

Science

STRATEGIC RESEARCH PLAN 2015 TO 2020

The new Strategic Plan aims to increase the international impact and relevance of research undertaken in the Faculty. It recognises six distinct, multidisciplinary impact areas in which the Faculty will strive to become a world leader:



African climate & development



Biodiversity & the Cape floristic region



Chemistry & biology for health in Africa



Marine biology & the southern oceans



Southern skies & the evolving universe



Human evolution & the African quaternary

12

DST/NRF
SARChI Chairs

348

Accredited
journal units

(Units are assigned to accredited research outputs and translate into a total monetary value)

R108
million

raised via
314
contracts

NRF RATINGS

Top rated researchers

16 A rated

66 B rated

6 P rated

2 new A ratings

in 2014 evaluation round:

- Professor **Russ Taylor**, UCT/UWC SKA Research Chair
- Professor **Patricia Whitelock**, Department of Astronomy and astronomer with the South African Astronomical Observatory

POSTGRADUATES

404

PhD students

72

Doctoral graduates

– a record high

463

Master's students

139

Master's graduates

23 percent with distinction

Ms **Wunmi Isafiade** and Ms **Emma Gray** awarded L'Oreal-UNESCO Women in Science (Sub-Saharan Africa) Fellowships

External AWARDS

Professor **Daya Reddy**, Department of Mathematics and Applied Mathematics and DST/NRF SARCHI Chair in Computational Mechanics – named next President of the International Council for Science (ICSU).

Associate Professor **Coleen Moloney**, Department of Biological Sciences and director of Ma-Re Institute – first woman marine scientist to win the national Gilchrist Memorial Medal.

Honorary Professor **Michael Feast** received the prestigious John FW Herschel Medal from the Council of the Royal Society of South Africa.

The 2015 Erna Hamburger Prize was awarded to Professor **Jill Farrant** by the EPFL (Swiss Federal Institute of Technology) WISH Foundation (Women in Science and Humanities) to leading researchers in science, engineering and architecture worldwide.

Internal AWARDS

Associate Professor **Sophie Oldfield**, Department of Environmental & Geographical Science – the **UCT Social Responsiveness Award** for her approach to scholarship and pedagogy built through a decade-long collaboration with Gertrude Square and the Valhalla Park United Front Civic Organisation.

Dr **Andrew Hamilton**, Department of Physics, for his work in the decade-long experiment to detect the elusive Higgs boson; Dr **Vanessa McBride**, Department of Astronomy, for her work on the use of optical, infrared and X-ray observations of neutron stars accreting material from normal stars; and Dr **Deena Pillay**, Department of Biological Sciences, for his work on marine ecosystems, particularly in lagoonal settings – the Claude Leon Merit Awards for Young Scholars.

DOCTORAL GRADUATIONS

C.A. AGYINGI (MATHEMATICS)

Hyperconvex hulls in categories of quasi-metric spaces
Supervised by Professor H.-P. Kunzi

M.A. AMBELE (CHEMISTRY)

The role of lipid in malaria pigment (Haemozoin) formation under biomimetic conditions
Supervised by Professor T. Egan

M.A. BENAMER (CHEMISTRY)

Chemical speciation and spatial distribution of heavy metals and their adsorption onto sediments of the Berg River, Western Cape, South Africa
Supervised by Professor G. Jackson and Dr K. Winter

W. BLACK (ARCHAEOLOGY)

Dental morphology and variation across holocene Khoesan people of Southern Africa
Supervised by Associate Professor B. Ackermann and Professor J. Sealy

L.K. BOAST (ZOOLOGY)

Exploring the causes of and mitigation options for human-predator conflict on game ranches in Botswana: How is coexistence possible?
Supervised by Emeritus Professor L. Underhill

S. BODENSTEIN (PHYSICS)

Precision determination of QCD fundamental parameters from sum rules
Supervised by Emeritus Professor C. Dominguez and Dr W.A. Horowitz

B. CALDER (MOLECULAR AND CELL BIOLOGY)

A proteomic investigation of the heat stress response of the South African abalone *haliotis midae*
Supervised by Associate Professor V. Coyne and Dr M. Rafudeen

H.C. CAWTHRA (GEOLOGY)

The marine geology of Mossel Bay, South Africa
Supervised by Associate Professor J. Compton

A. CHAMA (APPLIED MATHEMATICS)

Three-field mixed finite element approximations for problems in elasticity
Supervised by Professor D. Reddy

W. CROUS (CHEMISTRY)

The simple link atom saccharide hybrid method (slash): the St3gal-i mammalian sialyltransferase case study
Supervised by Professor R. Hunter

M. CYRUS (BOTANY)

The use of ULVA as a feed supplement in the development of an artificial diet and feeding regimes to produce export quality roe from the sea urchin *Tripneustes gratilla* (Linnaeus)
Supervised by Professor J. Bolton and Dr B.M. Macey

R.E. DIAMOND (GEOLOGY)

Stable isotope hydrology of the Table Mountain group
Supervised by Professor C. Harris

P.M. DRIVER (PHYSICAL OCEANOGRAPHY)

Rainfall variability over southern Africa
Supervised by Professor C. Reason and Dr B. Abiodun

H.L. EVERS-KING (PHYSICAL OCEANOGRAPHY)

Phytoplankton community structure determined through remote sensing and in situ optical measurements
Supervised by Emeritus Professor F. Shillington, Dr S. Bernard, Associate Professor M.I. Lucas and Dr S. Henson

J.E. FEARON (PHYSICS)

Strategies adopted by undergraduate physics students when modelling solutions to hands-on tasks
Supervised by Professor A. Buffler and Professor F.E. Lubben

S.P. FEBRUARY (APPLIED MATHEMATICS)

Structures in the cosmic void
Supervised by Associate Professor C. Clarkson

T.J. FLUGEL (ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE)

The evolution of the Congo-Kalahari Watershed: African mega-geomorphology
Supervised by Dr F. Eckardt and Dr F.P.D. Cotterill

C.M. FRANCIS (BOTANY)

Systematics of the Laurencia complex (Rhodomelaceae, Rhodophyta) in southern Africa
Supervised by Professor J. Bolton, Associate Professor R.J. Anderson and Dr L. Mattio

H.F. GEROMONT (APPLIED MATHEMATICS)

Effective fisheries management with few data: A management procedure approach
Supervised by Emeritus Professor D. Butterworth

P.C. GOGWANA (CHEMISTRY)

Investigation of the potential beneficial effects of supplemental polyunsaturated fatty acids and glycosaminoglycans on the risk factors for calcium oxalate kidney stone formation using theoretical, experimental and human models
Supervised by Emeritus Professor A. Rodgers and Associate Professor N. Ravenscroft

K.K. GOVENDER (CHEMISTRY)

The development of hybrid quantum classical computational methods for carbohydrate and hypervalent phosphoric systems
Supervised by Professor K. Naidoo and Dr G.A. Venter

P. GOVENDER (CHEMISTRY)

Development of new bioorganometallic ruthenium-arene metallodendrimers as anticancer agents
Supervised by Associate Professor G. Smith

S.L. HAMPTON (ZOOLOGY)

Multidisciplinary investigation into stock structure of small pelagic fishes in southern Africa
Supervised by Associate Professor C. Moloney, Professor P. Bloomer and Dr C.D van der Lingen

D. HATTAS (BOTANY)

Carbon based secondary metabolites in African savanna woody species in relation to anti-herbivore defense
Supervised by Professor J. Midgley, Associate Professor P. Scogings and Professor R. Julkunen-Tiito

R. IANJAMASIMANANA (ASTRONOMY)

Interstellar medium properties and star formation in nearby galaxies
Supervised by Professor T. Jarrett and Professor W.J.G. de Blok

J. JEYASUGITHTHAN (PHYSICS)

Experimental investigation of the characteristics of prompt gammas produced in tissue during proton therapy treatment
Supervised by Dr S. Peterson

E.O. JONAH (PHYSICS)

The topology and electrical properties of nanoparticle networks
Supervised by Professor D. Britton and Associate Professor M. Härting

S.D. JONES (PHYSICS)

Tomographic reconstruction of the morphology of silicon nanoparticle clusters
Supervised by Associate Professor M. Härting and Professor D.T. Britton

Y.J.S. JOSE (PHYSICAL OCEANOGRAPHY)

Mesoscale structuring of the pelagic ecosystem in the Mozambique channel: a modelling approach
Supervised by Emeritus Professor F. Shillington

W.R. JOUBERT (PHYSICAL OCEANOGRAPHY)

Primary productivity and its variability in the Atlantic Southern ocean
Supervised by Dr H. Waldron

L.T. KAAYA (ZOOLOGY)

Biological assessment of tropical riverine systems using aquatic macroinvertebrates in Tanzania, East Africa
Supervised by Emeritus Associate Professor J. Day and Dr H. Dallas

P.M. KALIBA (CONSERVATION BIOLOGY)

Faunal turnover between east and southern African terrestrial vertebrates: is Malawi the geographical break?
Supervised by Emeritus Professor T. Crowe and Professor R.C.K. Bowie

C. KASANZU (GEOLOGY)

Dating the unroofing and cooling histories of the Archaean Tanzania Craton, Eastern Africa: using a

combination of apatite fission-track and (U-Th)/He thermochronometric techniques
Supervised by Emeritus Associate Professor D. Reid and Professor M. de Wit

K.L. KIRSTEN-SARDINHA (ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE)

Evidence of Holocene Environmental Changes from Diatoms in Lake Sediments, Western Cape, South Africa
Supervised by Professor M. Meadows

A.A. KOCK (ZOOLOGY)

Behavioural ecology of white sharks carcharodon carcharias in False Bay, South Africa: towards improved management and conservation of a threatened apex predator
Supervised by Emeritus Professor C.L. Griffiths and Ms K. Mauff

J.P. KOTZE (ASTRONOMY)

Studying the environmental dependence of star formation properties of galaxies in the Abell 1437 galaxy cluster and its surrounding large scale structure
Supervised by Professor R. Kraan-Korteweg, Associate Professor P.A. Woudt, Dr D. Gilbank and Dr P. Vaisanen

S.C. KRÜGER (ZOOLOGY)

An investigation into the decline of the bearded vulture gypaetus barbatus in Southern Africa
Supervised by Dr A. Amar

R.B. KUHN (ASTRONOMY)

Photometric techniques for exoplanet detection: the construction and deployment of the KELT-South telescope
Supervised by Professor P. Whitelock and Dr J. Menzies

D. KUTER (CHEMISTRY)

Probing the structure and solvation of Ferrihaem and its chloroquine complex in aqueous solution: An experimental and computational approach
Supervised by Professor T. Egan and Professor K.J. Naidoo

B. KUYPER (PHYSICAL OCEANOGRAPHY)

An investigation into source and distribution of bromoform in the Southern African and Southern Ocean Marine boundary layer
Supervised by Professor C. Reason, Dr H.N. Waldron, Dr C.J. Palmer and Mr C. Labuschagne

K. KYRIACOU (ARCHAEOLOGY)

Coastal resources and nutrition among Middle Stone Age hunter-gatherers in the Southwestern Cape
Supervised by Emeritus Professor J. Parkington

M.A.A. LOCHNER (APPLIED MATHEMATICS)

New applications of statistics in astronomy and cosmology
Supervised by Professor B. Bassett

B. LOVEDAY (PHYSICAL OCEANOGRAPHY)

Modelling wind-driven inter-ocean exchange in the greater Agulhas with the regional ocean modelling system

Supervised by Professor C. Reason

T.G. MANDIWANA-NEUDANI (ZOOLOGY)

Taxonomy, phylogeny and biogeography of francolins ('*Francolinus*' spp.) Aves: order galliforme family: phasianidae

Supervised by Emeritus Professor T. Crowe and Professor R.C.K. Bowie

U.P. MÄNNL (PHYSICS)

Electronic properties and microstructure of nanoparticulate silicon systems for diode applications

Supervised by Associate Professor M. Härting and Professor D.T. Britton

M.C. MANYILIZU (PHYSICAL OCEANOGRAPHY)

Simulation of variability in the tropical Western Indian Ocean

Supervised by Professor C. Reason, Dr P. Penven and Dr F. Dufois

I. MATIMATI (BOTANY)

Functional role of plant water fluxes in nutrient acquisition

Supervised by Associate Professor M. Cramer and Associate Professor G.A. Verboom

M.W. MATTHEWS (PHYSICAL OCEANOGRAPHY)

Distinguishing cyanobacteria from algae using bio-optical remote sensing

Supervised by Emeritus Professor F. Shillington and Dr S. Bernard

R.L. MEGGERSEE (MOLECULAR AND CELL BIOLOGY)

Metronidazole resistance in clinical *Bacteroides fragilis* isolates from Groote Schuur Hospital, Cape Town, South Africa

Supervised by Associate Professor V. Abratt

G. MEHLANA (CHEMISTRY)

Crystal engineering of dynamic metal organic frameworks for applications in chromic sensing and capturing of small molecules

Supervised by Professor S. Bourne and Dr G. Ramon

N. METHNER (ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE)

Conceptualizing horizontal cooperation in regional socio-ecological systems through actor networks and collective action: the case of Berg River catchment

Supervised by Dr G. Ziervogel

S. MGUNI (ARCHAEOLOGY)

Using the archive to formulate a chronology of rock art in the South-Western Cape, South Africa

Supervised by Emeritus Professor J. Parkington

N. MIDLANE (CONSERVATION BIOLOGY)

The conservation status and dynamics of a protected African lion *Panthera leo* population in Kafue National Park, Zambia Cape Town, South Africa

Supervised by Professor J. O'Riain, Dr L. Hunter and Dr G. Balme

A.M. MOHAMMED (APPLIED MATHEMATICS)

Some aspects of the mass deformed ABJM theory

Supervised by Dr J. Murugan and Dr A. Weltman

N. MUNA (MOLECULAR AND CELL BIOLOGY)

Sociogenetic investigation of the southern harvester termite, *Microhodotermes viator*, via genetic and behavioural bioassays

Supervised by Dr C. O'Ryan

P.C. MUTAI (CHEMISTRY)

The medicinal chemistry progression of phytochemicals from *dalbergia melanoxylon* as potential antimycobacterial and antitumor agents

Supervised by Professor K. Chibale

M.N. NJORGE (CHEMISTRY)

In vitro metabolism of tetrazole aminoquinolines and derivatives of metergoline and fusidic acid

Supervised by Professor K. Chibale

N. NJUGUNA (CHEMISTRY)

Investigating the chemical space and metabolic bioactivation of natural products and cross-reactivity of chemical inhibitors in CYP450 phenotyping

Supervised by Professor K. Chibale and Dr C. Masimirembwa

L.J. NUPEN (ZOOLOGY)

A conservation genetic study of threatened, endemic southern African seabirds

Supervised by Dr J. Bishop and Professor P.G. Ryan

D.S.B. ONGARORA (CHEMISTRY)

Antimalarial drug rescue through safety improvement: design, synthesis and evaluation of amodiaquine analogues

Supervised by Professor K. Chibale and Dr C. Masimirembwa

O.V.F. OYEDELE (STATISTICAL SCIENCES)

The construction of a partial least squares biplot

Supervised by Associate Professor S. Lubbe

V. PAREKH (ASTRONOMY)

Morphological classification and dynamics of X-ray galaxy clusters

Supervised by Dr K. van der Heyden

B.W.P. REEVE (MOLECULAR AND CELL BIOLOGY)

Nitrogen metabolism and butanol production by South African *clostridium beijerinckii* and *clostridium saccharobutylicum* strains

Supervised by Associate Professor S. Reid

V. ROSS-GILLESPIE (ZOOLOGY)

Effects of water temperature on life history traits of selected South African Aquatic insects: implications for the ecological reserve

Supervised by Associate Professor M. Picker, Dr H. Dallas and Emeritus Associate Professor J. Day

N. RUGHOONATH (APPLIED MATHEMATICS)

Topics in Gauge/Gravity Duality

Supervised by Dr J. Murugan

M.J. SEHATA (CHEMISTRY)

Synthesis and evaluation of M.tb Glycosyltransferase (MshA) inhibitors

Supervised by Dr A. Jardine

A.Y.H. SHEN (MOLECULAR AND CELL BIOLOGY)

The transcriptome response of leaves of the resurrection plant, *Xerophyta humilis* to desiccation

Supervised by Professor N. Illing

S.P. SILAL (STATISTICAL SCIENCES)

A mathematical modelling approach for the elimination of malaria in Mpumalanga, South Africa Supervised by Associate Professor F. Little, Professor K. Barnes and Dr L. White

N.I. SINTHUMULE (ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE)

Land use change and the creation of Greater Mapungubwe transfrontier conservation area

Supervised by Associate Professor M. Ramutsindela

R.P. SKELTON (BOTANY)

The role of hydraulic strategies in understanding the response of fynbos to drought

Supervised by Dr A. West and Professor T. Dawson

R. SSEMBATYA (COMPUTER SCIENCE)

Designing an architecture for secure sharing of personal health records – A case of developing countries

Supervised by Dr A. Kayem and Professor G. Marsden

N. STEVENS (BOTANY)

Exploring the potential impacts of global change on the woody component of South African savannas

Supervised by Professor W. Bond, Dr S.A. Archibald and Associate Professor B.F.N. Erasmus

T. STRINGER (CHEMISTRY)

Development of quinoline and non-quinoline based organometallic complexes and their ligands conjugated to polyamine scaffolds as pharmacological agents

Supervised by Associate Professor G. Smith and Professor T.J. Egan

A.R. VAN ZYL (MOLECULAR AND CELL BIOLOGY)

Development of plant-produced bluetongue virus vaccines

Supervised by Professor E. Rybicki and Dr A.E. Meyers

K.J. VICKERY (ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE)

The nature of pan sediments: A case study on dust supply from the Makgadikgadi pans, Botswana

Supervised by Dr F. Eckardt

S.D. WALTON (PHYSICS)

Fully printed transistors employing silicon nanoparticles

Supervised by Professor D. Britton

C. WEI (COMPUTER SCIENCE)

Volumetric cloud generation using a Chinese brush calligraphy style

Supervised by Associate Professor J. Gain and Dr P. Marais

N.M. WHEAT (CHEMISTRY)

An ethnobotanical, phytochemical and metabolomics investigation of plants from the Paulshoek communal area, Namaqualand

Supervised by Associate Professor D.W. Gammon, Professor T. Hoffman and Professor K. Chibale

PATENTS

Filed applications

Britton, D.T., Harting, M. Thermal imaging sensors. National Phase Patent Application United States 14/375,459.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application Japan 2014-519649.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application China 201280043459.9.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application Europe 12735635.0.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application India 493/DELNP/2014.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application Korea 10-2014-7003309.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application Russia 2014 104 307.

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application South Africa 2014/00196

Britton, D.T., Scriba, M.R. Method of Producing Nanoparticles. National Phase Patent Application United States 14/131,612.

- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application Europe 13 712 926.8.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application Brazil xPCT/IB2013/051235.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application Canada 2,864,483.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application China 201380009373.9.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application India 1622/MUMNP/2014.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application Japan 2014-557157.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application South Africa 2014/06786.
- Chibale, K., Waterson, D., Witty, M.J., Younis, Y. Anti-Malarial Agents. National Phase Patent Application United States 14/379,332.
- Driver, C, Hunter, R., Parker, I. Radiopharmaceutical Conjugate. Provisional Patent Application Britain 1417067.4.
- Hitzeroth, I.I., Kennedy, P., Rybicki, E.P. Plant Produced Human Papillomavirus Pseudovirion. PCT Patent Application PCT PCT/IB2014/063411.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Australia 2012345443.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Brazil BR 11 2014 012491 4.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Canada 2,850,293.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application China 201280052968.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Europe 12853360.1.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application India 3054/DELNP/2014.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Indonesia P-00201403965.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Ireland xPCT/IB2012/056912.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Israel 232584.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Japan 2014-544038.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Korea 2014-7010686.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Malaysia PI 2010700894.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Mexico Mx/a/2014/006520.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application New Zealand 622595.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Philippines 1-2014-500466.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Russia 2014126587.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Singapore 11201401579U.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application South Africa 2014/03557.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application Thailand 1401002977.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application United Arab Emirates 202/2014.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Chimaeric Particle. National Phase Patent Application United States 14/360,524.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Small VLP. National Phase Patent Application Hong Kong xPCT/IB2012/056912.
- Hitzeroth, I.I., Pineo, C.B., Rybicki, E.P. HPV Small VLP. National Phase Patent Application Viet Nam 1-2014-02077.
- Jardine, M.A., Khonde, L.P. Process for Synthesizing Ergothioneine and its Intermediates. Provisional Patent Application Britain 1416678.9.

Rybicki, E.P., Tanzer, F.L. Expression System Incorporating a Capsid Promoter Sequence as an Enhancer of a Cytomegalovirus Promotor. National Phase Patent Application Britain GB 1945777.

Rybicki, E.P., Tanzer, F.L. Expression System Incorporating a Capsid Promoter Sequence as an Enhancer of a Cytomegalovirus Promotor. National Phase Patent Application France FR 1945777.

Rybicki, E.P., Tanzer, F.L. Expression System Incorporating a Capsid Promoter Sequence as an Enhancer of a Cytomegalovirus Promotor. National Phase Patent Application Germany DE 1945777.

Rybicki, E.P., Tanzer, F.L. Expression System Incorporating a Capsid Promoter Sequence as an Enhancer of a Cytomegalovirus Promotor. National Phase Patent Application Italy IT 1945777.

Hitzeroth, I.I., Maclean, J.M., Rybicki, E.P., Williamson, A-L. Expression of Proteins in Plants. National Phase Patent Application India 7719/DELNP/2007.

Rybicki, E.P., Tanzer, F.L. Expression System Incorporating a Capsid Promoter Sequence as an Enhancer of a Cytomegalovirus Promotor. National Phase Patent Application Europe 06820870.1.

Granted Applications

Britton, D.T., Harting, M. Assembling and Packaging a Discrete Electronic Component. National Phase Patent Application South Africa 2013/01891.

Britton, D.T., Harting, M. Method of Producing Stable Oxygen Terminated Semiconducting Nanoparticles. National Phase Patent Application China 200980118525.2.

Britton, D.T., Harting, M. Method of Producing Stable Oxygen Terminated Semiconducting Nanoparticles. National Phase Patent Application Japan 2011-508013.

Britton, D.T., Harting, M. Printed Temperature Sensor. National Phase Patent Application South Africa 2013/01890.

Britton, D.T., Harting, M. Producing Stable Oxygen Terminated Semiconducting Nanoparticles. National Phase Patent Application Russia 2011 137 638.

Britton, D.T., Harting, M. Semiconducting Nanoparticles with Surface Modification. National Phase Patent Application Korea 10-2008-7000378.

Britton, D.T., Harting, M., Odo, A.E. Inkjet Printing of Nanoparticulate Functional Inks. National Phase Patent Application Russia 2011 137 639.

Britton, D.T., Harting, M., Odo, A.E. Thick Film Semiconducting Inks. National Phase Patent Application Korea 10-2008-7018039.

Halsey, R.J., Rybicki, E.P., Tanzer, F.L., Williamson, A-L. Chimaeric HIV-1 Subtype C Gag-Virus-Like Particles. National Phase Patent Application India 4859/DELNP/2008.

Hitzeroth, I.I., Maclean, J.M., Rybicki, E.P., Williamson, A-L. Expression of Proteins in Plants. Divisional Patent Application South Africa 2012/04565.

DEPARTMENT OF ARCHAEOLOGY

**Head of Department: Emeritus Professor
John Parkington**

Departmental Profile

The Department of Archaeology is characterised by a diversity of well-established research interests. The Western Cape has a rich archaeological heritage which includes evidence of hunter-gatherer settlement, pastoralist communities and colonial settlers – all the subject of ongoing research. Further afield, the Department also has a research focus on the archaeology of early Tswana and Sotho-speaking agropastoralists, particularly in North West and the Free State. In addition, the Department is home to archaeometric and materials research, focussing on palaeoanthropology, past environments, early human diets and materials analysis.

Departmental Statistics

Permanent and long-term Contract Staff

Emeritus Professor	2
Emeritus Associate Professor	1
Professor	1
Associate Professor	2
Senior Lecturers	1
Lecturers	4
Contracts	1
Technical Support Staff	2
Administrative and Clerical Staff	1
Departmental Assistant	1
Lab Assistant	1
Total	16

Honorary Staff

Honorary Research Associates	10
Total	10

Students and Postdoctoral Fellows

Postdoctoral Fellows	7
Doctoral	15
Masters	13
Honours	14
Undergraduates	532
Total	581

Research Fields and Staff

Permanent Staff

EMERITUS PROFESSOR JOHN PARKINGTON

Head of Department. Hunter-gatherers, palaeoenvironmental reconstruction and human ecology, prehistoric art, coastal archaeology
John.Parkington@uct.ac.za

PROFESSOR JUDITH SEALY

Archaeometry, stable isotopes, precolonial southern Africa
Judith.Sealy@uct.ac.za

ASSOCIATE PROFESSOR REBECCA ROGERS ACKERMANN

Hominid evolution, variation, morphometrics, visualization and modelling, quantitative methods
Becky.Ackermann@uct.ac.za

ASSOCIATE PROFESSOR SIMON HALL

Senior lecturer, hunter-gatherers and farmers, Stone/Iron Age interaction, landscape sharing
Simon.Hall@uct.ac.za

DR SHADRECK CHIRIKURE

Senior lecturer, Archaeometallurgy, Iron Age, heritage studies
Shadreck.Chirikure@uct.ac.za

DR RIASHNA SITHALDEEN

Lecturer, Primate biogeography using genetic techniques, academic development in the geosciences
Riashna.Sithaldeen@uct.ac.za

DR DEANO STYNDER

Lecturer, African fauna, faunal analysis, ecomorphology, palaeoenvironments
Deano.Stynder@uct.ac.za

DR ALEXANDRA SUMNER

Lecturer, Lithic analysis, human cognitive evolution
Alexandra.Sumner@uct.ac.za

DR DOMINGO CARLOS SALAZAR-GARCIA

Lecturer, Biogeochemical analysis, palaeodiet reconstruction mobility and subsistence patterns
Domingo.salazargarcia@uct.ac.za

Contract Staff

DR DAVID BRAUN

Adjunct Professor, Early Stone Age in eastern and southern Africa, stone artefact technology
drbraun76@gmail.com

Emeritus Professor

EMERITUS PROFESSOR NIKOLAAS J. VAN DER MERWE

Isotopes, palaeodiets, palaeoenvironments, archaeometallurgy

Emeritus Associate Professor

EMERITUS ASSOCIATE PROFESSOR A. SMITH

Prehistoric pastoralism, origins of food production, ethnohistory

Honorary Research Associates

DR GRAHAM AVERY

Archaeozoology

DR KYLE BROWN

Stone artefact studies, landscape archaeology

DR JOSE DE PRADA-SAMPER

Folklore studies, indigenous narratives, Bleek and Lloyd archive

DR PER DITLEF FREDRIKSEN

Ceramics, ethnoarchaeology, archaeology of farming communities

MR PIETER JOLLY

Contact period rock art, history of San-Nguni/Sotho interaction

DR ALEX MACKAY

Middle Stone Age, stone artefact technology

PROFESSOR TIM MAGGS

Iron Age archaeology in southern Africa

DR WEBBER NDORO

Heritage Studies

DR JAYSON ORTON

Later Stone Age, stone artefacts, cultural resource management

PROFESSOR LARISSA SWEDDELL

Primateology

PROFESSOR SUSAN PFEIFFER

Biological anthropology

Postdoctoral Fellows

DR MARINA IGREJA

Stone tool use-wear analysis, techno-economic strategies, behavior of early modern humans.

DR ASHLEY COUTU

Isotope ecology, bio-archaeology, historical archaeology

DR PAUL CAVALIER

Proton magnetometry and the detection of buried objects and features

DR FOREMAN BANDAMA

Archaeometallurgy, Iron Age archaeology, ceramics, historical archaeology

DR TERRENCE RITZMAN

Human evolution, hybridization, non-adaptive evolutionary process

DR KATHARINE KYRIACOU

Nutritional analyses of foods and their relationship to modern human evolution

DR NONHLANHLA DLAMINI

Bioarchaeology, palaeodiet, stable isotopes

Distinguished Visitors

PROFESSOR JACK FISHER

Montana State University – faunal remains in archaeology

DR ALEX MACKAY

Australian National University – Pleistocene lithic technology

PROFESSOR SUSAN PFEIFFER

University of Toronto – biological anthropology

PROFESSOR PIERRE-JEAN TEXIER

CNRS-Valbonne France – prehistory

DR GUILLAUME PORRAZ

CNRS, University of Paris 10 – Stone artefact technology of the Middle Stone Age

DR BENJAMIN COLLINS

University of Toronto at Scarborough – Zooarchaeology, Middle and Later Stone Age

Contact Details

Postal address: Department of Archaeology, University of Cape Town, Private Bag X3, Rondebosch, 7701
Telephone: +27 21 650 2353
Fax: +27 21 650 2352
Email: lynn.cable@uct.ac.za
Web: www.uct.ac.za/depts/age/

RESEARCH OUTPUT

Chapters in books

Aguilella, G., Roman, D. and Salazar-Garcia, D.C. 2014. Les datacions radiocarboniques. In A.G. Aguilella., M.D. Roman and B.P.Garca (eds), *La Cova dels Diablets (Alcal de Xivert, Castell)*. Prehistoria a la Serra d'Irta, pp. 57-61. Valencia: Diputacio de la Castello. ISBN 9788415301424.

Braun, D.R. 2014. Earliest industries of Africa. In C. Renfrew and P. Bahn (eds), *The Cambridge World Prehistory Volume 1: Africa, South and Southeast Asia and the Pacific*, pp. 65-79. USA: Cambridge University Press. ISBN 9781107023772.

Cartwright, C., Parkington, J.E. and Cowling, R. 2014. Understanding late and terminal Pleistocene vegetation change in the Western Cape, South Africa: the wood charcoal evidence from Elands Bay Cave. In C.J. Stevens, S. Nixon, M.A. Murray and D.Q. Fuller (eds) *Archaeology of African Plant Use*: pp. 59-72. USA: Left Coast Press, Inc. ISBN 9781611329742.

Chirikure, S. 2014. The later prehistory of southern Africa from the Early to the Late Iron Age. In C. Renfrew and P. Bahn (eds), *The Cambridge World Prehistory Volume 1: Africa, South and Southeast Asia and the Pacific*, pp. 204-219. USA: Cambridge University Press. ISBN 9781107023772.

Olle, A., Saladie, P., Valleverdu, J., Caceres, I., Van Der Made, J., Exposito, I., Burjachs, F., Lopez-Polin, L., Lorenzo, C., Bennisar, B., Salazar-Garcia, D.C. and Olaria, C. 2014. La Cova de dalt del tossal de la font. In R.S. Ramos (ed), *Pleistocene and Holocene Hunter-gatherers in Iberia and the Gibraltar Strait: The Current Archaeological Record*, pp. 413-416. Burgos: Universidad de Burgos/Fundacion Atapuerca. ISBN 9788492681877.

Parkington, J.E. 2014. The Later Stone Age of Southern Africa. In C. Renfrew and P. Bahn (eds), *The Cambridge World Prehistory Volume 1: Africa, South and Southeast Asia and the Pacific*, pp. 131-150. USA: Cambridge University Press. ISBN 9781107023772.

Salazar-Garcia, D.C. 2014. Estudi de la dieta en la poblaci de Cova dels Diablets mitjanant anlisi d'istops estables del carboni i del nitrogen en collgen ossi. Resultats preliminars. In G.A. Arzo, D.R. Monroig and P.G. Borja (eds), *La Cova dels Diablets (Alcal de Xivert, Castell)*. Prehistoria a la Serra d'Irta: 67-79. Valencia: Diputacio de la Castello. ISBN 9788415301424.

Articles in peer-reviewed journals

Ackermann, R., Schroeder, L., Rogers, J. and Cheverud, J. 2014. Further evidence for phenotypic signatures of hybridization in descendent baboon populations. *Journal of Human Evolution*, 76: 54-62.

Armstrong, A. and Avery, G. 2014. Taphonomy of Verreaux's Eagle (*Aquila verreauxii*) prey accumulations from the Cape Floral Region, South Africa: implications for archaeological interpretations. *Journal of Archaeological Science*, 52: 163-183.

Bentez de Lugo, E.L., Moreno, M.M., Gutierrez, J.L., Alvarez Garcia, H.J., Zumajo, N.P., Trujillo, E.M., Sierra, J.M., Herreros, G.M., Martin, S.F., Salazar-Garcia, D.C., Lloret, C.O., Snchez, M.B. and Lpez Snchez, J.A. 2014. Aportaciones hidrogeologicas al estudio arqueologico de los orgenes de la Edad del Bronce de La Mancha: la cueva monumentalizada de Castillejo del Bonete (Terrinches, Ciudad Real, Espaa). *Trabajos De Prehistoria*, 71(1): 76-94.

Bos, K.I., Harkins, K.M., Herbig, A., Coscolla, M., Weber, N., Comas, I., Forrest, S.A., Bryant, J.M., Harris, S.R., Schuenemann, V.J., Campbell, T.J., Majander, K., Wilbur, A.K., Guichon, R.A., Wolfe Steadman, D.L., Cook, D., Niemann, S., Behr, M., Zumarraga, M., Bastida, R., Huson, D., Nieselt, K., Young, D., Parkhill, J., Buikstra, J.E., Gagneux, S., Stone, A.C. and Krause, J. 2014. Pre-Columbian mycobacterial genomes reveal seals as a source of New World human tuberculosis. *Nature*, 514: 494-497.

Cameron, M.E. and Pfeiffer, S. 2014. Long bone cross-sectional geometric properties of Later Stone Age foragers and herder-foragers. *South African Journal of Science*, 110(9/10): 2013-0369(11pp). DOI: 10.1590/sajs.2014/20130369.

Chirikure, S. and Bandama, F. 2014. Indigenous African furnace types and slag composition – is there a correlation? *Archaeometry*, 56(2): 296-312.

Chirikure, S. 2014. Land and sea links: 1500 years of connectivity between southern Africa and the Indian Ocean rim regions, AD 700 to 1700. *African Archaeological Review*, 31: 705-724.

Chirikure, S. 2014. 'Where angels fear to tread': ethics, commercial archaeology, and extractive industries in southern Africa. *Azania: Archaeological Research in Africa*, 49(2): 218-231.

Chirikure, S., Manyanga, M., Pollard, A.M., Bandama, F., Mahachi, G. and Pikirayi, I. 2014. Zimbabwe Culture before Mapungubwe: new evidence fom Mapela Hill, South-Western Zimbabwe. *PLoS One*, 9(10): e111224(18pp) DOI: 10.1371/journal.pone.0111224.

Dandara, C., Huzair, F., Borda-Rodriguez, A., Chirikure, S.C., Okpechi, I., Warnich, L. and Masimirembwa, C.M. 2014. H3Africa and the African Life Sciences Ecosystem: Building Sustainable Innovation. *Omics-A Journal of Integrative Biology*, 18(12): 733-739.

Fisher, J. and Parkington, J.E. 2014. *Procavia capensis* dentitions as guides to the season of occupation of Southern African Stone Age sites: the rock hyrax calendar. *South African Archaeological Bulletin*, 69(199): 4-18.

- Fu, Q., Li, H., Moorjani, P., Jay, F., Slepchenko, S.M., Bondarev, A.A., Johnson, P.L.F., Aximu-Petri, A., Prüfer, K., de Filippo, C., Meyer, M., Zwyns, N., Salazar-Garcia, D.C., Kuzmin, Y., Keates, S., Kosintsev, P.A., Razhev, D.I., Richards, M.P., Peristov, N.V., Lachmann, M., Douka, K., Higham, T.F.G., Slatkin, M., Hublin, J.J., Reich, D., Kelso, J., Viola, B. and Pääbo, S. 2014. Genome sequence of a 45,000-year-old modern human from western Siberia. *Nature*, 514: 445-449.
- Fuzessy, L.F., de Oliveira Silva, I., Malukiewicz, J., Rodrigues Silva, F.F., do Carmo Ponzio, M., Boere, V. and Ackermann, R. 2014. Morphological variation in wild marmosets (*Callithrix penicillata* and *C. geoffroyi*) and their hybrids. *Evolutionary Biology*, 41: 480-493.
- Irish, J.D., Black, W., Sealy, J.C. and Ackermann, R. 2014. Questions of Khoesan continuity: dental affinities among the indigenous Holocene peoples of South Africa. *American Journal of Physical Anthropology*, 155: 33-44.
- Jerardino, A., Navarro, R.A. and Galimberti, M. 2014. Changing collecting strategies of the clam *Donax serra* Röding (*Bivalvia: Donacidae*) during the Pleistocene at Pinnacle Point, South Africa. *Journal of Human Evolution*, 68: 58-67.
- Jerardino, A., Wiltshire, N., Webley, L., Tusenius, M., Halkett, D., Hoffman, M.T. and Maggs, T. 2014. Site distribution and chronology at Soutpansklipheuwel, a rocky outcrop on the West Coast of South Africa. *Journal of Island & Coastal Archaeology*, 9: 88-110.
- Kyriacou, K., Parkington, J.E., Marais, A.D. and Braun, D.B. 2014. Nutrition, modernity and the archaeological record: coastal resources and nutrition among Middle Stone Age hunter-gatherers on the Western Cape coast of South Africa. *Journal of Human Evolution*, 77: 64-73.
- Lemorini, C., Plummer, T.W., Braun, D.R., Crittenden, A., Ditchfield, P., Bishop, L., Hertel, F., Oliver, J.S., Marlowe, F.W., Schoeninger, M. and Potts, R. 2014. Old stones' song: use-wear experiments and analysis of the Oldowan quartz and quartzite assemblage from Kanjera South (Kenya). *Journal of Human Evolution*, 72: 10-25.
- Mackay, A., Sumner, A., Jacobs, Z., Marwick, B., Bluff, K. and Shaw, M. 2014. Putslaagte 1 (PL1), the Doring River, and the later Middle Stone Age in southern Africa's winter rainfall zone. *Quaternary International*, 350: 43-58.
- Morris, A.G., Heinze, A., Chan, E.K.F., Smith, A.B. and Hayes, V.M. 2014. First ancient mitochondrial human genome from a pre-pastoralist Southern African. *Genome Biology and Evolution*, 6(10): 2647-2653.
- Orton, J. 2014. SALSA: the Holocene technocomplexes, a reply to Lombard and colleagues. *South African Archaeological Bulletin*, 69(199): 110-112.
- Orton, J. 2014. The late pre-colonial site of Komkans 2 (KK002) and an evaluation of the evidence for indigenous copper smelting in Namaqualand, southern Africa. *Azania: Archaeological Research in Africa*, 49(3): 386-410.
- Parkington, J.E., Fisher, J., Poggenpoel, C.A. and Kyriacou, K. 2014. Strandloping as a resource-gathering strategy in the Cape, South African Holocene Later Stone Age: the Verloren Vlei record. *Journal of Island & Coastal Archaeology*, 9: 219-237.
- Pfeiffer, S., Doyle, L.E., Kurki, H.K., Harrington, L., Ginter, J.K. and Merritt, C.E. 2014. Discernment of mortality risk associated with childbirth in archaeologically derived forager skeletons. *International Journal of Paleopathology*, 7: 15-24.
- Pfeiffer, S., Williamson, R.F., Sealy, J.C., Smith, D.G. and Snow, M.H. 2014. Stable dietary isotopes and mtDNA from Woodland period southern Ontario people: results from a tooth sampling protocol. *Journal of Archaeological Science*, 42: 334-345.
- Power, R.C., Salazar-Garcia, D.C., Wittig, R.M. and Henry, A.G. 2014. Assessing use and suitability of scanning electron microscopy in the analysis of micro remains in dental calculus. *Journal of Archaeological Science*, 49: 160-169.
- Sahle Chemere, Y., Morgan, L., Braun, D.R., Atnafu, B. and Hutchings, W.K. 2014. Chronological and behavioral contexts of the earliest Middle Stone Age in the Gademotta Formation, Main Ethiopian Rift. *Quaternary International*, 331: 6-19.
- Salazar-Garcia, D.C., Richards, M.P., Nehlich, O. and Henry, A.G. 2014. Dental calculus is not equivalent to bone collagen for isotope analysis: a comparison between carbon and nitrogen stable isotope analysis of bulk dental calculus, bone and dentine collagen from same individuals from the Medieval site of El Raval (Alicante, Spain). *Journal of Archaeological Science*, 47: 70-77.
- Schroeder, L., Roseman, C.C., Cheverud, J. and Ackermann, R. 2014. Characterizing the evolutionary path(s) to early Homo. *PLoS One*, 9(12): e114307(20pp) DOI: 10.1371/journal.pone.0114307.
- Sealy, J.C., Johnson, M., Richards, M.P. and Nehlich, O. 2014. Comparison of two methods of extracting bone collagen for stable carbon and nitrogen isotope analysis: comparing whole bone demineralization with gelatinization and ultrafiltration. *Journal of Archaeological Science*, 47: 64-69.
- Sumner, T.A. and Kuman, K. 2014. Refitting evidence for the stratigraphic integrity of the Kudu Koppie Early to Middle Stone Age site, northern Limpopo Province, South Africa. *Quaternary International*, 343: 169-178.
- Swedell, L., Leedom, L., Saunders, J. and Pines, M. 2014. Sexual conflict in a polygynous primate: costs and benefits of a male-imposed mating system. *Behavioral Ecology and Sociobiology*, 68: 263-273.
- Walker, S., Lukich, V. and Chazan, M. 2014. Kathu Townlands: a high density Earlier Stone Age locality in the interior of South Africa. *PLoS One*, 9(7): e103436(11pp). DOI: 10.1371/journal.pone.0103436.

Warren, K.A., Hall, S.L. and Ackermann, R. 2014. Craniodental continuity and change between Iron Age peoples and their descendants. *South African Journal of Science*, 110(7/8): 2013-0275(11pp). DOI: 10.1590/sajs.2014/20130275.

Wilkins, J., Schoville, B.J. and Brown, K. 2014. An experimental investigation of the functional hypothesis and evolutionary advantage of stone-tipped spears. *PLoS One*, 9(8): e104514(13pp).

DEPARTMENT OF ASTRONOMY

Head of Department: Professor Renée C. Kraan-Korteweg

Departmental Profile

The Astronomy department has a strong focus on multi-wavelength (X-ray, optical, infrared, radio) observational astronomy with strengths in extragalactic astronomy (*large-scale structures of galaxies, cosmic flows, galaxy evolution and star formation, galaxy clusters, galaxy dynamics and dark matter, cosmic magnetism*), stellar astrophysics (*Cataclysmic variables, X-ray binaries, accretion disks in compact binaries, supernova remnants, stellar pulsations and stellar evolution*) and astronomical instrumentation (*high-speed CCD detectors*).

The Astronomy department hosts two SARChI chairs – one in Astrophysics and Space Science (DST/NRF) and one in Extragalactic Multi-wavelength Astronomy (SKA) – and recently appointed a joint UWC/UCT SKA chair. The staff in the Astronomy department lead four of the ten MeerKAT Large (legacy) Survey Projects, focussing on the study of explosive radio transients in our Galaxy and the nearby Universe (ThunderKAT), to the study of the gas dynamics in nearby galaxies (MHONGOOSE) and the evolution of galaxies and their gas content over cosmic time scales (MIGHTEE and LADUMA). The MeerKAT surveys and science with the SKA are central to the Astronomy department's focus on Big Data and data intensive astrophysics.

The Astronomy department is part of the Research Centre for Astrophysics, Cosmology and Gravitation (ACGC) at UCT (www.acgc.uct.ac.za), established in 2009, and is an active participant of the National Astrophysics and Space Science Programme – hosted at UCT – which offers Honours and Master's degrees. Strong links have been established with the South African Astronomical Observatory (SAAO) and the SKA South Africa project through joint staffing positions and postgraduate student supervision. The Department also enjoys active research collaborations with a range of national and international groups.

In 2014, the Astronomy department welcomed Prof Russ Taylor as a joint UCT/UWC SKA Chair with a research focus on Cosmic Magnetism. Prof Taylor is an expert on Big Data and data intensive astrophysics, particularly in relation to the Square Kilometre Array. Dr Vanessa McBride was promoted to senior lecturer with effect of 1 January 2015. In 2014, the Astronomy department had 17 postdoctoral fellows, 19 PhD students and 13 MSc research students. The NASSP postgraduate cohort of 2014 consisted for 16 coursework Masters students and 19 BSc Honours students.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	4
Associate Professor	1
Senior Scholar/Emeritus Professor	1
Senior Lecturer	1
Lecturer	1.5
Visiting SKA Professor	0.1
Administrative Staff	5
Total	13.6

Honorary Staff

Honorary Professor	1
Total	1

Affiliated Researchers

Honorary Professors	3
Honorary Academic	1
Total	4

Students and Postdoctoral Fellows

Postdoctoral Fellows	17
Doctoral	19
Masters (Research)	1
Masters (NASSP Dissertation)	12
Masters (NASSP Coursework)	16
Honours (NASSP)	19
Undergraduate	130
Total	214

Research Fields and Staff

Permanent Staff

PROFESSOR RENÉE C. KRAAN-KORTEWEG (HEAD OF DEPARTMENT), CO-DIRECTOR ACGC

Large-scale structures and streaming motions in the nearby Universe, the Zone of Avoidance, systematic HI-surveys, evolution and transformation of galaxies.

PROFESSOR CLAUDE CARIGNAN (SKA SARCHI CHAIR)

Galaxy dynamics and dark matter; astronomical instrumentation and techniques.

PROFESSOR THOMAS JARRETT (DST/NRF SARCHI CHAIR)

Galaxy evolution and star formation, large-scale structure and bulk-flow motions in the local Universe, astrophysical databases and large data sets.

PROFESSOR RUSS TAYLOR (JOINT UCT/UWC SKA CHAIR)

Cosmic magnetism; data intensive astrophysics

ADJUNCT PROFESSOR PATRICIA WHITELOCK (JOINT SAAO/UCT POSITION)

Galactic structure, stellar evolution, Local Group galaxies, long period variable and symbiotic stars.

EMERITUS DISTINGUISHED PROFESSOR BRIAN WARNER (SENIOR SCHOLAR)

Cataclysmic variable stars, white dwarf stars, history of astronomy.

ASSOCIATE PROFESSOR PATRICK A. WOUTD (DEPUTY HEAD OF DEPARTMENT)

Cataclysmic variable stars, ultra-compact binaries, high time domain astrophysics.

DR KURT VAN DER HEYDEN (SENIOR LECTURER, NASSP DIRECTOR)

Supernovae and Supernova remnants, systematic HI surveys, clusters of galaxies, X-ray spectroscopy.

DR SARAH BLYTH (LECTURER)

Large-scale structure, galaxy evolution and galaxy clusters, HI-surveys.

DR VANESSA MCBRIDE (LECTURER, JOINT SAAO/UCT POSITION)

X-ray binaries, Magellanic Clouds.

PROFESSOR ROB FENDER (VISITING SKA PROFESSOR)

X-ray binaries, neutron stars, black holes, accretion disks, radio transient surveys.

Honorary Staff in the department

HONORARY PROFESSOR MICHAEL W. FEAST & HONORARY RESEARCH ASSOCIATE

Stellar evolution, Galactic structure, long-period variable stars, distance scale.

Honorary Researchers associated with the department

HONORARY PROFESSOR PHIL A. CHARLES (UNIVERSITY OF SOUTHAMPTON)

Cataclysmic variables, X-ray binaries, neutron stars, black holes, accretion disks.

**HONORARY PROFESSOR ERWIN DE BLOK
(ASTRON, NL)**

Dark matter in disk galaxies, low-surface brightness galaxies, HI surveys, the interstellar medium in nearby galaxies, evolution of dark galaxies.

**HONORARY PROFESSOR TED WILLIAMS
(DIRECTOR, SAAO)**

Galaxy dynamics

**PROFESSOR PETER DUNSBY (UCT, MATHEMATICS
AND APPLIED MATHEMATICS)**

Honorary Academic, Co-director ACGC
Theoretical cosmology and gravity.

Postdoctoral Fellows

DR RICHARD ARMSTRONG (UNTIL AUGUST 2014)

Radio transients, radio interferometric techniques.

DR MACIEJ BILICKI

Cosmology, large-scale structure of the Universe, cosmic density and velocity fields, redshift and peculiar velocity surveys, cosmic flows.

DR LIZ BARTLETT (FROM FEBRUARY 2014)

X-ray emitting massive binaries

DR LUKE CHAMANDY (FROM AUGUST 2014)

Cosmic magnetism

DR MICKAËL CORIAT (UNTIL JULY 2014)

Accretion, jets, black hole and neutron star
X-ray binaries.

DR MICHELLE CLUVER (UNTIL SEPTEMBER 2014)

Galaxy evolution as traced by interactions in the
group environment

DR E.D. ELSON

Dynamical and star formation studies of nearby galaxies,
simulations of HI data sets.

DR ROGER DEANE

High redshift astrophysics with SKA Pathfinders and the
effect of massive black holes on their host galaxies.

DR KELLEY HESS (UNTIL SEPTEMBER 2014)

Neutral hydrogen in nearby galaxies, galaxy groups
and clusters.

DR TANA JOSEPH (FROM FEBRUARY 2014)

Extra galactic X-ray binaries

DR YANNICK LIBERT (FROM SEPTEMBER 2014)

Observations and modelling of circumstellar
environments around AGB stars

DR DANIELLE LUCERO (UNTIL DECEMBER 2014)

Cold gas and star formation in early-type galaxies.

DR NATASHA MADDOX (UNTIL JULY 2014)

Quasars and multi-wavelength observations of galaxies.

DR CHRISTINA MAGOULAS (FROM JANUARY 2014)

Multi-wavelength and WISE infrared properties of
nearby galaxies in the local Universe

DR VALERIO RIBEIRO (UNTIL AUGUST 2014)

Cataclysmic variables, novae, radio transients.

DR MATTHEW SCHURCH (UNTIL SEPTEMBER 2014)

Cataclysmic variables and X-ray binaries.

DR LEE TOWNSEND

Multi-wavelength observations and dynamics of massive
X-ray binaries

Contact Details

Postal Address:

Department of Astronomy
University of Cape Town
Private Bag X3
Rondebosch
7701

Telephone: +27 (21) 650 5830

Fax: 27 (21) 650 4547

Email: admin@ast.uct.ac.za

Webpage: www.ast.uct.ac.za

RESEARCH OUTPUT

Chapters in books

Warner, B. 2014. A Piazzzi Smyth, the Cape of Good Hope, Tenerife, and the siting of large telescopes. In I.G. Martinez-Pais, T. Shahbaz and J.C.Velazquez (eds), *Accretion Processes in Astrophysics*, pp. 291-294. 2014. USA: Cambridge University Press. ISBN 9781107030190.

Warner, B. 2014. Accretion onto white dwarfs. In I.G. Martinez-Pais, T. Shahbaz and J.C. Velazquez (eds), *Accretion Processes in Astrophysics*, pp.89-116 USA: Cambridge University Press. ISBN 9781107030190.

Articles in peer-reviewed journals

Alatalo, K., Appleton, P.N., Lisenfeld, U., Bitsakis, T., Guillard, P., Charmandaris, V., Cluver, M., Dopita, M.A., Freeland, E., Jarrett, T., Kewley, L.J., Ogle, P., Rasmussen, J., Rich, J., Verdes-Montenegro, L., Xu, C.K. and Yun, M. 2014. Strong far-infrared cooling lines, peculiar CO kinematics, and possible star-formation suppression in Hickson compact group 57. *Astrophysical Journal*, 795: 159(16pp) DOI: 10.1088/0004-637X/795/2/159.

- Alpaslan, M., Robotham, A.S.G., Obreschkow, D., Penny, S., Driver, S., Norberg, P., Brough, S., Brown, M.J.I., Cluver, M., Holwerda, B.W., Hopkins, A.M., van Kampen, E., Kelvin, L.S., Lara-Lpez, M.A., Liske, J., Loveday, J., Mahajan, S. and Pimblet, K.A. 2014. Galaxy and mass assembly (GAMA): fine filaments of galaxies detected within voids. *Monthly Notices of the Royal Astronomical Society*, 440: L106-L110.
- Angeloni, R., Contreras Ramos, R., Catelan, M., Dekany, I., Gran, F., Alonso-Garcia, J., Hempel, M., Navarrete, C., Andrews, H., Aparicio, A., Beamin, J.C., Berger, C., Borissova, J., Contreras, C., Cunial, A., de Grijs, R., Espinoza, N., Eyheramendy, S., Ferreira Lopes, C.E., Fiashi, M., Hajdu, G., Han, J., Helminiak, K.G., Hempel, A., Hidalgo, S.L., Ita, Y., Jeon, Y.-B., Jordan, A., Kwon, J., Lee, J.T., Martin, E.L., Masetti, N., Matsunaga, N., Milone, A.P., Minniti, D., Morelli, L., Murgas, F., Nagayama, T., Navarro, C., Ochner, P., Perez, P., Pichara, K., Rojas-Arriagada, A., Roquette, J., Saito, R.K., Siviero, A., Sohn, J., Sung, H.-I., Tamura, M., Tata, R., Tomasella, L., Townsend, B. and Whitelock, P. 2014. The VVV templates project towards an automated classification of VVV light-curves I. Building a database of stellar variability in the near-infrared. *Astronomy & Astrophysics*, 567: A100(11pp) DOI: 10.1051/0004-6361/201423904.
- Angus, G., Gentile, G., Diaferio, A., Famaey, B. and Van der Heyden, K.J. 2014. N-body simulations of the Carina dSph in MOND. *Monthly Notices of the Royal Astronomical Society*, 440: 746-761.
- Angus, G., Diaferio, A., Famaey, B., Gentile, G. and Van der Heyden, K.J. 2014. Modified Baryonic dynamics: two-component cosmological simulation with light sterile neutrinos. *Journal of Cosmology and Astroparticle Physics*, 10: 079(15pp).
- Baldry, I.K., Alpaslan, M., Bauer, A.E., Bland-Hawthorn, J., Brough, S., Cluver, M., Croom, S.M., Davies, L.J.M., Driver, S., Gunawardhana, M.L.P., Holwerda, B.W., Hopkins, A.M., Kelvin, L.S., Liske, J., Lpez-Snchez, A.R., Loveday, J., Norberg, P., Peacock, J.A., Robotham, A.S.G. and Taylor, E. 2014. Galaxy and mass assembly (GAMA): AUTOZ spectral redshift measurements, confidence and errors. *Monthly Notices of the Royal Astronomical Society*, 441: 2440-2451.
- Banfield, J.K., Schnitzeler, D.H.F.M., George, S.J., Norris, R.P., Jarrett, T., Taylor, A.R. and Stil, J.M. 2014. Radio galaxies and their magnetic fields out to $z \approx 3$. *Monthly Notices of the Royal Astronomical Society*, 444: 700-710.
- Bernstein-Cooper, E.Z., Cannon, J.M., Elson, E., Warren, S.R., Chengular, J., Skillman, E.D., Adams, E.A.K., Bolatto, A., Giovanelli, R., Haynes, M.P., McQuinn, K.B.W., Pardy, S.A., Rhode, K.L. and Salzer, J.J. 2014. Alfa discovery of the nearby gas-rich dwarf galaxy Leo P. V. neutral gas dynamics and kinematics. *Astronomical Journal*, 148: 35(16pp).
- Bilicki, M., Jarrett, T., Peacock, J.A., Cluver, M. and Steward, L. 2014. Two micron all sky survey photometric redshift catalog: a comprehensive three-dimensional census of the whole sky. *Astrophysical Journal Supplement Series*, 210: 9(16pp).
- Bitsakis, T., Charmandaris, V., Appleton, P.N., Diaz-Santos, T., Le Floch, E., da Cunha, E., Alatalo, K. and Cluver, M. 2014. Herschel observations of Hickson compact groups of galaxies: unveiling the properties of cold dust. *Astronomy & Astrophysics*, 565: A25(31pp) DOI: 10.1051/0004-6361/201323349.
- Brown, M.J.I., Moustakas, J., Smith, J.D.T., da Cunha, E., Jarrett, T., Imanishi, M., Armus, L., Brandl, B. and Peek, J.E.G. 2014. An atlas of galaxy spectral energy distributions from the ultraviolet to the mid-infrared. *Astrophysical Journal Supplement Series*, 212: 18(23pp).
- Brown, M.J.I., Jarrett, T. and Cluver, M.E. 2014. Recalibrating the wide-field infrared survey explorer (WISE) W4 filter. *Publications of the Astronomical Society of Australia*, 31: e049(5pp) DOI: 10.1017/pasa.2014.44.
- Campbell, L.A., Lucey, J.R., Colless, M., Heath Jones, D., Springob, C.M., Magoulas, C., Proctor, R.N., Mould, J.R., Read, M.A., Brough, S., Jarrett, T., Merson, A.I., Lah, P., Beutler, F., Cluver, M. and Parker, Q.A. 2014. The 6dF galaxy survey: fundamental plane data. *Monthly Notices of the Royal Astronomical Society*, 443: 1231-1251.
- Cannon, J.M., Johnson, M., McQuinn, K.B.W., Alfvén, E.D., Bailin, J., Ford, H.A., Girardi, L., Hirschauer, A.S., Janowiecki, S., Salzer, J.J., Van Sistine, A., Dolphin, A.E., Elson, E., Koribalski, B.S., Marigo, P., Rosenberg, J.L., Rosenfield, P., Skillman, E.D., Venkatesan, A. and Warren, S.R. 2014. Discovery of a gas-rich companion to the extremely metal-poor galaxy DDO 68. *Astrophysical Journal Letters*, 787: L1(7pp) DOI: 10.1088/2041-8205/787/1/L1.
- Cargile, P.A., James, D., Pepper, J., Kuhn, R., Siverd, R. and Stassun, K. 2014. Evaluating gyrochronology on the zero-age-main-sequence: rotation periods in the Southern Open Cluster Blanco 1 from the Kelt-South Survey. *Astrophysical Journal*, 782: 29(17pp).
- Chesneau, C., Meilland, A., Chapellier, E., Millour, F., van Genderen, A.M., Naze, Y., Smith, B., Spang, A., Smoker, J.V., Dessart, L., Kanaan, S., Bendjoya, P., Feast, M.W., Groh, J.H., Lobel, A., Nardetto, N., Otero, S., Oudmaijer, R.D., Tekola, A.G., Whitelock, P., Arcos, C., Cure, M. and Vanzi, L. 2014. The yellow hypergiant HR 5171 a: resolving a massive interacting binary in the common envelope phase. *Astronomy & Astrophysics*, 563: A71(23pp) DOI: 10.1051/0004-6361/201322421.
- Chomiuk, L., Linford, J.D., Yang, J., O'Brien, T., Paragi, Z., Mioduszewski, A.J., Beswick, R.J., Cheung, C.C., Mukai, K., Nelson, T., Ribeiro, V., Rupen, M.P., Sokoloski, J.L., Weston, J., Zheng, Y., Bode, M.F., Eyres, S., Roy, N. and Taylor, G.B. 2014. Binary orbits as the driver of γ -ray emission and mass ejection in classical novae. *Nature*, 514: 339-342.

- Cluver, M., Jarrett, T., Hopkins, A.M., Driver, S., Liske, J., Gunawardhana, M.L.P., Taylor, E., Robotham, A.S.G., Alpaslan, M., Baldry, I.K., Brown, M.J.I., Peacock, J.A., Popescu, C.C., Tuffs, R., Bauer, A.E., Bland-Hawthorn, J., Colless, M., Holwerda, B.W., Lara-Lpez, M.A., Leschinski, K., Lpez-Snchez, A.R., Norberg, P., Owers, M.S., Wang, L. and Wilkins, S.M. 2014. Galaxy and mass assembly (GAMA): mid-infrared properties and empirical relations from WISE. *Astrophysical Journal*, 782: 90(17pp) DOI: 10.1088/0004-637X/782/2/90.
- Collier, J.D., Banfield, J.K., Norris, R.P., Schnitzeler, D.H.F.M., Kimball, A.E., Filipovic, M.D., Jarrett, T., Lonsdale, C. and Tothill, N.F.H. 2014. Infrared-faint radio sources: a new population of high-redshift radio galaxies. *Monthly Notices of the Royal Astronomical Society*, 439: 545-565.
- Coppejans, D., Woudt, P.A., Warner, B., Krdring, E., MacFarlane, S., Schurch, M., Kotze, M., Breytenbach, J., Gulbis, A. and Coppejans, R. 2014. High-speed photometry of faint cataclysmic variables – VIII. Targets from the Catalina real-time transient survey. *Monthly Notices of the Royal Astronomical Society*, 437: 510-523.
- Cortese, L., Forgary, L.M.R., Ho, I.-T., Bekki, K., Bland-Hawthorn, J., Colless, M., Couch, W., Croom, S.M., Glazebrook, K., Mould, J., Scott, N., Sharp, R.G., Tonini, C., Allen, J.T., Bloom, J., Bryant, J.J., Cluver, M., Davies, R.L., Drinkwater, M.J., Goodwin, M., Green, A., Kewley, L.J., Kostantopoulos, I.S., Lawrence, J.S., Mahajan, S., Medling, A.M., Owers, M.S., Richards, S.N., Sweet, S.M. and Wong, O.I. 2014. The Sami galaxy survey: toward a unified dynamical scaling relation for galaxies of all types. *Astrophysical Journal Letters*, 795: L37(6pp) DOI: 10.1088/2041-8205/795/2/L37.
- Curran, P.A., Coriat, M., Miller-Jones, J.C.A., Armstrong, R., Edwards, P.G., Sivakoff, G.R., Woudt, P.A., Altamirano, D., Belloni, T.M., Corbel, S., Fender, R., Krding, E., Krimm, H.A., Markoff, S., Migliari, S., Russell, D.M., Stevens, J. and Tzioumis, T. 2014. The evolving polarized jet of black hole candidate swift J1745-26. *Monthly Notices of the Royal Astronomical Society*, 437: 3265-3273.
- De Blok, W.J.G., Keating, K.M., Pisano, D.J., Fraternali, F., Walter, F., Oosterloo, T., Brinks, E., Bigiel, F. and Leroy, A.K. 2014. A low HI column density filament in NGC 2403: signature of interaction or accretion. *Astronomy & Astrophysics*, 569: A68(11pp) DOI: 10.1051/0004-6361/201423880.
- De Blok, W.J.G., Jozsa, G.I.G., Patterson, M.T., Gentile, G., Heald, G.H., Jütte, E., Kamphuis, P., Rand, R.J., Serra, P. and Walterbos, R.A.M. 2014. HALOGAS observations of NGC 4414: fountains, interaction, and ram pressure. *Astronomy & Astrophysics*, 566: A80(16pp).
- De Blok, W.J.G. and Walter, F. 2014. The impact of the gas distribution on the determination of dynamical masses of galaxies using unresolved observations. *Astronomical Journal*, 147: 98(14pp).
- de Martino, D., Casares, J., Mason, E., Buckley, D.A.H., Kotze, M.M., Bonnet-Bidaud, J.-M., Mouchet, M., Coppejans, R. and Gulbis, A. 2014. Unveiling the redback nature of the low-mass X-ray binary XSS J1227.0–4859 through optical observations. *Monthly Notices of the Royal Astronomical Society*, 444: 3004-3014.
- Deane, R., Paragi, Z., Jarvis, M.J., Coriat, M., Bernadi, G., Fender, R., Frey, S., Heywood, I., Klckner, H.-R., Grainge, K. and Rumsey, C. 2014. A close-pair binary in a distant triple supermassive black hole system. *Nature*, 511: 57-60.
- Elson, E. 2014. An HI study of NGC 3521 – a galaxy with a slow-rotating halo. *Monthly Notices of the Royal Astronomical Society*, 437: 3736-3749.
- Feast, M.W., Menzies, J.W., Matsunaga, N. and Whitelock, P. 2014. Cepheid variables in the flared outer disk of our galaxy. *Nature*, 509(7500): 342-344.
- Hakala, P., Muhli, P. and Charles, P. 2014. Simultaneous optical and near-IR photometry of 4U1957+115 – a missing secondary star. *Monthly Notices of the Royal Astronomical Society*, 444: 3802-3808.
- Hong, T., Springob, C.M., Staveley-Smith, L., Scrimgeour, M.I., Masters, K.L., Macri, L.M., Koribalski, B.S., Heath Jones, D. and Jarrett, T. 2014. 2MTF – IV. A bulk flow measurement of the local Universe. *Monthly Notices of the Royal Astronomical Society*, 445: 402-413.
- Johnson, A., Blake, C., Koda, J., Ma, Y.-Z., Colless, M., Crocce, M., Davis, T.M., Jones, H., Magoulas, C., Lucey, J.R., Mould, J.R., Scrimgeour, M.I. and Springob, C.M. 2014. The 6dF Galaxy survey: cosmological constraints from the velocity power spectrum. *Monthly Notices of the Royal Astronomical Society*, 444: 3926-3947.
- Kalemni, E., Özbey Arabaci, M., Gver, T., Russell, D.M., Tomsick, J.A., Wilms, J., Weidenspointner, G., Kuulkers, E., Falanga, M., Diner, T., Drave, S.P., Belloni, T.M., Coriat, M., Lewis, F. and Munoz-Darias, T. 2014. Multiwavelength observations of the black hole transient Swift J1745-26 during the outburst decay. *Monthly Notices of the Royal Astronomical Society*, 445: 1288-1298.
- Katz, H., McGaugh, S.S., Sellwood, J.A. and De Blok, W.J.G. 2014. The formation of spiral galaxies: adiabatic compression with Young's algorithm and the relation of dark matter haloes to their primordial antecedents. *Monthly Notices of the Royal Astronomical Society*, 439: 1897-1908.
- Lisenfeld, U., Appleton, P.N., Cluver, M., Guillard, P., Alatalo, K. and Ogle, P. 2014. CO in Hickson compact group galaxies with enhanced warm H₂ emission: evidence for galaxy evolution? *Astronomy & Astrophysics*, 570: A24(20pp) DOI: 10.1051/0004-6361/201423632.
- Masters, K.L., Crook, A.C., Hong, T., Jarrett, T., Koribalski, B.S., Macri, L.M., Springob, C.M. and Staveley-Smith, L. 2014. 2MTF III. HI 21 cm observations of 1194 spiral

galaxies with the green bank telescope. *Monthly Notices of the Royal Astronomical Society*, 443: 1044-1056.

McQuinn, K.B.W., Cannon, J.M., Dolphin, A.E., Skillman, E.D., Salzer, J.J., Haynes, M.P., Adams, E., Cave, I., Elson, E., Giovanelli, R., Ott, J. and Saintonge, A. 2014. Distance determinations to shield Galaxies from Hubble Space telescope imaging. *Astrophysical Journal*, 785: 3(13pp).

Mehner, A., Ishibashi, K., Whitelock, P., Nagayama, T., Feast, M.W., van Wyk, F. and de Wit, W.-J. 2014. Near-infrared evidence for a sudden temperature increase in Eta Carinae. *Astronomy & Astrophysics*, 564: A14(9pp). DOI: 1051/0004-6361/201322729.

Modzelewska, J., Czerny, B., Hryniewicz, K., Bilicki, M., Krupa, M., Swieton, A., Pych, W., Udalski, A., Adhikari, T.P. and Petrogalli, F. 2014. SALT long-slit spectroscopy of CTS C30.10: two-component Mg II line. *Astronomy & Astrophysics*, 570: A53(13pp). DOI: 10.1051/0004-6361/201424332.

Mutabazi, T., Blyth, S., Woudt, P.A., Lucey, J.R., Jarrett, T., Bilicki, M., Schröder, A.C. and Moore, S.A.W. 2014. The Norma cluster (ACO 3627) – III. The distance and peculiar velocity via the near-infrared Ks-band fundamental plane. *Monthly Notices of the Royal Astronomical Society*, 439: 3666-3682.

Neill, J.D., Seibert, M., Tully, R.B., Courtois, H., Sorce, J.G., Jarrett, T., Scowcroft, V. and Masci, F. 2014. The calibration of the WISE W1 and W2 Tully-Fisher relation. *Astrophysical Journal*, 792: 129(22pp).

Neilsen, J., Coriat, M., Fender, R., Lee, J.C., Ponti, G., Tzioumis, A.K., Edwards, P.G. and Broderick, J.W. 2014. A link between x-ray emission lines and radio jets in 4U 1630-47? *Astrophysical Journal Letters*, 784: L5(6pp) DOI: 10.1088/2041-8205/784/1/L5.

Odendaal, A., Meintjes, P.J., Charles, P. and Rajoelimanana, A. 2014. Optical and X-ray properties of CAL 83-II. An X-ray pulsation at ~67 s. *Monthly Notices of the Royal Astronomical Society*, 437: 2948-2956.

Oliva-Altamirano, P., Brough, S., Lidman, C., Couch, W.J., Hopkins, A.M., Colless, M., Taylor, E., Robotham, A.S.G., Gunawardhana, M.L.P., Ponman, T., Baldry, I.K., Bauer, A.E., Bland-Hawthorn, J., Cluver, M., Cameron, E., Conselice, C.J., Driver, S., Edge, A.C., Graham, A.W., van Kampen, E., Lara-Lpez, M.A., Liske, J., Lpez-Snchez, A.R., Loveday, J., Mahajan, S., Peacock, J.A., Phillipps, S., Pimblet, K.A. and Sharp, R.G. 2014. Galaxy and mass assembly (GAMA): testing galaxy formation models through the most massive galaxies in the Universe. *Monthly Notices of the Royal Astronomical Society*, 440: 762-775.

Perkins, S., Questiaux, J., Finniss, S., Tyler, R., Blyth, S.L. and Kuttel, M. 2014. Scalable desktop visualisation of very large radio astronomy data cubes. *New Astronomy*, 30: 1-7.

Pinol-Ferrer, N., Fathi, K., Carignan, C., Font, J., Hernandez, O., Karlsson, R. and van de Ven, G. 2014. Bar pattern speed and position of the circumnuclear ring in NGC 1097. *Monthly Notices of the Royal Astronomical Society*, 438(2014): 971-982.

Plant, D.S., Fender, R., Ponti, G., Munoz-Darias, T. and Coriat, M. 2014. Revealing accretion on to black holes: x-ray reflection throughout three outbursts of GX 339-4. *Monthly Notices of the Royal Astronomical Society*, 442: 1767-1785.

Rahoui, F., Coriat, M. and Lee, J.C. 2014. Optical and near-infrared spectroscopy of the black hole GX339-4-II. The spectroscopic content in the low/hard and high/soft states. *Monthly Notices of the Royal Astronomical Society*, 442: 1610-1618.

Rajpaul, V., Allie, M.S. and Blyth, S. 2014. Introductory astronomy course at the University of Cape Town: probing student perspectives. *Physical Review Special Topics-Physics Education Research*, 10: 020126(20pp).

Randriamampandry, T. and Carignan, C. 2014. Galaxy mass models: MOND versus dark matter haloes. *Monthly Notices of the Royal Astronomical Society*, 439: 2132-2145.

Regis, M., Colafrancesco, S., Profumo, S., De Blok, W.J.G., Massardi, M. and Richter, L. 2014. Local Group dSph radio survey with ATCA (III): constraints on particle dark matter. *Journal of Cosmology and Astroparticle Physics*, 2014(10): 016(24pp).

Ribeiro, V., Chomiuk, L., Munari, U., Steffen, W., Koning, N., O'Brien, T., Simon, T., Woudt, P.A. and Bode, M.F. 2014. Radio frequency models of Novae in eruption. I. The free-free process in Bipolar Morphologies. *Astrophysical Journal*, 792: 57(8pp).

Robotham, A.S.G., Driver, S., Davies, L.J.M., Hopkins, A.M., Baldry, I.K., Agius, N.K., Bauer, A.E., Bland-Hawthorn, J., Brough, S., Brown, M.J.I., Cluver, M., De Propriis, R., Drinkwater, M.J., Holwerda, B.W., Kelvin, L.S., Lara-Lopez, M.A., Liske, J., Lopez-Sanchez, A.R., Loveday, J., Mahajan, S., McNaught-Roberts, T., Moffett, A., Norberg, P., Obreschkow, D., Owers, M.S., Penny, S., Pimblet, K.A., Prescott, M., Taylor, E., van Kampen, E. and Wilkins, S.M. 2014. Galaxy and mass assembly (GAMA): galaxy close pairs, mergers and the future fate of stellar mass. *Monthly Notices of the Royal Astronomical Society*, 444: 3986-4008.

Semena, A.N., Revnivtsev, M.G., Buckley, D.A.H., Kotze, M.M., Khabibullin, I.I., Breytenbach, J., Gulbis, A., Coppejans, R. and Potter, S. 2014. On the area of accretion curtains from fast aperiodic time variability of the intermediate polar EX Hya. *Monthly Notices of the Royal Astronomical Society*, 442: 1123-1132.

Smith, D.J.B., Jarvis, M.J., Hardcastle, M.J., Vaccari, M., Bourne, N., Dunne, L., Ibar, E., Maddox, N., Prescott, M., Vlahakis, C., Eales, S., Maddox, S.J., Smith, M., Valiante, E. and de Zotti, G. 2014. The temperature dependence of

the far-infrared-radio correlation in the Herschel-ATLAS. *Monthly Notices of the Royal Astronomical Society*, 445: 2232-2243.

Sorce, J.G., Tully, R.B., Courtois, H., Jarrett, T., Neill, J.D. and Shaya, E.J. 2014. From Spitzer galaxy photometry to Tully-Fisher distances. *Monthly Notices of the Royal Astronomical Society*, 444: 527-541.

Springob, C.M., Magoulas, C., Colless, M., Mould, J.R., Erdogdu, P., Heath Jones, D., Lucey, J.R., Campbell, L.A. and Fluke, C.J. 2014. The 6dF Galaxy survey: peculiar velocity field and cosmography. *Monthly Notices of the Royal Astronomical Society*, 445: 2677-2697.

Stern, D., Lansbury, G.B., Assef, R., Brandt, W.N., Alexander, D.M., Ballantyne, D.R., Balokovic, M., Bauer, F., Benford, D., Blain, A., Boggs, S., Bridge, C., Brightman, M., Christensen, F.E., Comastri, A., Craig, W.W., Del Moro, A., Eisenhardt, P., Gandhi, P., Griffith, R.L., Hailey, C.J., Harrison, F.A., Hickox, R.C., Jarrett, T., Koss, M., Lake, S.E., LaMassa, S.M., Luo, B., Tsai, C.W., Urry, C.M., Walton, D.J., Wright, E., Wu, J., Yan, L. and Zhang, W.W. 2014. NuSTAR and XMM-Newton observations of luminous, heavily obscured, WISE-selected Quasars at $Z \sim 2$. *Astrophysical Journal*, 794: 102(7pp).

Stewart, I., Blyth, S. and De Blok, W.J.G. 2014. A simple model for global HI profiles of galaxies. *Astronomy & Astrophysics*, 567: A61(27pp). DOI: 10.1051/0004-6361/201423602.

Stil, J.M., Keller, B.W., George, S.J. and Taylor, A.R. 2014. Degree of polarization and source counts of faint radio sources from stacking polarized intensity. *Astrophysical Journal*, 787: 99(12pp).

Sturm, R., Haberl, F., Vasilopoulos, G., Bartlett, E.S., Maggi, P., Rau, A., Greiner, J. and Udalski, A. 2014. Discovery of SXP 265, a Be/X-ray binary pulsar in the wing of the small Magellanic cloud. *Monthly Notices of the Royal Astronomical Society*, 444: 3571-3580.

Tekola, A., Berlind, A. and Visnen, P. 2014. What size haloes do local LIRGs live in? *Monthly Notices of the Royal Astronomical Society*, 439: 3033-3038.

Visnen, P., Barway, S. and Randriamanakoto, R.Z. 2014. Star clusters in a nuclear star forming ring: the disappearing string of pearls. *Astrophysical Journal Letters*, 797: L16(5pp). DOI: 10.1088/2041-8205/797/2/L16.

Viaene, S., Fritz, J., Baes, M., Bendo, G.J., Blommaert, J.A.D.L., Boquien, M., Boselli, A., Ciesla, L., Cortese, L., De Looze, I., Gear, W.K., Gentile, G., Hughes, T.M., Jarrett, T., Karczewski, O., Smith, M.W.L., Spinoglio, L., Tamm, A., Tempel, E., Thilker, D. and Verstappen, J. 2014. The Herschel exploitation of local Galaxy andromeda (HELGA). iv. Dust scaling relations at sub-kpc resolution. *Astronomy & Astrophysics*, 567: A71(22pp). DOI: 10.1051/0004-6361/201423534.

Williams, W., Kraan-Korteweg, R.C. and Woudt, P.A. 2014. Deep NIR photometry of HI galaxies in the zone of avoidance. *Monthly Notices of the Royal Astronomical Society*, 443: 41-57.

Zwart, J.T.L., Jarvis, M., Deane, R., Bonfield, D.G., Knowles, K., Madhanpall, N., Rahmani, H. and Smith, D.J.B. 2014. The star formation history of mass-selected galaxies from the VIDEO survey. *Monthly Notices of the Royal Astronomical Society*, 439: 1459-1471.

Peer-reviewed published conference proceedings

Asabere, B.D., Horellou, C., Winkler, H., Jarrett, T. and Leeuw, L. 2014. Dust in the radio galaxy and merger remnant NGC 1316 (Fornax A). In R. Botha and T. Jili (eds), *Proceedings of SAIP2013: the 58th Annual Conference of the South African Institute of Physics*, 8-12 July 2013, University of Zululand, Pretoria: The South African Institute of Physics (SAIP). ISBN 9780620628198.

Darnley, M.J., Bode, M.F., Harman, D.J., Hounsell, R.A., Munari, U., Ribeiro, V., Surina, F., Williams, R.P. and Williams, S.C. 2014. On the galactic nova progenitor population. In P.A. Woudt and V.A.R.M. Ribeiro (eds), *Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades*, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Feast, M.W. and Whitelock, P. 2014. Variable stars and galactic structure. In J. Andersen, J. Bland-Hawthorn and B. Nordstrom (eds), *Proceedings of the IAU Symposium*, 9-13 June 2008, Copenhagen, Denmark. United Kingdom: International Astronomical Union. ISBN 9780521889858.

MacFarlane, S., Steeghs, D. and Woudt, P.A. 2014. Integral field unit spectroscopy of the helium Nova V445 puppis. In P.A. Woudt and V.A.R.M. Ribeiro (eds), *Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades*, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

McBride, V., Li, K.L., Kong, A.K.H., Charles, P.A., Lu, T.-N., Bartlett, E.S., Coe, M.J., Rajoelimanana, A., Udalski, A., Masetti, N. and Franzen, T. 2014. MAXI J0158-744: a luminous supersoft source in the Magellanic Bridge. In P.A. Woudt and V.A.R.M. Ribeiro (eds), *Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades*, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Odendaal, A., Meintjies, P.J., Charles, P.A. and Rajoelimanana, A. 2014. Periodic X-ray modulations in Supersoft X-ray sources. In J. Janse van Rensburg (ed), *Proceedings of SAIP2012: The 57th Annual Conference*

of the South African Institute of Physics, 9-13 July 2012, University of Pretoria, Pretoria: University of Pretoria. ISBN 9781775920700.

Otulakowska-Hypka, M., Mikolajewska, J. and Whitelock, P. 2014. A new look at the symbiotic star RW Hydrae. In P.A. Woudt and V.A.R.M. Ribeiro (eds), Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Ramatsoku, M., Kraan-Korteweg, R.C., Schröder, A.C. and van Driel, W. 2014. Extragalactic large-scale structures in the northern zone of avoidance. In J. Janse van Rensburg (ed), Proceedings of SAIP2012: The 57th Annual Conference of the South African Institute of Physics, 9-13 July 2012, University of Pretoria, Pretoria: University of Pretoria. ISBN 9781775920700.

Ribeiro, V. 2014. Morpho-kinematic modeling of Nova ejecta. In P.A. Woudt and V.A.R.M. Ribeiro (eds), Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades, 4-8 February 2013, Cape Town, California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Ribeiro, V., Bode, M.F. and Williams, R.E. 2014. On the evolution of the late-time hubble space telescopemaging of the Outburst of the Recurrent Nova RS Ophiuchi (2006). In P.A. Woudt and V.A.R.M. Ribeiro (eds), Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Ribeiro, V., Steffen, W., Chomiuk, L., Koning, N., O'Brien, T. and Woudt, P.A. 2014. Towards non-spherical radio models. In P.A. Woudt and V.A.R.M. Ribeiro (eds), Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

Said, K., Kraan-Korteweg, R.C. and Jarrett, T. 2014. Galaxy peculiar velocities in the zone of avoidance. In R. Botha and T. Jili (eds), Proceedings of SAIP2013: The 58th Annual Conference of the South African Institute of Physics, 8-12 July 2013, University of Zululand, Pretoria: The South African Institute of Physics (SAIP). ISBN 9780620628198.

Egan, J., Woudt, P.A., Warner, B., Williams, R.E., Steeghs, D. and Ribeiro, V. 2014. High speed photometry and spectroscopy of novae at Quiescence. In P.A. Woudt and V.A.R.M. Ribeiro (eds), Proceedings of Astronomical Society of the Pacific Conference Series Volume 490 – Stella Novae: Past and Future Decades, 4-8 February 2013, Cape Town. California, USA: Astronomical Society of the Pacific. ISBN 9781583818640.

DEPARTMENT OF BIOLOGICAL SCIENCES

(Including the Bolus Herbarium, The Plant Conservation Unit, The Percy FitzPatrick Institute of African Ornithology DST/NRF Centre of Excellence, The Marine Research Institute and The Animal Demography Unit, ADU)

Head of Department: Professor Anusuya Chinsamy-Turan

Departmental Profile

The Department of Biological Sciences was established in 2013 as a result of the merger between the long standing Botany and Zoology Departments. Our aim is to be recognised as a high quality biodiversity research and teaching department, with strong inter-disciplinary research that understands and manages biodiversity resources in the face of climate change both locally and globally.

Thirty academic staff, several research associates and at least 31 support staff make up our staff complement. In addition there are 38 postdoctoral research fellows, and 210 postgraduate students, 26 Honours students and 699 undergraduate students. Our Department is home to The Percy FitzPatrick Institute for African Ornithology, a DST/NRF Centre of Excellence, as well as to the Animal Demography Unit, the Bolus Herbarium and library, and the Plant Conservation Unit. The Seaweed Unit of the Department of Environmental Affairs & Tourism Chief Directorate: Fisheries Branch, Inshore Research is also housed in our Department, under Hon A/Prof Robert J Anderson. The Marine Research Institute (Ma-Re) is jointly hosted by our department and the Department of Oceanography.

The vision of the **Percy FitzPatrick Institute for African Ornithology** is to be a leading international research and postgraduate training institute in the fields of ornithology and conservation biology, with particular emphasis on African issues. To achieve this, the Institute undertakes scientific studies involving birds that contribute to the theory and practice affecting the maintenance of biological diversity and the sustained use of biological resources. Current research programmes can be broadly placed within the themes of Characterising Biodiversity, Evolutionary Ecology and Maintaining Biodiversity. The Institute is home to the Niven Library, which holds Africa's most comprehensive collection of ornithological books and papers.

The **Plant Conservation Unit** focuses on sustainable land use, restoration and palaeoecology/environmental

history with an emphasis on the conservation of the vegetation of the winter rainfall region of South Africa.

The mission of the **Animal Demography Unit** is to contribute to the understanding of animal populations, especially population dynamics, and thus provide input to their conservation. They achieve this through mass participation projects, long term monitoring, innovative statistical modelling and population-level interpretation of results. The emphasis is on the curation, analysis, publication and dissemination of data.

Located within an academic environment, the focus of the **Bolus Herbarium** is to aid in the teaching and research of the diversity of the southern African flora, particularly that of the Cape Floristic Region. With a collection of over 350,000 specimens, it is the third largest herbarium in South Africa and the third largest university Herbarium in the southern Hemisphere. The collection is recognized for its superb representation of the Cape Flora and the large number of type specimens housed.

The **Marine Research Institute** (Ma-Re) exists as an interdepartmental (and interfaculty) network linking staff and postgraduate students involved in marine research at UCT. Its research activities typically require the production of knowledge that draws on inputs (in planning) and outputs (based on specialist knowledge) that span disciplines and are problem-/ solution- oriented. To date, there has been good progress made in research arenas involving social-ecological systems linked to fisheries, in the development and use of indicators to track marine ecosystem changes, and in the use of satellite data, biophysical modelling and field measurements to understand variability in marine primary production in the region.

Besides the above focused research units, our department also hosts DST/NRF South African Research Chairs in Evolution and Systematics, and in Marine Ecology and Fisheries, and there are several other smaller groups that coordinate independent research on animals and plants in terms of conservation, ecology, evolution, systematics, physiology and their response to global climate change. A central theme that binds our research is our unique geographical location which we consider as a gateway to terrestrial biodiversity, as well as to the Atlantic, Indian, Southern and Antarctic oceans.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	8
Associate Professors	12
Senior Lecturers	6
Lecturers	4

Scientific Staff	5
Technical Support Staff	6
Administrative and Clerical Staff	20
Contract Research Staff	15
Total	76

Honorary and Emeritus Staff

Honorary Professors	5
Honorary Associate Professors	3
Honorary Research Associates	42
Emeritus Professors	7
Emeritus Associate Professors	3
Total	60

Research Affiliates

Research Affiliates	11
---------------------	-----------

Students and Postdoctoral Fellows

Postdoctoral Fellows	38
Doctoral	90
Master's	120
Honours	26
Undergraduate	699
Total	973

Research Fields and Staff

Permanent Staff

PROFESSOR ANUSUYA CHINSAMY-TURAN

Head of Department. Palaeobiologist. Undertakes comparative bone and teeth histology of extant and extinct vertebrates (such as dinosaurs, Mesozoic birds, pterosaurs, nonmammalian therapsids, as well as, more recent Pliocene vertebrates).

PROFESSOR JOHN J. BOLTON

The biodiversity, biogeography, ecology, systematics and resource use of marine algae; marine aquaculture.

PROFESSOR GRAEME CUMMING

Chair of Conservation Biology. Landscape ecology, conservation biology, community ecology, resilience and complex systems theory.

PROFESSOR TERRY HEDDERSON

Plant systematics; bryology; molecular systematics; life history traits.

PROFESSOR M. TIMM HOFFMAN

Director of the Plant Conservation Unit: plant ecology; conservation biology; community ecology; biodiversity.

PROFESSOR JEREMY MIDGLEY

Plant ecology; evolutionary biology; forest ecosystem dynamics.

PROFESSOR JUSTIN O'RIAIN

Social mammals; behavioural ecology; vertebrate reproduction.

PROFESSOR PETER RYAN

Seabird-fishery interactions; avian evolutionary biology; marine pollution; behavioural ecology; island conservation.

ASSOCIATE PROFESSOR COLIN ATTWOOD

Marine protected areas; line fish population ecology.

ASSOCIATE PROFESSOR MICHAEL D. CRAMER

Physiology; ecophysiology; plant nutrition.

ASSOCIATE PROFESSOR EDMUND FEBRUARY

Senior Lecturer: palaeoecology; ecophysiology.

ASSOCIATE PROFESSOR LINDSEY GILLSON

Deputy Director of the Plant Conservation Unit: conservation ecology; palaeoecology; theoretical ecology; landscape history.

ASSOCIATE PROFESSOR JOHN HOFFMANN

Integrating biological control into the management of alien invasive weeds in South Africa.

ASSOCIATE PROFESSOR DAVID JACOBS

DST & NRF Research Chair in Animal Evolution and Systematics. Evolutionary biology; behavioural ecology, systematics and evolutionary development; bats and other mammals.

ASSOCIATE PROFESSOR ASTRID JARRE

DST & NRF Research Chair in Marine Ecology & Fisheries. Ecosystem modeling: ecosystem approach to fisheries management, collaboration between social and natural scientists.

ASSOCIATE PROFESSOR MIKE LUCAS

Honorary Research Fellowship, National Oceanography Centre, Southampton, UK. UCT: biological oceanography; biogeochemical cycling; phytoplankton dynamics, carbon/nitrogen cycling and climate change. Research in the Benguela upwelling, North and South Atlantic and Southern Ocean ecosystems. South African Surface Ocean Lower Atmosphere Study (SOLAS) SSC.

ASSOCIATE PROFESSOR COLEEN MOLONEY

Plankton ecology; ecosystem dynamics; fisheries ecology; ecological modelling.

ASSOCIATE PROFESSOR MIKE PICKER

Insect ecology; insect biodiversity.

ASSOCIATE PROFESSOR ANTHONY G. VERBOOM

Senior Lecturer: Plant systematics, ecophysiology, biogeography.

ASSOCIATE PROFESSOR MUTHAMA MUASYA

Senior Lecturer: plant systematics; molecular systematics; biogeography.

DR ARJUN AMAR

Raptor research, Rarity & conservation of African birds.

DR JACQUELINE BISHOP

Lecturer: Evolutionary biology and conservation genetics.

DR GARY BRONNER

Senior Lecturer: systematics, ecology and conservation biology of African small mammals, with emphasis on endemic and threatened golden moles; Scientific Editor: African Zoology.

DR SAMSON B. CHIMPHANGO

Lecturer: Physiology; nitrogen fixation.

DR LESEGO KHOMO

Lecturer: Soil Science.

DR LAWRENCE KRUGER

Lecturer: Savanna ecology, particularly elephant impacts on vegetation structure, biodiversity consequences.

DR HEATHER MARCO

Senior Lecturer: Neuropeptide purification/biochemistry; crustacean neuroendocrinology & physiology; insect neuroendocrinology; Convenor of second year Form and function (Ecophysiology) course. Alexander von Humboldt Foundation Research Fellow.

DR DEENA PILLAY

Senior Lecturer: Marine benthic ecology, estuarine ecosystems, biological interactions

DR CECILE REED

Lecturer: Marine parasitology, freshwater ecology

DR ADAM WEST

Senior Lecturer: Ecophysiology, climate change, stable isotopes.

Emeritus Professors and Senior Scholars**EMERITUS PROFESSOR GEORGE BRANCH (SENIOR SCHOLAR)**

Rocky-shore ecology; estuarine and lagoonal ecology; invertebrate fisheries management; fisheries policy; subsistence fisheries; impacts of diamond-mining; coastal ecology

**EMERITUS PROFESSOR GERD GÄDE
(SENIOR SCHOLAR)**

Invertebrates; isolation and characterization of neuropeptides; intermediary metabolism; anaerobic metabolism; insect flight and its control by hormones; mode of action of invertebrate neuropeptide hormones; phylogeny; confirmation of expression of genome predicted neuropeptides by mass spectrometric methods; spectrometric methods; cloning of neuropeptide precursors and their cognate receptors

**EMERITUS PROFESSOR CHARLES GRIFFITHS
(SENIOR SCHOLAR)**

Director of the Marine Biology Research Centre: aquatic invasive alien species; biodiversity and endemism patterns of African marine fauna; coastal marine ecology; amphipod taxonomy

**EMERITUS PROFESSOR LES UNDERHILL
(SENIOR SCHOLAR)**

Director Animal Demography Unit. Interfaces statistics and biology, in applications of statistics in the biological sciences, particularly ornithology and ecology

EMERITUS PROFESSOR JOHN FIELD

Former Director Marine Research Institute

EMERITUS PROFESSOR W.R. SIEGFRIED

Former Director of the Percy FitzPatrick Institute

EMERITUS PROFESSOR WILLIAM J. BOND

Plant ecology: evolutionary biology; conservation biology; fire and community dynamics

Emeritus Associate Professors

EMERITUS ASSOCIATE PROFESSOR BRYAN DAVIES

River ecology; ecosystem processes; ecological effects of dams and rivers; wetland ecology

EMERITUS ASSOCIATE PROFESSOR JENNY DAY

Director of the Freshwater Research Unit; freshwater ecology; bioassessment; crustaceans; wetlands, particularly temporary and saline waters; conservation and management of inland water ecosystems; water chemistry and water quality

EMERITUS ASSOCIATE PROFESSOR JENNIFER JARVIS

Small and subterranean mammal ecophysiology and ethology

Technical and Administrative Support Staff

Terry H Trinder-Smith – Principal Scientific officer
Cornelia Klak – Principal Scientific Officer
Dawood Hattas – Principal Scientific Officer
Liesl Phigeland – Chief Scientific Officer
Hans-Dieter Oschadleus – Chief Scientific Officer
Andrea Plos – Principal Technical Officer
Chris Tobler – Principal Technical Officer

Gonzalo Aquilar – Principal Technical Officer
George du Plessis – Chief Technical Officer
Petra Muller – Chief Technical Officer
Desmond Barnes – Senior Technical Officer
Rob Little – Manager: DST/NRF Centre for Excellence
Sarojini I Pillay – Admin Manager
Natalie Jodamus – SAP Administrator
Tania C Jansen – Senior Secretary
Soraya Abrahams – Senior Secretary
Vuyiwe Bathaka – Senior Secretary
Ellenor Salo – Senior Secretary
Anthea Stain – Administrative Assistant
Granville Faulmann – Workshop/Departmental Assistant
Nazli Davids – Department Assistant
Gugulethu NJ Ginindza – Department Assistant
Zamikaya Jikumlambo – Laboratory Assistant
Susan Kuyper – Executive Assistant
Hilary Buchanan – Administrative Assistant
Anthea Links – Administrative Assistant
Margaret Koopman – Niven Library Manager
Charlene J Christian – Herbarium Assistant
Rene A Navarro – Informations Systems Consultant
Mrs Gillian Smith – Marine Biology
Michael Brooks – IT Specialist

Contract Research Staff

DR LYNNE J SHANNON

DR HENNING WINKER

Assessment of Fish Stocks

MS FIONA IMPSON

Development of insect agents for biological control of alien invasive plants.

MS CARIEN KLEINJAN

Evaluation of insect agents used for biological control of alien invasive plants.

DR SANDY-LYNN STEENHUISEN

Pollination ecology of Cape flora, NRF Research career advancement fellow

DR LAURA BLAMEY

Marine ecology and modelling, NRF Research career advancement fellow

Johanna M Lot – Research Assistant
Johan C Carstens – Research Assistant
Shaamielah Davids – Research Technician
Samuel L Jack – Research Assistant
Esther A Mostert – Research Assistant
Sven M Ragaller – Research Assistant

Frances L Morling – Research Assistant
Jessica D Greenston – Research Officer
Vincent C Moran – Research Officer

Research Affiliates

PROF P. BLOOMER

Project Manager, DST/NRF CoE at the Percy FitzPatrick Institute, University of Pretoria

A/PROF R.C.K. BOWIE

Project Manager, DST/NRF CoE at the Percy FitzPatrick Institute, University of California Berkeley

DR R. COVAS

Cooperative breeding & sociality in birds (Sociable Weaver Research Project)

DR A. JENKINS

Raptor research programme, rarity & conservation of African birds

PROF A. MCKECHNIE

Project Manager, DST/NRF CoE at the Percy FitzPatrick Institute, University of Pretoria

DR A. MILEWSKI

Interactions between plants and megaherbivores

DR M. PINEIRO DE MELO

Systematics and Biogeography

DR P. PISTORIUS

Project Manager, DST/NRF CoE at the Percy FitzPatrick Institute, NMMU

DR C. O'RYAN

Project Leader (Department of Molecular and Cell Biology, UCT)

DR L. ROXBURGH

Rarity and conservation of African birds

DR C. SPOTTISWOODE

Evolutionary ecology of avian clutch parasitism

Honorary Professors

PROFESSOR DAVID CUMMING

Influence of land use policy and practice on biodiversity and resilience in social-ecological systems

PROFESSOR LARRY HUTCHINGS

Marine fisheries

PROFESSOR RICHARD COWLING

Plant ecology; conservation biology; community ecology; biodiversity

PROFESSOR JOHN S. DONALDSON

Biodiversity

PROFESSOR PETER LINDER

Systematics; taxonomy; evolutionary biology.

Honorary Associate Professors

ASSOCIATE PROFESSOR ROBERT J. ANDERSON

Phycology

ASSOCIATE PROFESSOR R.J.M. CRAWFORD

Animal Demography Unit

ASSOCIATE PROFESSOR R. ALTWEGG

Statistical ecology

Honorary Research Associates

DR A. BALME

Carnivore Conservation

DR PETER BARHAM

Penguin survival

DR PHOEBE BARNARD

Birds & Environmental Change Partnership Programme, S A National Biodiversity Institute

DR N. BERGH

Systematics

PROF D BORCHERS

Statistical ecology

DR P. CARRICK

Restoration ecology

DR ROB CRAWFORD

Ecosystem approach to fisheries (as it relates to seabirds) and the conservation and suitable utilization of South Africa's seabirds

DR O. CURTIS

Renosterveld Ecology and Management.

DR H. DALLAS

River health monitoring

DR M. DE VILLIERS

SARCA Project Manager – Diversity and distribution of reptiles in South Africa, Lesotho and Swaziland.

DR T. FLOWER

Behavioural ecology

DR DAVID GRÉMILLET

Visiting Research Associate: Functional ecology of marine birds. Ecophysiology of marine birds facing global change; functional and evolutionary ecology; avian energetic; biotelemetry; impact of marine fisheries; polar ecosystems; Benguela upwelling ecosystem.

DR H.-J. HAWKINS

Protea Ecophysiology

DR A.R. JENKINS

AVISENSE Consulting

DR S. KERWATH

Line fish research

DR S. KIRKMAN

Seal research

DR C. KLAK

Aizoaceae curation/taxonomy

DR F. KRUGER

Forest/Conservation/Ecology

DR A.T. LOMBARD

Conservation planning/policy & wildlife welfare

DR K. LUDYNIA

Seabird Biology

DR H MALAN

Freshwater Research

DR Q. MARTINS

Leopard conservation & human/wildlife conflict research

DR L. MATTIO

Seaweed Molecular systematics

DR B. PATERSON

Development of electronic decision support tools for the management of natural resources

DR L PICHEGRU

Island Closure Task Team (Department of Agriculture, Forests and Fisheries)

DR M. REMISIEWICZ

Ornithology

DR A.R. RIDLEY

Cooperative breeding and sociality in birds (including the Pied Babbler Research Project)

DR T.B. ROBINSON

Marine ecology

DR J.-P. ROUX

Benguela system

DR C. SAVAGE

Coastal and estuarine ecosystems

DR G. SCOTT

Traditional medicine plants

DR A. SEYDACK

Forest ecology

DR R. SIMMONS

Raptor Research, Life History Strategies, Seabird Research, Climate Change Vulnerability and Adaptation

DR K. SINK

Mapping of Marine biodiversity

DR J. SLINGSBY

Global change impacts on fynbos

PROF C. STIRTON

Plant systematics

DR S. TODD

Land use/climate change impacts

DR H. VAN DER MERWE

Plant conservation

DR L. WALLER

Penguin research

DR R.M. WANLESS

Seabird conservation; island restoration; invasive alien species; mitigation measures for avoiding seabird bycatch in fisheries; marine protected areas and marine Important Bird Areas

DR I. WIESEL

Brown Hyena Research Project

DR ANTHONY J WILLIAMS

Seabird biology and conservation; the status and distribution of seabirds in Latin America; synanthropic ecology

Postdoctoral Fellows

Dr Ah-Peng, Claudine

Dr Angstmann, Julia

Dr Bastian, Anna

Dr Angstmann, Julia

Dr Bled, Florent

Dr Boyes, Rutledge

Dr Canoville, Aurore

Dr Connan, Maelle

Dr Cook, Timothee

Dr Cunningham, Susan

Dr De Vos, Aletta

Dr Ferrer Paris, Jose

Dr Flower, Martha

Dr Flower, Thomas

Dr Hempson, Gareth

Dr Hoffman, Tali

Dr Kohler, Sophie

Dr Lee, Alan

Dr Lemaire, Benny

Dr Ludynia, Katrin

Dr Maciejewski Kristine

Dr Martin, Rowan

Dr Mattio, Lydiane

Dr Mead, Angela

Dr Mokotjomela, Thabiso

Dr Mullers, Ralf

Dr Ndjaula, Hilka
Dr Oatley, Graeme
Dr Pichegru, Lorien
Dr Redelstorff, Ragna
Dr Reid, Timothy
Dr Sanchez Mercado Ada
Dr Sherley, Richard
Dr .Steenhuisen, Sandy-Lynn
Dr Steinfurth, Antje
Dr Van der Niet, Timotheus
Dr Wimberger, Kirsten
Dr Winker, Henning

Contact details

Private Bag X3, Rhodes Gift, 7701 South Africa
Tel: +27 (0) 21 650 3604 Fax: +27 (0) 21 650 3301
Email: sarojini.pillay@uct.ac.za
Web: www.biologicalsciences.uct.ac.za/

RESEARCH OUTPUT

Authored books

Bruyns, P.V. 2014. *The Apocynaceae of Namibia*. 150pp. Pretoria: South African National Biodiversity Institute. ISBN 9781919976983.

Chapters in books

Ackerly, D.D., Stock, W.D. and Slingsby, J. 2014. Geography, climate, and biodiversity: the history and future of mediterranean-type ecosystems. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 361-375. New York: Oxford University Press. ISBN 9780199679584.

Allsopp, N., Anderson, P., Holmes, P.M., Melin, A. and O'Farrell, P.J. 2014. People, the Cape floristic region, and sustainability. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 337-360. New York: Oxford University Press. ISBN: 9780199679584.

Altwegg, R., West, A., Gillson, L. and Midgley, G.F. 2014. Impacts of climate change in the Greater Cape floristic region. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 299-320. New York: Oxford University Press. ISBN 9780199679584.

Anderson, B., Allsopp, N., Ellis, A.G., Johnson, S.D., Midgley, J.J., Pauw, A. and Rodger, J.G. 2014. Biotic Interactions. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 224-247. New York: Oxford University Press. ISBN 9780199679584.

Bergh, N., Verboom, G.A., Rouget, M. and Cowling, M. 2014. Vegetation types of the greater Cape floristic region. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 1-25. New York: Oxford University Press. ISBN 9780199679584.

Colville, J.F., Potts, A.J., Bradshaw, P.L., Measey, G.J., Snijman, D., Picker, M.D., Proches, S., Bowie, R.C.K. and Manning, J. 2014. Floristic and faunal Cape biochoria: do they exist? In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 73-92. New York: Oxford University Press. ISBN 9780199679584.

Cramer, M.D., West, A., Power, S., Skelton, R. and Stock, W.D. 2014. Plant ecophysiological diversity. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 248-272. New York: Oxford University Press. ISBN 9780199679584.

Ellis, A.G., Verboom, G.A., van der Niet, T., Johnson, S.D. and Linder, P. 2014. Speciation and extinction in the greater Cape floristic region. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 119-141. New York: Oxford University Press. ISBN 9780199679584.

Garrido, S. and van der Lingen, C.D. 2014. Feeding Biology and Ecology. In K. Ganas (ed), *Biology and Ecology of Sardines and Anchovies*, pp. 122-189. USA: CRC Press, Taylor & Francis Group. ISBN 9781482228540.

Golding, J. 2014. Wangari Maathai the earth mother. In A. Adebajo (ed), *Africa's Peacemakers: Nobel Laureates of African Descent*, pp. 235-256. United Kingdom: Zed Books. ISBN 9781780329437.

Howard, J. 2014. Promoting sustainable development in marine regions. In P. Sillitoe (ed), *Sustainable Development: An appraisal from the Gulf Region*, pp. 270-390. UK: Berghahn Books, United Kingdom. ISBN 9781782383727.

Marean, C., Cawthra, H.C., Cowling, M., Esler, K.J., Fisher, E., Milewski, A., Potts, A.J., Singels, E. and De Vynck, J. 2014. Stone age people in a changing South African greater Cape floristic region. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 164-199. New York: Oxford University Press. ISBN 9780199679584.

Paterson, B., Norton, M., Jarre, A.C. and Green, L.J. 2014. Science, fisher's knowledge & Namibia's fishing industry. In B. Cooper and R. Morrell (eds), *Africa-Centred Knowledges: Crossing Fields and Worlds*, pp.111-125. Woodbridge, Surrey, UK: James Currey Publishers. ISBN 9781847010957.

Rouget, M., Barnett, M., Cowling, R.M., Cumming, T., Daniels, F., Hoffman, M.T., Knight, A., Manuel, J., Nel, J., Parker, A., Raimondo, D. and Rebelo, T. 2014. Conserving

the Cape floristic region. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 321-336. New York: Oxford University Press. ISBN 9780199679584.

Slingsby, J., Ackerly, D.D., Latimer, A.M., Linder, P. and Pauw, A. 2014. The assembly and function of Cape plant communities in a changing world. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 200-223. New York: Oxford University Press. ISBN 9780199679584.

Verboom, G.A., Linder, P., Forest, F., Hoffmann, V., Bergh, N. and Cowling, M. 2014. Cenozoic assembly of the Greater Cape flora. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 93-118. New York: Oxford University Press. ISBN 9780199679584.

Watt, D., McCormick, A. and Cramer, M.D. 2014. Source and sink physiology. In P.H. Moore and F.C. Botha (eds), *Sugarcane: Physiology, Biochemistry & Functional Biology*, pp. 483-520. USA: John Wiley & Sons, Inc. ISBN 9780813821214/14.

Wilson, J.R.U., Gaertner, M., Griffiths, C.L., Kotze, I., Le Maitre, D.C., Marr, S.M., Picker, M.D., Spear, D., Stafford, L., Richardson, D.M., van Wilgen, B. and Wannenburgh, A. 2014. Biological invasions in the Cape floristic region: history, current patterns, impacts, and management challenges. In N. Allsopp, J.F. Colville and G.A. Verboom (eds), *Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region*, pp. 273-298. New York: Oxford University Press. ISBN 9780199679584.

Articles in peer-reviewed journals

Abadi, F., Barbraud, c., Besson, D.B., Bried, J.B., Crochet, P.A., Delord, K.D., Forcada, F.J., Grosbois, V., Phillips, R.A., Sagar, P., Thompson, P.T., Waugh, S., Weimerskirch, H., Wood, A.G. and Gimenez, O. 2014. Importance of accounting for phylogenetic dependence in multi-species mark-recapture studies. *Ecological Modelling*, 273: 236-241.

Ah-Peng, C., Flores, O., Wilding, N., Bardat, J., Marline, L., Hedderson, T.A. and Strasberg, D. 2014. Functional diversity of subalpine bryophyte communities in an oceanic island (La Reunion). *Arctic Antarctic and Alpine Research*, 46(4): 841-851.

Altwegg, R., Doutrelant, C., Anderson, M., Spottiswoode, C.N. and Covas, R. 2014. Climate, social factors and research disturbance influence population dynamics in a declining sociable weaver metapopulation. *Oecologia*, 174: 413-425.

Altwegg, R., Jenkins, A.R. and Abadi, F. 2014. Nestboxes and immigration drive the growth of an urban Peregrine Falcon *Falco peregrinus* population. *Ibis*, 156: 107-115.

Amar, A. and Esselstyn, A. 2014. Positive association between rat abundance and breeding success of the critically endangered Mariana crow *Corvus kubaryi*. *Bird Conservation International*, 24: 192-200.

Amar, A., Koeslag, A., Malan, G., Brown, M. and Wreford, E. 2014. Clinal variation in the morph ratio of black sparrowhawks *Accipiter melanoleucus* in South Africa and its correlation with environmental variables. *Ibis*, 156: 627-638.

Amelineau, F., Peron, C., Lescroel, A., Authier, M., Provost, P. and Gremillet, D. 2014. Windscape and tortuosity shape the flight costs of northern gannets. *Journal of Experimental Biology*, 217: 876-885.

Andres-Sanchez, S., Martinez-Ortega, M. and Rico, E. 2014. Revision taxonomica del genero *Bombycilaena* (DC.) Smoljan. (Asteraceae). *Candollea*, 69(1): 55-63.

Arroyo, B., Leckie, F., Amar, A., Mccluskie, A. and Redpath, S. 2014. Ranging behaviour of Hen Harriers breeding in special protection areas in Scotland. *Bird Study*, 61: 48-55.

Baigrie, B., Thompson, A.M. and Flower, T. 2014. Interspecific signaling between mutualists: food-thieving drongos use a cooperative sentinel call to manipulate foraging partners. *Proceedings of the Royal Society B-Biological Sciences*, 281: 20141232(8pp) DOI: 10.1098/rspb.2014.1232.

Balme, G., Lindsey, P.A., Swanepoel, L.H. and Hunter, L. 2014. Failure of research to address the rangewide conservation needs of large carnivores: leopards in South Africa as a case study. *Conservation Letters*, 7(1): 3-11.

Barlow, R., Lamont, T., Morris, T., Sessions, H. and Van den Berg, M. 2014. Adaptation of phytoplankton communities to mesoscale eddies in the Mozambique Channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 106-118.

Bartosova-Sojkova, P., Kodadkova, A., Peckova, H., Kuchta, R. and Reed, C.C. 2014. Morphology and phylogeny of two new species of *Sphaeromyxa* Thlohan, 1892 (Cnidaria: Myxozoa) from marine fish (Clinidae and Trachichthyidae). *Parasitology*, 142(5): 660-674.

Bauters, K., Larridon, I., Reynders, M., Asselman, P., Vrijdaghs, A., Muasya, A.M., Simpson, D. and Goetghebeur, P. 2014. A new classification for *Lipocarpha* and *Volkiella* as infrageneric taxa of *Cyperus* s.l. (Cyperaceae, Cyperaceae): insights from species tree reconstruction supplemented with morphological and floral developmental data. *Phytotaxa*, 166(1): 1-32.

Bayliss, J., Timberlake, J., Branch, W., Bruessow, C., Collins, S., Congdon, C., Curran, M., de Sousa, C., Dowsett, R., Dowsett-Lemaire, F., Fishpool, L., Harris, T., Herrmann, E., Georgiadis, S., Kopp, M., Liggitt, B., Monadjem, A., Patel, I.H., Ribeiro, D., Spottiswoode, C., Taylor, P.J., Willcock, S. and Smith, P. 2014. The discovery, biodiversity and conservation of Mabu forest-the largest

- medium-altitude rainforest in southern Africa. *Oryx*, 48(2): 177-185.
- Beamish, E. and O’Riain, M.J. 2014. The effects of permanent injury on the behaviour and diet of commensal Chacma baboons (*Papio ursinus*) in the Cape Peninsula, South Africa. *International Journal of Primatology*, 35: 1004-1020.
- Behagle, N., du Buisson, L., Josse, E., Lebourges-Dhaussy, A., Roudaut, G. and Menard, F. 2014. Mesoscale features and micronekton in the Mozambique channel: an acoustic approach. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 164-173.
- Bentley, J., Verboom, G.A. and Bergh, N.G. 2014. Erosive processes after tectonic uplift stimulate vicariant and adaptive speciation: evolution in an Afrotemperate-endemic paper daisy genus. *BMC Evolutionary Biology*, 14: 27(16pp).
- Bernard, A.T.F., Gotz, A., Parker, D., Heyns, E., Halse, S.J., Ridin, N.A., Smith, M.K.S., Paterson, A.W., Winker, H., Fullwood, L., Langlois, T.J. and Harvey, E.S. 2014. New possibilities for research on reef fish across the continental shelf of South Africa. *South African Journal of Science*, 110(9/10): a0079(5pp). DOI: 10.1590/sajs.2014/a0079.
- Bester, M.N., Ryan, P.G., Bester, A. and Glass, T. 2014. Vagrant Antarctic fur seals at the Tristan da Cunha Islands. *Polar Biology*, 37: 1701-1703.
- Bird, M.S. and Day, J.A. 2014. Wetlands in changed landscapes: the influence of habitat transformation on the Physico-Chemistry of temporary depression wetlands. *PLoS One*, 9(2): e88935(13pp). DOI: 10.1371/journal.pone.0088935.
- Bird, M.S., Day, J.A. and Malan, H. 2014. The influence of biotope on invertebrate assemblages in lentic environments: a study of two perennial alkaline wetlands in the Western Cape, South Africa. *Limnologica*, 48: 16-27.
- Blamey, L., Plaganyi-Lloyd, E.E. and Branch, G.M. 2014. Was overfishing of predatory fish responsible for a lobster-induced regime shift in the Benguela? *Ecological Modelling*, 273: 140-150.
- Bouchenak-Khelladi, Y., Muasya, A.M. and Linder, P. 2014. A revised evolutionary history of Poales: origins and diversification. *Botanical Journal of the Linnean Society*, 175: 4-16.
- Bouchenak-Khelladi, Y., Slingsby, J., Verboom, G.A. and Bond, W.J. 2014. Diversification of C4 grasses (Poaceae) does not coincide with their ecological dominance. *American Journal of Botany*, 101(2): 300-307.
- Bourgeois, K., Wilson, J. W. and Dromzee, S. 2014. First records of the northern giant petrel *macronectes halli* ashore on Gough Island. *Marine Ornithology*, 41: 135-136.
- Britton, M., Hedderson, T.A. and Verboom, G.A. 2014. Topography as a driver of cryptic speciation in the high-elevation cape sedge *Tetraria triangularis* (Boeck.) C.B. Clarke (Cyperaceae: Schoeneae). *Molecular Phylogenetics and Evolution*, 77: 96-109.
- Bruyns, P.V., Klak, C. and Hanacek, P. 2014. Evolution of the stapeliads (Apocynaceae-Asclepiadoideae) – repeated major radiation across Africa in an old World group. *Molecular Phylogenetics and Evolution*, 77: 251-263.
- Bruyns, P.V., Oliveira-Neto, M., Flavia Melo-de-Pinna, G. and Klak, C. 2014. Phylogenetic relationships in the Didiereaceae with special reference to subfamily Portulacarioideae. *Taxon*, 63(5): 1053-1064.
- Caceres, A., Melo, M., Barlow, J., Cardoso, P., Maiato, F. and Mills, M. 2014. Threatened birds of the Angolan Central Escarpment: distribution and response to habitat change at Kumbira Forest. *Oryx*, 1: 1-8.
- Canoville, A., Thomas, D.B. and Chinsamy-Turan, A. 2014. Insights into the habitat of middle Permian pareiasaurs (Parareptilia) from preliminary isotopic analyses. *Lethaia*, 47: 266-274.
- Cardoso, D.B.O.S., Stirton, C.H. and Torke, B.M. 2014. Taxonomy of South American *Ormosia* (Leguminosae, Papilionoideae): recircumscription of *O. costulata*, reinstatement of *O. trifoliolata*, and the new species *O. lewisii* from the Brazilian Atlantic Forest. *Systematic Botany*, 39(4): 1132-1141.
- Carstens, K. 2014. Egg-capping in the Southern Ground-Hornbill *Bucorvus leadbeateri*. *Ostrich*, 85(1): 89-91.
- Cerda, I.A., Chinsamy-Turan, A. and Pol, D. 2014. Unusual endosteally formed bone tissue in a Patagonian Basal Sauropodomorph dinosaur. *Anatomical Record*, 297: 1385-1391.
- Cerda, I.A., Pol, D. and Chinsamy-Turan, A. 2014. Osteohistological insight into the early stages of growth in *Mussaurus patagonicus* (Dinosauria, Sauropodomorpha). *Historical Biology*, 26(1): 110-121.
- Chinsamy-Turan, A., Buffetaut, E., Canoville, A. and Angst, D. 2014. Insight into the growth dynamics and systematic affinities of the late Cretaceous *Gargantuavis* from bone microstructure. *Naturwissenschaften*, 101: 447-452.
- Cohen, L., Pichegru, L., Gremillet, D., Coetzee, J., Upfold, L. and Ryan, P.G. 2014. Changes in prey availability impact the foraging behavior and fitness of Cape gannets over a decade. *Marine Ecology-Progress Series*, 505: 281-293.
- Colabuono, F.I., Barquete, V., Taniguchi, S., Ryan, P.G. and Montone, R.C. 2014. Stable isotopes of carbon and nitrogen in the study of organochlorine contaminants in albatrosses and petrels. *Marine Pollution Bulletin*, 83: 241-247.
- Collingham, Y.C., Huntley, B., Altwegg, R., Barnard, P., Beveridge, O.S., Gregory, R.D., Mason, L.R., Oschadlus, H.D., Simmons, R.E., Willis, S.G. and Green, R.E. 2014. Prediction of mean adult survival rates of southern African

- birds from demographic and ecological covariates. *Ibis*, 156: 741-754.
- Commins, M., Anson, I.J. and Ryan, P.G. 2014. Multi-scale factors influencing seabird assemblages in the African sector of the Southern Ocean. *Antarctic Science*, 26(1): 38-48.
- Connan, M., McQuaid, C., Bonnievie, T., Smale, M.J. and Chérel, Y. 2014. Combined stomach content, lipid and stable isotope analyses reveal spatial and trophic partitioning among three sympatric albatrosses from the Southern Ocean. *Marine Ecology-Progress Series*, 497: 259-272.
- Cook, T. and Brischox, F. 2014. Why does the only 'planktonic tetrapod' dive? Determinants of diving behavior in a marine ectotherm. *Animal Behaviour*, 98: 113-123.
- Cooper, R., Leiman, A. and Jarre, A.C. 2014. An analysis of the structural changes in the offshore demersal hake (*Merluccius capensis* and *M. paradoxus*) trawl fishery in South Africa. *Marine Policy*, 50: 270-279.
- Cotterill, F.P.D., Taylor, P.J., Gippoliti, S., Bishop, J. and Groves, C.P. 2014. Why one century of Phenetics is enough: response to are there really twice as many bovid species as we thought? *Systematic Biology*, 63(5): 819-832.
- Cramer, M.D. and Barger, N. 2014. Are mima-like mounds the consequence of long-term stability of vegetation spatial patterning? *Palaeogeography Palaeoclimatology Palaeoecology*, 409: 72-83.
- Crawford, R., Makhado, A., Waller, L. and Whittington, P. 2014. Winners and losers – responses to recent environmental change by South African seabirds that compete with purse-seine fisheries for food. *Ostrich*, 85(2): 111-117.
- Crawford, R.J.M., Dyer, B.M., Upfold, L. and Makhado, A. 2014. Congruent, decreasing trends of gentoo penguins and Crozet shags at sub-Antarctic Marion Island suggest food limitation through common environmental forcing. *African Journal of Marine Science*, 36(2): 225-231.
- Cressey, E., Measey, G.J. and Tolley, K.A. 2014. Fading out of view: the enigmatic decline of Rose's mountain toad *Capensibufo rosei*. *Oryx*, 1: 1-8.
- Cumming, G.S., Buerkert, A., Hoffmann, M., Schlecht, E., von Cramon-Traubadel, S. and Tschardtke, T. 2014. Implications of agricultural transitions and urbanization for ecosystem services. *Nature*, 515: 50-57.
- Cuthbert, R., Louw, H., Lurling, J., Parker, G., Rexer-Huber, K., Sommer, E., Visser, P. and Ryan, P.G. 2013. Low burrow occupancy and breeding success of burrowing petrels at Gough Island: a consequence of mouse predation. *Bird Conservation International*, 23: 113-124.
- Cuthbert, R.J., Broome, K., Bradley, J. and Ryan, P.G. 2014. Evaluating the effectiveness of aerial baiting operations for rodent eradications on cliffs on Gough Island, Tristan da Cunha. *Conservation Evidence*, 11: 25-28.
- Cuthbert, R.J., Cooper, J. and Ryan, P.G. 2014. Population trends and breeding success of albatrosses and giant petrels at Gough Island in the face of at-sea and on-land threats. *Antarctic Science*, 26(2): 163-171.
- Cyrus, M., Bolton, J.J., De Wet, L. and Macey, B.M. 2014. The development of a formulated feed containing Ulva (Chlorophyta) to promote rapid growth and enhanced production of high quality roe in the searchin *Tripneustes gratilla* (Linnaeus). *Aquaculture Research*, 45: 159-176.
- de Vega, C., Guzman, B., Steenhuisen, S., Johnson, S.D., Herrera, C.M. and Lachance, M. 2014. *Metschnikowia drakensbergensis* sp. nov. and *Metschnikowia caudata* sp. nov., endemic yeasts associated with Protea flowers in South Africa. *International Journal of Systematic and Evolutionary Microbiology*, 64: 3724-3732.
- De Vos, A., Gotz, A., Winker, H. and Attwood, C.G. 2014. Optimal BRUVs (baited remote underwater video system) survey design for reef fish monitoring in the Stilbaai marine protected area. *African Journal of Marine Science*, 36(1): 1-10.
- Dean, W.R.J., Francke, U., Joseph, G., Goncalves, M., Mills, S.L., Milton, S., Monadjem, A. and Oschadleus, H.D. 2014. Further breeding records for Birds (AVES) in Angola. *Durban Museum Novitates*, 36: 1-10.
- Dehnhard, N., Poisbleau, M., Demongin, L., Ludynia, K. and Quillfeldt, P. 2014. High juvenile annual survival probabilities in Southern Rockhopper Penguins *Eudyptes chrysocome* are independent of individual fledging traits. *Ibis*, 156: 548-560.
- Deville, A.S., Labaude, S., Robin, J., Bechet, A., Gauthier-Clerc, M., Porter, W.P., Fitzpatrick, M., Mathewson, P. and Gremillet, D. 2014. Impacts of extreme climatic events on the energetics of long-lived vertebrates: the case of the greater flamingo facing cold spells in the Carmargue. *Journal of Experimental Biology*, 217: 3700-3707.
- Dixon, R.M., Mattio, L., Huisman, J.M., Payri, C., Bolton, J.J. and Gurgel, C.F.D. 2014. North meets south – taxonomic and biogeographic implications of a phylogenetic assessment of *Sargassum* subgenera *Arthrophyucus* and *Bactrophyucus* (Fucales, Phaeophyceae). *Phycologia*, 53(1): 15-22.
- Doty, K.F., Betzelberger, A., Kocot, K.M. and Cook, M.E. 2014. Immunofluorescence localization of the tubulin cytoskeleton during cell division and cell growth in members of the Coleohaetales (Streptophyta). *Journal of Phycology*, 50: 624-639.
- Downs, C., Harebottle, D.M., Dodman, T., Ndiaye, A., Barnard, P., Huntley, B., Ogada, D., Botha, A. and Ng'weno, F. 2014. Birds in a changing environment: report on the 13th Pan-African Ornithological Congress in Arusha, Tanzania. *Ostrich*, 85(1): 3-6.

- Duggan, G., Green, L.J. and Jarre, A.C. 2014. 'Thinking like a fish': adaptive strategies for coping with vulnerability and variability emerging from a relational engagement with kob. *Maritime Studies*, 13(4): 1-21.
- Duggan, G., Rogerson, J., Green, L.J. and Jarre, A.C. 2014. Opening dialogue and fostering collaboration: different ways of knowing in fisheries research. *South African Journal of Science*, 110(7/8): 2013-0128(9pp).
- Edwards, C.T.T., Bunnefeld, N., Balme, G. and Milner-Gulland, E.J. 2014. Data-poor management of African lion hunting using a relative index of abundance. *Proceedings of the National Academy of Sciences of the United States of America*, 111(1): 539-543.
- Ellis, L.T., Aleffi, L.T., Tacchi, R., Alegro, A., Alonso, M., Asthana, A.K., Sahu, V., Biasuso, A.B., Callaghan, D.A., Ezer, T., Kara, R., Seyli, T., Garilleti, R., Gil-Lopez, M.J., Gwynne-Evans, D., Hedderson, T.A., Kiebacher, T., Larrain, J., Long, D.C., Luth, D., Malcolm, B., Mamontov, Y.S., Newsham, K.K., Nobis, M., Nowak, A., Ochyra, R., Pawlikowski, P., Plasek, V., Cihal, L., Potemkin, A.D., Puche, F., Rios, D., Gallego, M.T., Guerra, J., Sawicki, J., Schafer-Verwimp, A., Segarra-Moragues, J.G., Segota, V., Sofronova, E.V., Stefanut, S., Szucs, P., Bidlo, A., Papp, B., Szurdoki, E., Tan, B.C., Vana, J., Vigalondo, B., Draper, I., Lara, F.A., Yoon, Y.J., Sun, B.Y. and Nishimura, N. 2014. New national and regional bryophyte records, 41. *Journal of Bryology*, 36(4): 306-324.
- Ellis, L.T., Bayliss, J., Bruggeman-Nannenga, M.A., Cykowska, B., Ochyra, R., Gremmen, N., Frahm, J.-P., Hedderson, T.A., Heras, P., Infante, V.M., Hugonnot, V., Mogro, F., Plasek, V., Cihal, L., Sawicki, J., Schafer-Verwimp, A., Stebel, A., Stefanut, S., Vana, J., Yang, J. and Lin, S.H. 2014. New national and regional bryophyte records, 38. *Journal of Bryology*, 36(1): 61-72.
- Emaresi, E., Bize, P., Altwegg, R., Henry, I., Van den Brink, V.V., Gasparini, G.J. and Roulin, A. 2014. Melanin-specific life-history strategies. *American Naturalist*, 183(2): 269-280.
- Eriksen, M., Lebreton, C.M., Carson, S., Thiel, M., Moore, C.J., Borerro, C., Galgani, F., Ryan, P.G. and Reisser, J. 2014. Plastic pollution in the world's oceans: more than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea. *PLoS One*, 9(12): e111913(15pp). DOI: 10.1371/journal.pone.0111913.
- Filander, Z. and Griffiths, C.L. 2014. Additions to and revision of the South African echinoid fauna (Echinodermata: Echinoidea). *African Natural History*, 10: 47-56.
- Flavia Melo-de-Pinna, G., Ogura, A.S., Arruda, E.C.P. and Klak, C. 2014. Repeated evolution of endoscopic peripheral vascular bundles in succulent leaves of Aizoaceae (Caryophyllales). *Taxon*, 63(5): 1037-1052.
- Flower, T., Gribble, M. and Ridley, M. 2014. Deception by flexible alarm mimicry in an African bird. *Science*, 344: 513-516.
- Fort, J., Robertson, J., Gremillet, D., Traisnel, G. and Bustamante, P. 2014. Spatial Ecotoxicology: migratory arctic seabirds are exposed to Mercury contamination while overwintering in the Northwest Atlantic. *Environmental Science & Technology*, 48: 11560-11567.
- Fuchs, J., Simmons, R.E., Mindell, D.P., Bowie, R.C.K. and Oatley, G. 2014. Lack of mtDNA genetic diversity in the Black Harrier *Circus maurus*, a Southern African endemic. *Ibis*, 156: 227-230.
- Gerson, R., Smith, K., Smit, B., McKechnie, A.E. and Wolf, B.O. 2014. The impact of humidity on evaporative cooling in small desert birds exposed to high air temperatures. *Physiological and Biochemical Zoology*, 87(6): 782-795.
- Gillson, L. and Marchant, R. 2014. From myopia to clarity: sharpening the focus of ecosystem management through the lens of palaeoecology. *Trends in Ecology & Evolution*, 29: 317-325.
- Gotz, A., Kerwath, S.E., Samaai, T., da Silva, C. and Wilke, C.G. 2014. An exploratory investigation of the fish communities associated with reefs on the central Agulhas bank, South Africa. *African Zoology*, 49(2): 253-264.
- Gray, M.M., Wegmann, D.G., Haasl, R., White, M.A., Gabriel, S.I., Searle, J.B., Cuthbert, R.J., Ryan, P.G. and Payseur, A. 2014. Demographic history of a recent invasion of house mice on the isolated Island of Gough. *Molecular Ecology*, 23: 1923-1939.
- Gremillet, D., Peron, C., Pons, J.B., Ouni, R., Authier, M., Thevenet, M. and Fort, J. 2014. Irreplaceable area extends marine conservation hotspot off Tunisia: insights from GPS-tracking Scopoli's shearwaters from the largest seabird colony in the mediterranean. *Marine Biology*, 161: 2669-2680.
- Han, G., Chiappe, L.M., Ji, S., Habib, M., Turner, A.H., Chinsamy-Turan, A., Liu, X. and Han, L. 2014. A new raptorial dinosaur with exceptionally long feathering provides insights into dromaeosaurid flight performance. *Nature Communications*, 5: 4382(9pp).
- Hedderson, T.A., Bizuru, E., Mujawamariya, M. and Raondry-Rakotoarisoa, N. 2014. New and additional moss records for Rwanda. *Journal of Bryology*, 36(1): 72-75.
- Hempson, G., Midgley, J.J., Lawes, M.J., Vickers, K.J. and Kruger, L. 2014. Comparing bark thickness: testing methods with barkstem data from two South African fire-prone biomes. *Journal of Vegetation Science*, 25: 1247-1256.
- Heystek, A., Geerts, S., Barnard, P. and Pauw, A. 2014. Pink flower preference in sunbirds does not translate into plant fitness differences in a polymorphic *Erica* species. *Evolutionary Ecology*, 28: 457-470.
- Hoffman, M.T. 2014. Changing patterns of rural land use and land cover in South Africa and their implications for land reform. *Journal of Southern African Studies*, 40(4): 707-725.

- Hofmeyr, S., Symes, C. and Underhill, L.G. 2014. Secretarybird *Sagittarius serpentarius* population trends and Ecology: insights from South African citizen science data. *PLoS One*, 9(5): e96772(12pp). DOI: 10.1371/journal.pone.0096772.
- Huggett, J.A. 2014. Mesoscale distribution and community composition of zooplankton in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 119-135.
- Huntley, B., Midgley, G.F., Barnard, P. and Valdes, J. 2014. Suborbital climatic variability and centres of biological diversity in the Cape region of Southern Africa. *Journal of Biogeography*, 41: 1338-1351.
- Jack, S., Hoffman, M.T., Rohde, R., Durbach, I.N. and Archibald, M.L. 2014. Blow me down: a new perspective on *Aloe dichotoma* mortality from windthrow. *BMC Ecology*, 14: 7(12pp).
- Jackson, G.E., Gamielien, R., Mugumbate, G.C. and Gade, G. 2014. Structural studies of adipokinetic hormones in water and DPC micelle solution using NMR distance restrained molecular dynamics. *Peptides*, 53: 270-277.
- Jacobs, D.S., Bastian, A. and Bam, L.C. 2014. The influence of feeding on the evolution of sensory signals: a comparative test of an evolutionary trade-off between masticatory and sensory functions of skulls in southern African Horseshoe bats (*Rhinolophidae*). *Journal of Evolutionary Biology*, 27: 2829-2840.
- Jansen, D., Abadi, F., Harebottle, D.M. and Altwegg, R. 2014. Does seasonality drive spatial patterns in demography? Variation in survival in African reed warblers *Acrocephalus baeticatus* across southern Africa does not reflect global patterns. *Ecology and Evolution*, 4(7): 889-898.
- Jerardino, A., Navarro, R.A. and Galimberti, M. 2014. Changing collecting strategies of the clam *Donax serra Röding* (*Bivalvia: Donacidae*) during the Pleistocene at Pinnacle point, South Africa. *Journal of Human Evolution*, 68: 58-67.
- Jerardino, A., Wiltshire, N., Webley, L., Tusenius, M., Halkett, D., Hoffman, M.T. and Maggs, T. 2014. Site distribution and chronology at Soutpansklipheuwel, a rocky outcrop on the West Coast of South Africa. *Journal of Island & Coastal Archaeology*, 9: 88-110.
- Jewell, O.J.D., Wcisel, M.A., Towner, A., Chivell, W., Van der Merwe, L. and Bester, M. 2014. Core habitat use of an apex predator in a complex marine landscape. *Marine Ecology-Progress Series*, 506: 231-242.
- Jones, M. and Ryan, P.G. 2014. Effects of pre-laying attendance and body condition on long-term reproductive success in wandering Albatrosses. *Emu*, 114: 137-145.
- Jones, M., Dilley, B., Hagens, Q., Louw, H., Mertz, E., Visser, P. and Ryan, P.G. 2014. The effect of parental age, experience and historical reproductive success on wandering albatross (*Diomedea exulans*) chick growth and survival. *Polar Biology*, 37: 1633-1644.
- Jose, Y., Aumont, O., Machu, B., Penven, P., Moloney, C.L. and Maury, O. 2014. Influence of mesoscale eddies on biological production in the Mozambique channel: several contrasted examples from a coupled ocean-biogeochemistry model. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 79-93.
- Joseph, G., Seymour, C.L., Cumming, G.S., Cumming, D. and Mahlangu, Z. 2014. Termite mounds increase functional diversity of woody plants in African savannas. *Ecosystems*, 17: 808-819.
- Joubert, D.F., Zimmermann, I., Fendler, J., Winschiers-Theophilus, H., Graz, F.P., Smit, G.N. and Hoffman, M.T. 2014. The development of an expert system for arid rangeland management in central Namibia with emphasis on bush thickening. *African Journal of Range and Forage Science*, 31(2): 161-172.
- Katz, E., Tolley, K.A. and Bishop, J. 2014. Temporal changes in allelic variation among Cape Dwarf Chameleons, *Bradypodion pumilum*, inhabiting a transformed, semi-urban wetland. *African Journal of Herpetology*, 63(1): 1-12.
- Klak, C., Hanacek, P. and Bruyns, P.V. 2014. Phylogeny and taxonomy for *Mesembryanthemum* subg. *Volkeranthus* (*Aizoaceae-Mesembryanthemoideae*). *South African Journal of Botany*, 95: 112-122.
- Kohler, S., Connan, M., Kolasinski, J., Cherel, Y., McQuaid, C. and Jaquemet, S. 2014. Trophic overlap between sexes in the dimorphic African black oystercatcher foraging on an alien mussel. *Austral Ecology*, 39: 567-578.
- Kruger, S., Allan, D., Jenkins, A.R. and Amar, A. 2014. Trends in territory occupancy, distribution and density of the bearded vulture *Gypaetus barbatus meridionalis* in southern Africa. *Bird Conservation International*, 24: 162-177.
- Kruger, S., Reid, T. and Amar, A. 2014. Differential range use between age classes of Southern African bearded vultures *Gypaetus barbatus*. *PLoS One*, 9(12): e114920(18pp). DOI: 10.1371/journal.pone.01149020.
- Lamont, T., Barlow, R. and Kyewalyanga, M. 2014. Physical drivers of phytoplankton production in the southern Benguela upwelling system. *Deep-Sea Research Part I-Oceanographic Research Papers*, 90: 1-16.
- Lamont, T., Barlow, R., Morris, T. and Van den Berg, M. 2014. Characterisation of mesoscale features and phytoplankton variability in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 94-105.
- Lange, L. and Griffiths, C.L. 2014. Large-scale spatial patterns within soft-bottom epibenthic invertebrate assemblages along the west coast of South Africa, based

- on the Nansen trawl survey. *African Journal of Marine Science*, 36(1): 111-124.
- Lawes, M.J., Richardson, S.J., Clarke, P.J., Midgley, J.J., McGlone, M.S. and Bellingham, P.J. 2014. Bark thickness does not explain the different susceptibility of Australian and New Zealand temperate rainforests to anthropogenic fire. *Journal of Biogeography*, 41: 1467-1477.
- Le Maitre, D.C., Kruger, F.J. and Forsyth, G.G. 2014. Interfacing ecology and policy: developing an ecological framework and evidence base to support wildfire management in South Africa. *Austral Ecology*, 39: 424-436.
- Lebourges-Dhaussy, A., Huggett, J.A., Ockhuis, S., Roudaut, G., Josse, E. and Verheye, H.M.S. 2014. Zooplankton size and distribution within mesoscale structures in the Mozambique Channel: a comparative approach using the TAPS acoustic profiler, a multiple net sampler and ZooScan image analysis. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 136-152.
- Lee, A.T.K. and Simmons, R.E. 2014. What's eating black harriers *Circus maurus*? Two predation events camera-recorded on a ground nesting raptor. *Gabar*, 25(1): 1-4.
- Lee, A.T.K., Brightsmith, J., Vargas, P., Leon, Q., Mejia, J. and Marsden, J. 2014. Diet and geophagy across a western Amazonian parrot assemblage. *Biotropica*, 46(3): 322-330.
- Lee, T.K. and Barnard, P. 2014. Aspects of the ecology and morphology of the protea seedeater, *Crithagra leucopterus*, a little-know Fynbos endemic. *African Zoology*, 49(2): 295-300.
- Lehmann, C.E.R., Anderson, T.R., Sankaran, M., Higgins, S.I., Archibald, S., Hoffmann, W.A., Hanan, N., Williams, R., Fensham, R.J., Felfili, J., Hutley, L.B., Ratnam, J.V., Jose, J., Montes, R., Franklin, D., Russell-Smith, J., Ryan, C.M., Durigan, G., Hiernaux, P., Haidar, R., Bowman, D.M.J.S. and Bond, W.J. 2014. Savanna vegetation-fire-climate relationships differ among continents. *Science*, 343: 548-552.
- Lei, B., Green, J.A. and Pichegru, L. 2014. Extreme microclimate conditions in artificial nests for endangered African Penguins. *Bird Conservation International*, 24: 201-213.
- Lescroel, A., Ballard, G.B., Gremillet, D., Authier, M. and Ainley, D. 2014. Antarctic climate change: extreme events disrupt plastic phenotypic response in Adelie Penguins. *PLoS One*, 9(1): e85291(9pp). DOI: 10.1371/journal.pone.0085291.
- Liu, Y., Ah-Peng, C., Wilding, N., Bardat, J., Devos, N., Carter, B. and Shaw, J. 2014. Population structure in the tropical peatmoss, *Sphagnum tumidulum* Besch. (Sphagnaceae). *Bryologist*, 117(4): 329-335.
- Lloyd, P., Abadi, F., Altwegg, R. and Martin, T. 2014. South temperate birds have higher apparent adult survival than tropical birds in Africa. *Journal of Avian Biology*, 45: 493-500.
- Lubbe, A.B., Underhill, L.G., Waller, L. and Veen, J.B. 2014. A condition index for African penguin *Spheniscus demersus* chicks. *African Journal of Marine Science*, 36(2): 143-154.
- Ludynia, K., Waller, L., Sherley, R., Abadi, F., Galada, Y., D Geldenhuys, D., Crawford, R., Shannon, L. and Jarre, A.C. 2014. Processes influencing the population dynamics and conservation of African penguins on Dyer Island, South Africa. *African Journal of Marine Science*, 36(2): 253-267.
- Maciejewski, K. and Kerley, G. 2014. Elevated elephant density does not improve ecotourism opportunities: convergence in social and ecological objectives. *Ecological Applications*, 24(5): 920-926.
- Mackay, B., Little, R.M., Amar, A. and Hockey, P.A.R. 2014. Incorporating environmental considerations in managing Egyptian geese on Golf courses in South Africa. *Journal of Wildlife Management*, 78(4): 671-678.
- Malauene, B.S., Shillington, F.A., Roberts, M.J. and Moloney, C.L. 2014. Cool, elevated chlorophyll-a waters off northern Mozambique. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 68-78.
- Mandiwana-Neudani, T., Bowie, R.C.K., Hausberger, M., Henry, L. and Crowe, T. 2014. Taxonomic and phylogenetic utility of variation in advertising calls of francolins and spurfowls (Galliformes: Phasianidae). *African Zoology*, 49(1): 54-82.
- Maquart, P., Rousse, P. and van Noort, S. 2014. Revision of the Afrotropical genus *Phorotrophus* Saussure, 1892 (Hymenoptera: Ichneumonidae: Acaenitinae), with descriptions of eight new species. *African Natural History*, 10: 57-117.
- Marco, H., Anders, L. and Gade, G. 2014. cDNA cloning and transcript distribution of two novel members of the neuroparsin peptide family in a hemipteran insect (*Nezara viridula*) and a decapod crustacean (*Jasus lalandii*). *Peptides*, 53: 97-105.
- Marco, H., Simek, P. and Gade, G. 2014. Adipokinetic hormones of the two extant apterygotan insect orders, Archaeognatha and Zygentoma. *Journal of Insect Physiology*, 60: 17-24.
- Maree, B.A., Wanless, R., Fairweather, T.P., Sullivan, B.J. and Yates, O. 2014. Significant reductions in mortality of threatened seabirds in a South African trawl fishery. *Animal Conservation*, 17: 520-529.
- Marsac, F., Barlow, R., Ternon, J.F., Ménard, F. and Roberts, M.J. 2014. Ecosystem functioning in the Mozambique channel: synthesis and future research. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 212-220.
- Martin, R.O., Koeslag, A., Curtis, O. and Amar, A. 2014. Fidelity at the frontier: divorce and dispersal in a newly

- colonized raptor population. *Animal Behaviour*, 93: 59-68.
- Martin, R.O., Perrin, M., Boyes, R.S., Abebe, D., Annorbah, D., Asamoah, A., Bizimana, D., Bobo, S., Bunbury, S., Brouwer, J., Diop, S., Ewnetu, M., Fotso, C., Garteh, J., Hall, P., Holbech, H., Madindou, R., Maisels, F., Mokoko, J., Mulwa, R., Reuleaux, A., Symes, C., Tomungang, S., Taylor, S., Valle, S., Waltert, M. and Wondafresh, M. 2014. Research and conservation of the larger parrots of Africa and Madagascar: a review of knowledge gaps and opportunities. *Ostrich*, 85(3): 205-233.
- Martin, R.O., Sebele, L., Koeslag, A., Curtis, O., Abadi, F. and Amar, A. 2014. Phenological shifts assist colonization of a novel environment in a range-expanding raptor. *Oikos*, 123: 1457-1468.
- Martins, R., Roberts, M.J., Lett, C., Chang, N., Moloney, C.L., Camargo, M.G. and Vidal, A.G. 2014. Modelling transport of chokka squid (*Loligo reynaudii*) paralarvae off South Africa: reviewing, testing and extending the Westward Transport Hypothesis'. *Fisheries Oceanography*, 23(2): 116-131.
- Masubelele, M., Hoffman, M.T., Bond, W.J. and Gambiza, J. 2014. A 50 year study shows grass cover has increased in shrublands of semi-arid South Africa. *Journal of Arid Environments*, 104: 43-51.10.
- Matimati, I., Verboom, G.A. and Cramer, M.D. 2014. Do hydraulic redistribution and nocturnal transpiration facilitate nutrient acquisition in *Aspalathus linearis*? *Oecologia*, 175: 1129-1142.
- Matimati, I., Verboom, G.A. and Cramer, M.D. 2014. Nitrogen regulation of transpiration controls mass-flow acquisition of nutrients. *Journal of Experimental Botany*, 65(1): 159-168.
- Maurin, O., Davies, T.J., Burrows, J., Daru, B.H., Yessoufou, K., Muasya, A.M., van der Bank, M. and Bond, W.J. 2014. Savanna fire and the origins of the 'underground forests' of Africa. *New Phytologist*, 204: 201-214.
- McAuliffe, J.R., Hoffman, M.T., McFadden, L.D. and King, M.P. 2014. Role of aeolian sediment accretion in the formation of heuweltjie earth mounds, western South Africa. *Earth Surface Processes and Landforms*, 39: 1900-1912.
- McInnes, A.M., Suarez, N., Rishworth, M., Green, D., Pistorius, P.A. and Pichegru, L. 2014. Lumbering the gauntlet: Cape Gannet fledglings killed by African Penguins. *Ostrich*, 85(2): 193-196.
- McQuaid, K. and Griffiths, C.L. 2014. Alien reef-building polychaete drives long-term changes in invertebrate biomass and diversity in a small, urban estuary. *Estuarine Coastal and Shelf Science*, 138: 101-106.
- Melin, A., Rouget, M., Midgley, J.J. and Donaldson, J. 2014. Pollination ecosystems services in South African agricultural systems. *South African Journal of Science*, 110(11/12): 2014-0078(9pp).
- Mendoza, C.G., Isnard, S., Charles-Dominique, T., Van den Bulcke, J., Rowe, N.P., Van Acker, J., Goetghebeur, P. and Samain, M. 2014. Bouldering: an alternative strategy to long-vertical climbing in root-climbing horticolas. *Journal of the Royal Society Interface*, 11: 20140611(12pp).
- Midlane, N., O'Riain, M.J., Balme, G., Robinson, H.S. and Hunter, L. 2014. On tracks: a spoor-based occupancy survey of lion *Panthera leo* distribution in Kafue National Park, Zambia. *Biological Conservation*, 172: 101-108.
- Mills, A.J., Spear, D., Ndhlovu, T., Knight, M.H., Peinke, D.M., Hofmeyr, S. and Cowling, M. 2014. Biomass of large herbivores in South African subtropical thicket. *African Journal of Ecology*, 52: 577-580.
- Mills, M. 2014. Dusky twin-spot *euschistospiza cinereovinacea*, a new host species for indigobirds *Vidua*. *Bulletin of the African Bird Club*, 21: 191-199.
- Mills, M. 2014. Observations of the rarely seen aerial display of short-winged cisticola *Cisticola brachypterus*. *Bulletin of the African Bird Club*, 21: 200-201.
- Milne, R. and Griffiths, C.L. 2014. Invertebrate biodiversity associated with algal turfs on a coral-dominated reef. *Marine Biodiversity*, 44: 181-188.
- Minnaar, I.A., Shinner, R., van Noort, S. and Clusella-Trullas, S. 2014. New records of the parasitic wasp *Dinocampus coccinellae* (Hymenoptera: Braconidae) and its hosts in South Africa. *African Entomology*, 22(1): 226-229.
- Moncrieff, G.R., Chamaille-Jammes, S. and Bond, W.J. 2014. Modelling direct and indirect impacts of browser consumption on woody plant growth: moving beyond biomass. *Oikos*, 123: 315-322.
- Moncrieff, G.R., Scheiter, S., Bond, W.J. and Higgins, S.I. 2014. Increasing atmospheric CO₂ overrides the historical legacy of multiple stable biome states in Africa. *New Phytologist*, 201: 908-915.
- Monteiro, M., Reino, L., Beja, P., Mills, M., Bastos-Silveira, C., Ramos, M., Rodrigues, D., Neves, I., Consciencia, S. and Figueira, R. 2014. The collection and database of birds of Angola hosted a IICT (Instituto de Investigacao Cientifica Tropical), Lisboa, Portugal. *ZooKeys*, 387: 89-99.
- Moore, C., Cumming, G.S., Slingsby, J.A. and Grewar, J. 2014. Tracking socioeconomic vulnerability using network analysis: insights from an Avian influenza outbreak in an ostrich production network. *PLoS One*, 9(1): e86973(12pp). DOI: 10.1371/journal.pone.0086973.
- Muasya, A.M., Viljoen, J.-A., Dlodlu, M. and Demissew, S. 2014. Phylogenetic position of *Cyperus clandestinus* (Cyperaceae, Cyperaceae) clarified by morphological and molecular evidence. *Nordic Journal of Botany*, 32: 106-114.
- Mullers, R.H.E. and Amar, A. 2014. Shoebill *Balaeniceps rex* foraging behavior in the Bangweulu Wetlands, Zambia. *Ostrich*, 2014: 1-6.

- Mustin, K., Amar, A. and Redpath, S. 2014. Colonization and extinction dynamics of a declining migratory bird are influenced by climate and habitat degradation. *Ibis*, 156(4): 788-798.
- Ndlovu, M., Cumming, G.S. and Hockey, P.A.R. 2014. Influence of moult and location on patterns of daily movement by Egyptian Geese in South Africa. *Emu*, 114(1): 23-29.
- Neira Alarcon, S., Moloney, C.L., Shannon, L., Christensen, V., Arancibia, H. and Jarre, A.C. 2014. Assessing changes in the southern Humboldt in the 20th century using food web models. *Ecological Modelling*, 278: 52-66.
- Neira, S., Moloney, C.L., Christensen, V., Cury, P., Shannon, L. and Arancibia, H. 2014. Analysing changes in the southern Humboldt ecosystem for the period 1970-2004 by means of dynamic food web modelling. *Ecological Modelling*, 274: 41-49.
- Nel, A., Pitcher, G.C., Richoux, N.B. and Jackson, S. 2014. Culture environment and hatchery of origin influence growth, condition and feeding organ morphology in the Pacific oyster *Crassostrea gigas* in South Africa. *African Journal of Marine Science*, 36(4): 481-491.
- Nel, P. and Branch, G.M. 2014. The effect of bait collectors on stocks of *Callichirus kraussi* and *Upogebia* species in Langebaan Lagoon. *African Zoology*, 49(1): 30-43.
- O'Connor, T.G., Puttick, J. and Hoffman, M.T. 2014. Bush encroachment in southern Africa: changes and causes. *African Journal of Range and Forage Science*, 31(2): 67-88.
- Odendaal, L., Jacobs, D.S. and Bishop, J. 2014. Sensory trait variation in an echolocating bat suggests roles for both selection and plasticity. *BMC Evolutionary Biology*, 14: 60(18pp).
- Okanga, S., Cumming, G.S., Hockey, P.A.R., Nupen, L. and Peters, J.L. 2014. Host specificity and co-speciation in Avian Haemosporidia in the Western Cape, South Africa. *PLoS One*, 9(2): e86382(11pp). DOI: 10.1371/journal.pone.0086382.
- Olbers, J., Rowe, F.W.E., Griffiths, C.L. and Samyn, Y. 2014. The rediscovery of a collection of Echinoderms, including two holotypes in the Durban Natural Science Museum, South Africa. *Durban Museum Novitates*, 36: 11-29.
- Ommer, R.E. and Paterson, B. 2014. Conclusions: reframing the possibilities for natural and social science dialogue on the economic history of natural resources. *Ecology and Society*, 19(1): 17(4pp). DOI: 10.5751/ES-05972-190117.
- Owen, C.A., Coetzee, J.A. and van Noort, S. 2014. Distributional range of the South African maritime spider-egg parasitoid wasp, *Echthrodesis lamoralis* (Hymenoptera: Platygasteridae: Scelioninae). *African Invertebrates*, 55(2): 323-332.
- Parr, C.L., Lehmann, C.E.R., Bond, W.J., Hoffmann, W.A. and Andersen, A.N. 2014. Tropical grassy biomes: misunderstood, neglected, and under threat. *Trends in Ecology & Evolution*, 29(4): 205-213.
- Paterson, B. and Kainge, P. 2014. Rebuilding the Namibian hake fishery: a case for collaboration between scientists and fishermen. *Ecology and Society*, 19(2): 49(11pp). DOI: 10.5751/ES-06370-190249.
- Patrick, S.C., Bearhop, S., Gremillet, D., Lescoel, A., Grecian, W.J., Bodey, T.W., Hamer, K.C., Wakefield, E.D., Le Nuz, M. and Votier, S. 2014. Individual differences in searching behavior and spatial foraging consistency in a central place marine predator. *Oikos*, 123: 33-40.
- Peters, K., Griffiths, C.L. and Robinson, T. 2014. Patterns and drivers of marine bioinvasions in eight Western Cape harbours, South Africa. *African Journal of Marine Science*, 36(1): 49-57.
- Philippon, N., Martiny, N., Camberlin, P., Hoffman, M.T. and Gond, V. 2014. Timing and patterns of the ENSO signal in Africa over the last 30 Years: insights from normalized difference vegetation index data. *Journal of Climate*, 27: 2509-2532.
- Pichegru, L. and Parsons, N.J. 2014. Female-biased mortality in African penguins. *African Journal of Marine Science*, 36(2): 279-282.
- Pitcher, G.C., Cembella, A.D., Krock, B., Macey, B.M., Mansfield, L. and Probyn, T.A. 2014. Identification of the marine diatom *Pseudo-nitzschia multiseriata* (Bacillariophyceae) as a source of the toxin domoic acid in Algoa Bay, South Africa. *African Journal of Marine Science*, 36(4): 523-528.
- Pitcher, G.C., Probyn, T.A., du Randt, A., Lucas, A.J., Bernard, S., Evers-king, H., Lamont, T. and Hutchings, L. 2014. Dynamics of oxygen depletion in the nearshore of a coastal embayment of the southern Benguela upwelling system. *Journal of Geophysical Research-Oceans*, 119: 2183-2200.
- Plaganyi, E.E., Ellis, N., Blamey, L., Morello, E.B., Norman-Lopez, A., Robinson, W., Sporcic, M. and Sweatman, H. 2014. Ecosystem modelling provides clues to understanding ecological tipping points. *Marine Ecology-Progress Series*, 512: 99-113.
- Ponchon, A., Gremillet, D., Christensen-Dalsgaard, S., Erikstad, E., Barrett, R.T., Reiertsen, T., McCoy, K.D., Tveraa, T. and Boulinier, T. 2014. When things go wrong: intra-season dynamics of breeding failure in a seabird. *Ecosphere*, 5(1): 4 (19pp). DOI: 10.1890/ES13-00233.1.
- Porter, S., Kaehler, S., Branch, G.M. and Sink, K.J. 2014. Riverine subsidies for inshore filter-feeder communities: potential influences on trophic patterns among bioregions. *Marine Ecology-Progress Series*, 498: 13-26.
- Potts, A., Hedderson, T.A. and Grimm, G.W. 2014. Constructing phylogenies in the presence of intra-

- individual site polymorphisms (2ISPs) with a focus on the nuclear ribosomal cistron. *Systematic Biology*, 63(1): 1-16.
- Pulfrich, A. and Branch, G.M. 2014. Effects of sediment discharge from Namibian diamond mines on intertidal and subtidal rocky-reef communities and the rock lobster *Jasus lalandii*. *Estuarine Coastal and Shelf Science*, 150: 179-191.
- Pulfrich, A. and Branch, G.M. 2014. Using diamond-mined sediment discharges to test the paradigms of sandy-beach ecology. *Estuarine Coastal and Shelf Science*, 150: 165-178.
- Puttick, J., Hoffman, M.T. and Gambiza, J. 2014. The impact of land use on woody plant cover and species composition on the Grahamstown municipal commonage: implications for South Africa's land reform programme. *African Journal of Range and Forage Science*, 31(2): 123-133.
- Puttick, J., Hoffman, M.T. and Gambiza, J. 2014. The influence of South Africa's post-apartheid land reform policies on bush encroachment and range condition: a case study of Fort Beauforts municipal commonage. *African Journal of Range and Forage Science*, 31(2): 135-145.
- Rahlao, S.J., Milton, S., Esler, K.J. and Barnard, P. 2014. Performance of invasive alien fountain grass (*Pennisetum setaceum*) along a climatic gradient through three South African biomes. *South African Journal of Botany*, 91: 43-48.
- Rao, S., Hockey, P.A.R. and Montevicchi, W.A. 2014. Coastal Dispersal by pre-breeding African black oystercatchers *Haematopus Moquini*. *Marine Ornithology*, 42: 105-112.
- Redelstorff, R., Sander, P.M. and Galton, P.M. 2014. Unique bone histology in partial large bone shafts from upper Triassic of Aust Cliff, England: an early independent experiment in gigantism. *Acta Palaeontologica Polonica*, 59(3): 607-615.
- Regnard, G., Boyes, R.S., Martin, R.O., Rybicki, E.P. and Hitzeroth, I.I. 2014. Beak and feather disease virus: correlation between viral load and clinical signs in wild Cape parrots (*Poicephalus robustus*) in South Africa. *Archives of Virology*, 14: 1-6.
- Reid, T., Ronconi, R.A., Cuthbert, R.J. and Ryan, P.G. 2014. The summer foraging ranges of adult spectacled petrels *Procellaria conspicillata*. *Antarctic Science*, 26(1): 23-32.
- Reimers, B., Griffiths, C.L. and Hoffman, M.T. 2014. Repeat photography as a tool for detecting and monitoring historical changes in South African coastal habitats. *African Journal of Marine Science*, 36(3): 387-398.
- Remisiewicz, M., Tree, A.J., Underhill, L.G. and Nowakowski, J.K. 2014. Geographical patterns in primary moult and body mass of Greenshank *Tringa nebularia* in Southern Africa. *Ardea*, 102: 31-46.
- Retief, K., West, A. and Pfab, M.F. 2014. Can stable isotopes and radiocarbon dating provide a forensic solution for curbing illegal harvesting of threatened cycads? *Journal of Forensic Sciences*, 59(6): 1541-1551.
- Rexer-Huber, K., Parker, G., Ryan, P.G. and Cuthbert, R.J. 2014. Burrow occupancy and population size in the Atlantic petrel *Pterodroma Incerta*: a comparison of methods. *Marine Ornithology*, 42: 137-141.
- Ribeiro, A., Lloyd, P., Dean, W.R.J., Brown, M. and Bowie, R.C.K. 2014. The ecological and geographic context of morphological and genetic divergence in an understorey-dwelling bird. *PLoS One*, 9(2): e85903(11pp). DOI: 10.1371/journal.pone.0085903.
- Ridley, M., Wiley, E. and Thompson, A.M. 2014. The ecological benefits of interceptive eavesdropping. *Functional Ecology*, 28: 197-205.
- Rius, M., Clusella-Trullas, S., McQuaid, C., Navarro, R.A., Griffiths, C.L., Mathee, C.A., von der Heyden, S. and Turon, X. 2014. Range expansions across ecoregions: interactions of climate change, physiology and genetic diversity. *Global Ecology and Biogeography*, 23: 76-88.
- Rollinson, D.P., Dilley, B. and Ryan, P.G. 2014. Diving behaviour of white-chinned petrels and its relevance for mitigating longline bycatch. *Polar Biology*, 37: 1301-1308.
- Roos, C.I., Bowman, D.M.J.S., Balch, J., Artaxo, P., Bond, W.J., Cochrane, M.A., D'Antonio, C.M., DeFries, R.S., Mack, M., Johnston, F.H., Krawchuk, M.A., Kull, C.A., Moritz, M.A., Pyne, S.J., Scott, A. and Swetnam, T.W. 2014. Pyrogeography, historical ecology, and the human dimensions of fire regimes. *Journal of Biogeography*, 41: 833-836.
- Rousse, P. and van Noort, S. 2014. A review of the Afrotropical Rhyssinae (Hymenoptera: Ichneumonidae) with the descriptions of five new species. *European Journal of Taxonomy*, 91: 1-42.
- Rousse, P. and van Noort, S. 2014. Afrotropical Ophioninae (Hymenoptera, Ichneumonidae): an update of Gauld and Mitchells revision, including two new species and an interactive matrix identification key. *ZooKeys*, 456: 59-73.
- Rousse, P. and van Noort, S. 2014. *Belesica madiba* and *Cremastus tutui* (Ichneumonidae: Cremastinae), two entomological gems from South Africa. *Zootaxa*, 3795(2): 161-173.
- Rousse, P. and van Noort, S. 2014. Revision of the Afrotropical Lycorinae (Ichneumonidae; Hymenoptera) II. Three new Lycorina species and additional distribution records. *Zootaxa*, 3884(3): 222-234.
- Rusch, U.D., Midgley, J.J. and Anderson, B. 2014. Seasonal fluctuations in rodent seed caching and consumption behaviour in fynbos shrublands: implications for fire

- management. *South African Journal of Botany*, 93: 217-221.
- Ryan, P.G. 2014. Litter survey detects the South Atlantic 'garbage patch'. *Marine Pollution Bulletin*, 79: 220-224.
- Ryan, P.G., Bourgeois, K., Dromzee, S. and Dilley, B. 2014. The occurrence of two bill morphs of prions *Pachyptila vittata* on Gough Island. *Polar Biology*, 37: 727-735.
- Ryan, P.G., Lamprecht, A., Swanepoel, D. and Moloney, C.L. 2014. The effect of fine-scale sampling frequency on estimates of beach litter accumulation. *Marine Pollution Bulletin*, 88: 249-254.
- Ryan, P.G., Musker, S. and Rink, A.N. 2014. Low densities of drifting litter in the African sector of the Southern Ocean. *Marine Pollution Bulletin*, 89: 16-19.
- Ryan, P.G., Ortmann, H.E. and Herian, K. 2014. Cascading effects of introduced scale insects on *Nesospiza* finches at the Tristan da Cunha archipelago. *Biological Conservation*, 176: 48-53.
- Sabarros, P., Gremillet, D., Demarcq, H., Moseley, C., Pichegru, L., Mullers, R.H.E., Stenseth, N.C. and Machu, E. 2014. Fine-scale recognition and use of mesoscale fronts by foraging Cape gannets in the Benguela upwelling region. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 107: 77-84.
- Schachtschneider, K. and Reinecke, M.K. 2014. Riparian trees as common denominators across the river flow spectrum: are ecophysiological methods useful tools in environmental flow assessments? *Water SA*, 40(2): 287-295.
- Schutgens, M., Shaw, J.M. and Ryan, P.G. 2014. Estimating scavenger and search bias for collision fatality surveys of large birds on power lines in the Karoo, South Africa. *Ostrich*, 85(1): 39-45.
- Scogings, P.F., Hjalten, J., Skarpe, C., Hattas, D., Zobolo, A., Dziba, L. and Rooke, T. 2014. Nutrient and secondary metabolite concentrations in a savanna are independently affected by large herbivores and shoot growth rate. *Plant Ecology*, 215: 73-82.
- Seddon, A.W.R., Mackay, A., Baker, A.G., Birks, H.J.B., Breman, E., Buck, C.E., Ellis, E.C., Froyd, C., Gill, J.L., Gillson, L., Johnson, E.E., Jones, V.J., Juggins, S., Macia-Fauria, M., Mills, K., Morris, J.L., Nogueira-Bravo, D., Punyasena, S.W., Roland, T.P., Tanentzap, A.J., Willis, K.J., Aberhan, M., Asperen, E.N., Austin, W.E.N., Battarbee, R., Bhagwat, S., Belanger, C.L., Bennett, K.D., Birks, H.H., Ramsey, C.B., Brooks, S., de Bruyn, M., Butler, P.G., Chambers, F.M., Clarke, S.J., Davies, A.L., Dearing, J.A., Ezard, T.H.G., Feurdean, A., Flower, R.J., Gell, P., Hausmann, S., Hogan, E.J., Hopkins, M.J., Jeffers, E.S., Korhola, A.A., Marchant, R., Kiefer, T.K., Lamentowicz, M., Larocque-Tobler, I., Lopez-Merino, L., Liow, L.H., McGowan, S., Miller, J.H., Montoya, E., Morton, O., Nogue, S., Onoufriou, C., Boush, L., Rodriguez-Sanchez, F., Rose, N.L., Sayer, C.D., Shaw, H.E., Payne, R., Simpson, G., Sohar, K., Whitehouse, N.J., Williams, J.W. and Witkowski, A. 2014. Looking forward through the past: identification of 50 priority research questions in palaeoecology. *Journal of Ecology*, 102: 256-267.
- Seymour, C., Milewski, A.V., Mills, A.J., Joseph, G., Cumming, G.S., Cumming, D. and Mahlangu, Z. 2014. Do the large termite mounds of *Macrotermes* concentrate micronutrients in addition to macronutrients in nutrient-poor African savannas? *Soil Biology & Biochemistry*, 68: 95-105.
- Shannon, L., Coll, M., Bundy, A., Gascuel, D., Heymans, J.J., Kleisner, K., Lynam, C., Piroddi, C., Tam, J., Travers-Trolet, M. and Shin, Y.-J. 2014. Trophic level-based indicators to track fishing impacts across marine ecosystems. *Marine Ecology-Progress Series*, 512: 115-140.
- Shannon, L., Osman, W. and Jarre, A.C. 2014. Communicating changes in state of the southern Benguela ecosystem using trophic, model-derived indicators. *Marine Ecology-Progress Series*, 512: 217-237.
- Shaw, J.M. and Ryan, P.G. 2014. Stable isotopes reveal regional movement patterns in an endangered bustard. *Austral Ecology*, 40: 198-205.
- Shaw, J.M., Dilley, B., Davies, D. and Ryan, P.G. 2014. Trapping and capture myopathy in Ludwig's bustard. *South African Journal of Wildlife Research*, 44(1): 16-23.
- Shelton, J., Day, J.A. and Impson, N.D. 2014. Preliminary evaluation of the impact of invasive smallmouth bass *Micropterus dolomieu* on native fish abundance in the Witte River, Cape Floristic region, South Africa. *African Zoology*, 49(2): 277-282.
- Sherley, R., Abadi, F., Ludynia, K., Barham, B.J., Clark, A.E. and Altwegg, R. 2014. Age-specific survival and movement among major African Penguin *Spheniscus demersus* colonies. *Ibis*, 156: 716-728.
- Sherley, R., Barham, P., Barham, B., Crawford, R.J.M., Dyer, B.M., Leshoro, T.M., Makhado, A.B., Upfold, L. and Underhill, L.G. 2014. Growth and decline of a penguin colony and the influence on nesting density and reproductive success. *Population Ecology*, 56: 119-128.
- Sherley, R., Waller, L., Strauss, V., D Geldenhuys, D., Underhill, L.G. and Parsons, N.J. 2014. Hand-Rearing, release and survival of African Penguin chicks abandoned before independence by moulting parents. *PLoS One*, 9(10): e110794(8pp). DOI: 10.1371/journal.pone.0110794.
- Shiponeni, N., Carrick, P.J., Allsopp, N. and Hoffman, M.T. 2014. Effects of root competition and soils on seedling establishment at the ecotone between an arid grassland and succulent shrubland in South Africa. *Journal of Vegetation Science*, 25: 402-410.
- Slingsby, J., Britton, M. and Verboom, G.A. 2014. Ecology limits the diversity of the Cape flora: Phylogenetics

- and diversification of the genus *Tetraria*. *Molecular Phylogenetics and Evolution*, 72: 61-70.
- Stathopoulos, S., Bishop, J. and O’Ryan, C. 2014. Genetic Signatures for Enhanced Olfaction in the African Mole-Rats. *PLoS One*, 9 (4): e93336(13pp). DOI: 10.1371/journal.pone.0093336.
- Staver, A.C. and Bond, W.J. 2014. Is there a browse trap? Dynamics of herbivore impacts on trees and grasses in an African savanna. *Journal of Ecology*, 102: 595-602.
- Stevens, N., Seal, C., Archibald, S. and Bond, W.J. 2014. Increasing temperatures can improve seedling establishment in arid adapted savanna trees. *Oecologia*, 175: 1029-1040.
- Stevens, N., Swemmer, A., Ezzy, L. and Erasmus, B.F.N. 2014. Investigating potential determinants of the distribution limits of a savanna woody plant: *Colophospermum mopane*. *Journal of Vegetation Science*, 25: 363-373.
- Stoffolano Jr., J.G., Croke, K., Chambers, J., Gade, G., Solari, P. and Liscia, A. 2014. Role of Phote-HrTH (Phormia terraenovae hypertrehalosemic hormone) in modulating the supercontractile muscles of the crop of adult *Phormia regina* Meigen. *Journal of Insect Physiology*, 71: 147-155.
- Tate, G.J. and Marco, H. 2014. Adaptations to life on arid islands of South Africa: renal performance and phenotypic plasticity in the European rabbit *Oryctolagus cuniculus*. *African Zoology*, 49(2): 203-212.
- Terer, T., Muasya, A.M., Higgins, S., Gaudet, J.J. and Triest, L. 2014. Importance of seedling recruitment for regeneration and maintaining genetic diversity of *Cyperus papyrus* during drawdown in Lake Naivasha, Kenya. *Aquatic Botany*, 116: 93-102.
- Ternon, J.F., Bach, P., Barlow, R., Huggett, J.A., Jaquemet, S., Marsac, F., Mnard, F., Penven, P., Potier, M. and Roberts, M.J. 2014. The Mozambique channel: from physics to upper trophic levels. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 1-9.
- Thiebault, A., Mullers, R.H.E., Pistorius, P.A. and Tremblay, Y. 2014. Local enhancement in a seabird: reaction distances and foraging consequence of predator aggregations. *Behavioral Ecology*, 25(6): 1302-1310.
- Thiebault, A., Mullers, R.H.E., Pistorius, P.A., Meza-Torres, A., Dubroca, L., Green, D. and Tremblay, Y. 2014. From colony to first patch: processes of prey searching and social information in Cape Gannets. *Auk*, 131: 595-609.
- Thrush, S.F., Hewitt, J.E., Parkes, S., Lohrer, A.M., Pilditch, C., Woodin, S.A., Wethey, D.S., Chiantore, M., Asnaghi, V., De Juan, S., Kraan, C., Rodil, I., Savage, C. and van Colen, C. 2014. Experimenting with ecosystem interaction networks in search of threshold potentials in real-world marine ecosystems. *Ecology*, 95(6): 1451-1457.
- Tonnabel, J., Mignot, A., Douzery, E.J., Rebelo, A.G., Schurr, F.M., Midgley, J.J., Illing, N., Justy, F., Orcel, D. and Olivieri, I. 2014. Convergent and correlated evolution of major life-history traits in the angiosperm Genus *Leucadendron* (Proteaceae). *Evolution*, 68(10): 2775-2792.
- Travers-Trolet, M., Shin, Y.-J. and Field, J. 2014. An end-to-end coupled model ROMS-N2P2Z2D2-OSMOSE of the southern Benguela foodweb: parameterisation, calibration and pattern-oriented validation. *African Journal of Marine Science*, 36(1): 11-29.
- Travers-Trolet, M., Shin, Y.-J., Shannon, L., Moloney, C.L. and Field, J. 2014. Combined fishing and climate forcing in the Southern Benguela upwelling ecosystem: an end-to-end modelling approach reveals dampened effects. *PLoS One*, 9(4): e94286(9pp). DOI: 10.1371/journal.pone.0094286.
- Tremblay, Y., Thiebault, A., Mullers, R.H.E. and Pistorius, P.A. 2014. Bird-borne video-cameras show that seabird movement patterns relate to previously unrevealed proximate environment, not prey. *PLoS One*, 9(2): e88424(6pp). DOI: 10.1371/journal.pone.0088424.
- van den Heuvel, I. and Midgley, J.J. 2014. Towards an isotope ecology of Cape fynbos small mammals. *African Zoology*, 49(2): 195-202.
- van den Heuvel, M., Cherry, M.I. and Klump, M. 2014. Crimson-breasted shrike females with extra pair offspring contributed more to duets. *Behavioral Ecology and Sociobiology*, 68: 1245-1252.
- van den Heuvel, M., Cherry, M.I. and Klump, M. 2014. Land or lover? Territorial defence and mutual mate guarding in the crimson-breasted shrike. *Behavioral Ecology and Sociobiology*, 68: 373-381.
- van der Lingen, C. and Miller, T.W. 2014. Spatial, ontogenetic and interspecific variability in stable isotope ratios of nitrogen and carbon of *Merluccius capensis* and *Merluccius paradoxus* off South Africa. *Journal of Fish Biology*, 85: 456-472.
- Van der Niet, T., Pirie, M.D., Shuttleworth, A., Johnson, S.D. and Midgley, J.J. 2014. Do pollinator distributions underlie the evolution of pollination ecotypes in the Cape shrub *Erica plukenetii*? *Annals of Botany*, 113: 301-315.
- van der Wal, R., Miller, D., Irvine, J., Fiorini, S., Amar, A., Yearley, S., Gill, R. and Dandy, N. 2014. The influence of information provision on people’s landscape preferences: a case study on understory vegetation of deer-browsed woodlands. *Landscape and Urban Planning*, 124: 129-139.
- van Noort, S., Buffington, M.L. and Forshage, M. 2014. Review of afro-tropical Figitinae (Figitidae, Cynipoidea, Hymenoptera) with the first records of *Neralsia* and *Lonchidia* for the region. *ZooKeys*, 453: 37-69.
- van Noort, S., Masner, L., Popovici, O., Valerio, A.A., Taekul, C., Johnson, N.F., Murphy, N.P. and Austin, A.D. 2014. Systematics and biology of the aberrant

intertidal parasitoid wasp *Echthrodesis lamorali* Masner (Hymenoptera : Platygasteridae s.l.): a parasitoid of spider eggs. *Invertebrate Systematics*, 28: 1-16.

Vegter, A.C., Barletta, M., Beck, C., Borrero, J., Burton, H., Campbell, M.L., Costa, M.F., Eriksen, M., Eriksson, C., Estrades, A., Gilardi, K.V.K., Hardesty, B.D., Ivar do Sul, J.A., Lavers, J.L., Lazar, B., Lebreton, C.M., Nichols, W.J., Ribic, C.A., Ryan, P.G., Schuyler, Q.A., Smith, S.D.A., Takada, H., Townsend, K.A., Wabnitz, C.C.C., Wilcox, C., Young, L.C. and Hamann, M. 2014. Global research priorities to mitigate plastic pollution impacts on marine wildlife. *Endangered Species Research*, 25: 225-247.

Voelker, G., Penalba, V., Huntley, W. and Bowie, R.C.K. 2014. Diversification in an Afro-Asian songbird clade (*Erythropgia-Copsychus*) reveals founder-event speciation via trans-oceanic dispersals and a southern to northern colonization pattern in Africa. *Molecular Phylogenetics and Evolution*, 73: 97-105.

Vogel, M., Henley, D., Rode, C., van de Vyver, D., Carstens, K., Simmons, G. and De Boer, W.F. 2014. Elephant (*Loxodonta africana*) impact on trees used by nesting vultures and raptors in South Africa. *African Journal of Ecology*, 52: 458-465.

Ward, D., Hoffman, M.T. and Collocott, S.J. 2014. A century of woody plant encroachment in the dry Kimberley savanna of South Africa. *African Journal of Range and Forage Science*, 31(2): 107-121.

Watanabe, J., Hattori, M., Berriman, M., Lehane, M.J., Gade, G., Marco, H. and Mulder, N.J. 2014. Genome sequence of the TsetseFly (*Glossina morsitans*): vector of African Trypanosomiasis. *Science*, 344: 380-386.

Weller, F., Cecchini, L., Shannon, L., Sherley, R., Crawford, R., Altwegg, R., Scott, L.D., Stewart, T.J. and Jarre, A.C. 2014. A system dynamics approach to modelling multiple drivers of the African penguin population on Robben Island, South Africa. *Ecological Modelling*, 277: 38-56.

Welsford, M.R., Midgley, J.J. and Johnson, S.D. 2014. Experimental evaluation of insect pollination versus wind pollination in leucadendron (proteaceae). *International Journal of Plant Sciences*, 175(3): 296-306.

West, A.G., February, E.C. and Bowen, G.J. 2014. Spatial analysis of hydrogen and oxygen stable isotopes ("isoscapes") in ground water and tap water across South Africa. *Journal of Geochemical Exploration*, 145: 213-222.

Whitehead, O.T. 2014. Pseudostalked barnacles *Xenobalanus globicipitis* attached to killer whales *Orcinus orca* in South African waters. *Marine Biodiversity*, 1: 1-4.

Wigley, B.J.W., Fritz, H., Coetzee, C. and Bond, W.J. 2014. Herbivores shape woody plant communities in the Kruger National Park: lessons from three long-term exclosures. *Koedoe: Research Journal of the South African National Parks*, 56(1): 1165(12pp).

Winker, H., Kerwath, S.E. and Attwood, C.G. 2014. Proof of concept for a novel procedure to standardize multispecies catch and effort data. *Fisheries Research*, 155: 149-159.

Wittmann, K.J. and Griffiths, C.L. 2014. Description of the stargazer mysid *Mysidopsis zsilaveczi* sp. nov. (Mysida, Mysidae, Leptomysinae) from the Cape Peninsula, South Africa. *Crustaceana*, 87(11-12): 1411-1429.

Yadok, B.G., Barshep, Y. and Cresswell, W. 2014. The importance of anthropogenic effects in habitat use and territory size of Northern Anteater-chats *Myrmecocichla aethiops* near Amurum Forest Reserve, Jos-Plateau, Nigeria. *Ostrich*, 85(2): 147-151.

Yemane, D., Kirkman, S.P., Kathena, J., N'siangango, S.E., Axelsen, B. and Samaai, T. 2014. Assessing changes in the distribution and range size of demersal fish populations in the Benguela current large Marine Ecosystem. *Reviews in Fish Biology and Fisheries*, 24: 463-483.

Zeeman, S., Branch, G.M., Pillay, D. and Jarre, A.C. 2014. An experimental test of the effect of the abalone *Haliotis midae* on benthic community composition. *Marine Biology*, 161: 329-337.

Peer-reviewed published conference proceedings

Ramaboa, K. and Underhill, L.G. 2014. A measure to identify regression outliers. In H. Ibrahim, J. Zulkapli, N. Aziz, N. Ahmad and S.A. Rahman (eds), *Proceedings of International Conference on Quantitative Sciences and its Applications (ICOQSA 2014): Proceedings of the 3rd International Conference on Quantitative Sciences and its Applications, 12-14 August 2014, Langkawi, Kedah. Malaysia: American Institute of Physics. ISBN 9780735412743.*

DEPARTMENT OF CHEMISTRY

(Including the Centre for Supramolecular Chemistry Research, the MRC/UCT Drug Discovery & Development Research Centre and the Scientific Computing Research Unit)

Head of Department: Professor Susan A Bourne

Departmental Profile

The research activities of the department reflect the wide range and scope of the traditional sub-disciplines of inorganic, organic and physical chemistry, sustained by analytical, spectroscopic and computational methodology. The Department has active research groups with strengths in Catalysis, Bioinorganic, Biophysical and Bioanalytical Chemistry, Synthetic Chemistry, Medicinal Chemistry, Supramolecular Chemistry, Scientific Computing and Chemical Glycobiology. Programmes are devoted to fundamental and applied chemical research, and to interdisciplinary studies in which chemistry plays a key role. Synthetic studies are carried out in organic, organometallic and co-ordination chemistry, in order to develop and apply new methodology, and to prepare biologically active compounds, novel catalysts and components of new materials. These studies also provide tools for analytical and separation science, and models for advanced structural and conformational studies. Molecular structure determination with the aid of spectroscopic and X-ray diffraction techniques are two areas of specialisation in the Department. Computational chemistry is a leading area of specialization supported by several state of the art clusters. Computer code development and modelling applications of biological and industrial problems play a key role in many of the Department's research programmes. There is also an active research thrust in the area of chemistry education, with a particular focus on student learning in tertiary level chemistry courses.

The Department of Chemistry is home to three UCT-accredited research units:

The *Centre for Supramolecular Chemistry Research, CSCR* (Dir. Prof. Mino Caira) studies the physical chemistry of supramolecular systems. Research projects include the synthesis and characterization of metal organic frameworks (MOFs) and large metal-containing supramolecular assemblies with the potential for guest uptake (gas storage, molecular sensing), the study of selectivity in organic host-guest systems, and the beneficiation of pharmaceutically relevant materials through the investigation of their polymorphs, solvates, cyclodextrin inclusion complexes and cocrystals. Solid

phases are studied using powder and single crystal X-ray diffraction, thermal analysis (including TGA and DSC) and spectroscopy (FTIR and solid-state NMR techniques). The thermodynamics of inclusion and complexation processes in solution are investigated by high-resolution NMR spectroscopy and isothermal titration calorimetry.

H3-D Drug Discovery and Development Centre (Dir. Prof. Kelly Chibale) aims to bridge the gap between basic and clinical studies, training a new generation of African scientists with key skills required for drug discovery and development – integrating medicinal chemistry, biology, pharmacology as well as drug metabolism and pharmacokinetics (DMPK) studies as reflected in the processes of Absorption, Distribution, Metabolism and Excretion (ADME). H3-D also focuses on beneficiation of clinically used drugs, including generic medicines. Drug beneficiation, amongst other things, involves selection of the optimum form of a solid drug candidate for pharmaceutical development and (re)formulation.

The *Scientific Computing Research Unit, SCR* (Dir. Prof. Kevin J. Naidoo) develops state-of-the-art high performance computing (HPC) software as well as providing a modelling and informatics platform for applications in chemistry and chemical biology. SCR's research activities include the development of software acceleration for life science applications. This aspect of the unit's research is supported by hardware giant Nvidia Corporation. SCR's specialised HPC facility houses South Africa's most sophisticated scientific compute servers and GPU clusters designed for chemical and chemical biology applications. The specific objectives of the unit are to trace gene-to-glycan biochemical schemes important in glycobiology as well as model enzyme catalysed chemical reactions and ionic liquids.

The research enterprise of the Department of Chemistry is significantly enhanced by the appointment of two of its permanent staff members to DST/NRF South African National Research Chairs – Professor Kevin Naidoo in *Scientific Computing* and Professor Kelly Chibale in *Drug Discovery*. These highly prestigious appointments have raised the Department's international research profile significantly and contribute substantially to its research outputs.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	7
Associate Professors	5
Senior Lecturers	2
Lecturers	4
Senior Scholars	2

Research Officers	8
Scientific Officers	7
Technical Officers	12
Research Staff	3
Support Staff	10
Administrative and Clerical Staff	8
Total	68

Emeritus Staff

Emeritus Professors	3
Total	3

Students and Postdoctoral Fellows

Postdoctoral Fellows	20
Doctoral	54
Master's	23
Honours	18
Undergraduates	1391
Total	1506

Research Fields and Staff

Permanent and long-term Contract Staff

PROFESSOR SUSAN A. BOURNE

Crystal engineering; solid-state chemistry; crystallography; thermal analysis.

PROFESSOR MINO R. CAIRA

Solid state chemistry; polymorphism; solvatomorphism; drug-cyclodextrin inclusion; co-crystallization; enantiomeric separation.

PROFESSOR KELLY CHIBALE

Drug discovery; medicinal chemistry.

ASSOCIATE PROFESSOR BETTE DAVIDOWITZ

Chemical education; curriculum design; writing and communication within the discipline.

PROFESSOR TIMOTHY J. EGAN

Bioinorganic chemistry of the malaria parasite.

ASSOCIATE PROFESSOR DAVID W. GAMMON

Natural products chemistry; phytochemical studies on medicinal plants; carbohydrates; heterogeneous catalysis of organic reactions.

PROFESSOR ROGER HUNTER

Synthesis; indole alkaloids; calixarenes; p-block synthetic methodology.

ASSOCIATE PROFESSOR ALAN T. HUTTON

Organometallic chemistry; co-ordination chemistry; electrochemistry; chemical nomenclature.

PROFESSOR GRAHAM E. JACKSON

Nuclear magnetic resonance; computer modelling; metal-ion equilibria; design of metal containing drugs; copper and rheumatoid arthritis.

DR ANWAR JARDINE

Senior Lecturer: medicinal chemistry; chemical biology; enzymology; natural product and organic synthesis; drug design and development; green chemistry.

DR CATHERINE H. KASCHULA

Lecturer: medicinal, synthetic and biological chemistry. Developing the potential of natural products in cancer prevention and treatment.

PROFESSOR KEVIN J. NAIDOO

Scientific Computing – free energy calculations – reaction dynamics; code acceleration and general purpose graphical processing units; computational glycomics; cancer genomics and chemical glycobiology.

DR CLIVE OLIVER

Lecturer: Mixed-ligand metal-organic frameworks; large supramolecular assemblies; crystallography; thermal analysis; gas and liquid sorption.

ASSOCIATE PROFESSOR NEIL RAVENSCROFT

Physicochemical analysis of biologicals; carbohydrates; glycoconjugate and protein vaccines.

ASSOCIATE PROFESSOR GREGORY S. SMITH

Organometallic synthesis; catalysis; bio-organometallic chemistry; polynuclear transition metal complexes; metal-containing polymers and dendrimers.

DR SUTHANANDA N. SUNASSEE

Lecturer: Organic chemistry, plant/marine/microbial natural products chemistry.

DR GERHARD A. VENTER

Lecturer: computational chemistry; intermolecular interactions; ionic liquids.

DR SARAH WILSON

Senior Lecturer.

Senior Scholar

EMERITUS PROFESSOR LUIGI R. NASSIMBENI

Physical chemistry; thermal analysis; kinetics; inclusion compounds.

EMERITUS PROFESSOR ALLEN L. RODGERS

Kidney stones; urine chemistry; calcium oxalate crystallization.

Research Associates

DR GAËLLE RAMON

Supramolecular chemistry, inclusion compounds, metal organic frameworks, crystal engineering

Emeritus Professors

EMERITUS PROFESSOR JAMES R. BULL

Organic synthesis; steroidal hormones; 19-norsteroids; estrogens; bioactive steroids; predictive design; cycloaddition.

EMERITUS PROFESSOR PETER W. LINDER

Solution equilibria of cyclodextrin inclusion complexes.

EMERITUS PROFESSOR ALISTAIR M. STEPHEN

Carbohydrate chemistry.

Research Officers

DR CHRISTOPHER BARNETT

Research Officer: Scientific Computing; Glycoinformatics; data analytics and visualisation; cancer.

DR RICHARD KLAUS GESSNER

Research Officer: Hit to lead medicinal chemistry progression of antimycobacterial hits.

DR SANDEEP GHORPADE

Chief Research Officer: Medicinal chemistry; tuberculosis.

DR RUDOLF MULLER

Chief Research Officer: Medicinal chemistry; tuberculosis.

DR TANYA PAQUET

Research Officer: Synthetic organic chemistry; medicinal chemistry; malaria; drug design and development; hit-to-lead and lead optimisation.

DR LESLIE STREET

Principal Research Officer: Medicinal chemistry; malaria and tuberculosis.

DR RENIER VAN DER WESTHUYZEN

Research Officer: Parallel synthesis; medicinal chemistry; discovery of new drugs for treatment of infections by mycobacterium tuberculosis.

DR SUSAN WINKS

Research Officer: Synthesis; medicinal chemistry; tuberculosis; drug discovery and development.

NRF RCA Fellows

DR DYANNE CRUICKSHANK

Supramolecular chemistry; X-ray diffraction; material science; hosting systems; enhancing molecular functionality; photochromism.

DR BANOTHILE MAKHUBELA

Development of water-soluble metallodendrimers for biphasic catalysis and as novel bioorganometallic drugs.

Postdoctoral Fellows

DR JAHANSHAH ASHKANI

Glycan structures from gene expression data, based on glycosyltransferase reactions in breast cancer.

DR EUSTINA BATISAI

Synergistic effects in host-guest selectivity

DR CHRISTEL BRUNSCHWIG

Reactive Metabolites and Drug Drug interactions.

DR WERNER CROUS

Development of link atoms for polar bonds.

DR MOGAMAT RIEDAA GAMIELDIEN

Protein 3D Structure.

DR PUMEZA GOGWANA

Development of copper peptide complexes as anti-inflammatory drugs.

DR DIEGO GONZALEZ-CABRERA

Hit to lead and lead optimization medicinal chemistry progression of antimalarial hits.

DR KRISHNA K GOVENDER

Improvement and application of hybrid quantum classical simulations to hypervalent molecular systems.

DR PRESHENDREN GOVENDER

The design and development of novel PGM dendritic multinuclear complexes for use in medicinal biotechnology.

DR LEIGH LOOTS

Supramolecular beneficiation of new drug candidates.

DR CLAIRE LE MANACH

Hit to lead and lead optimization medicinal chemistry progression of antimalarial hits.

DR NIGEL MAKOAH

Assay development with aspects of in vitro /in vivo drug metabolism & pharmacokinetics (DMPK).

DR YEVGENY MOSKOVITZ

Coarse grained force field development for glycan folding.

DR CHRISTIANE MUSWAMBA-NDAY

Neuroprotective effects of flavonoids nanoparticles against metal ion-induced oxidative stress in Alzheimer's disease.

DR ELUMALAI PAVADAI

Discovery of anti-infective drugs through pharmacophore-based approaches.

DR MARIVEL SAMIPILLAI

Inclusion of picolines by bis-(3,3'-bis-(9-hydroxy-9-fluorenyl)-2,2'-binaphthyl): selectivity and structure.

DR KAWALJIT SIGH

Towards the synthesis of reversed anti-tuberculosis agents and hybrid bacterial efflux pump inhibitors.

DR CANDICE SOARES DE MELO

Hit to lead medicinal chemistry progression of antimycobacterial hits.

DR TAMERYN STRINGER

Development of novel bioorganometallic antimarials.

DR COLIN WILSON

Medicinal chemistry of new antituberculosis agents.

Contact details

Tel: +27 21 650 2446

Fax: +27 21 650 5195

Email: shanaaz.manie@uct.ac.za

web: www.uct.ac.za/depts/cem

RESEARCH OUTPUT

Chapters in books

Chigorimbo-Murefu, N., Mugumbate, G.C. and Chibale, K. 2014. Enabling technologies to facilitate natural product-based drug discovery from African Biodiversity. In A. Gurib-Fakim (ed), *Novel Plant Bioresources: Applications in Food, Medicine & Cosmetics*, pp. 57-68. Chichester: John Wiley & Sons Ltd, Chichester, England. ISBN 9781118460610.

Furrer, J., Smith, G.S. and Therrien, B. 2014. Metal complexes as enzyme inhibitors and catalysts in living cells. In G. Gasser (ed), *Inorganic Chemical Biology*, pp. 341-371. Singapore: John Wiley & Sons. ISBN 9781118510025.

Jardine, M.A. and Sayed, S. 2014. Chitosan as an advanced healthcare material. In A. Tiwari and A.N. Nordin (eds), *Advanced Biomaterials and Biodevices*, pp. 147-182. USA: John Wiley & Sons Inc, Hoboken, USA, NJ. ISBN 9781118773635.

Articles in peer-reviewed journals

Abay, E.T., van der Westhuizen, J.H., Swart, K.J., Gibhard, L., Tukulula, M., Chibale, K. and Wiesner, J. 2014. The development and validation of an LC-MS/MS method for the determination of a new anti-malarial compound (TK900D) in human whole blood and its application to pharmacokinetic studies in mice. *Malaria Journal*, 13: 42 (13pp).

Andayi, A.W., Egan, T.J. and Chibale, K. 2014. Kojic acid derived hydroxypyridinone-chloroquine hybrids: synthesis, crystal structure, antiplasmodial activity and β -haematin inhibition. *Bioorganic & Medicinal Chemistry Letters*, 24: 3263-3267.

Barton, B., Caira, M.R., Hosten, E.C., McClelland, C.W. and Weitz, S. 2014. Clathrates of TETROL: selective inclusion of methylcyclohexanones in their energetically unfavorable axial methyl conformations. *Chemical Communications*, 50: 13353-13355.

Burger, D.-., Reudelhuber, T.L.-., Mahajan, A., Chibale, K., Sturrock, E.D. and Touyz, R.M.- 2014. Effects of a domain-selective ACE inhibitor in a mouse model of chronic angiotensin II-dependent hypertension. *Clinical Science*, 127: 57-63.

Cabrera, D.G., Le Manach, C., Douelle, F., Younis, Y., Feng, T.-S., Paquet, T., Nchinda, A.T., Street, L.J., Taylor, D., De Kock, C., Wiesner, L., Duffy, S., White, K.L., Zabiulla, K.M., Sambandan, Y., Bashyam, S., Waterson, D., Witty, M.J., Charman, S.A., Avery, V.M., Wittlin, S. and Chibale, K. 2014. 2,4-Diaminothienopyrimidines as orally active antimalarial agents. *Journal of Medicinal Chemistry*, 57: 1014-1022.

Caira, M.R., Popa, M.M., Draghici, C., Barbu, L., Dumitrescu, D. and Dumitrascu, F. 2014. 7,8,9,10-Tetrahydropyrrolo[2,1-]isoquinolines in the search for new indolizine derivatives. *Tetrahedron Letters*, 55: 5635-5638.

Chellan, P., Land, K.M., Shokar, A., Au, A., An, S.H., Taylor, D., Smith, P.J., Riedel, T., Dyson, P.J., Chibale, K. and Smith, G.S. 2014. Synthesis and evaluation of new polynuclear organometallic Ru(II), Rh(III) and Ir(III) pyridyl ester complexes as *in vitro* antiparasitic and antitumor agents. *Dalton Transactions*, 43: 513-526.

Cheuka, P.M., Cabrera, D.G., Paquet, T. and Chibale, K. 2014. Structure-activity relationship studies of antiplasmodial aminomethylthiazoles. *Bioorganic & Medicinal Chemistry Letters*, 24: 5207-5211.

Crous, W., Field, M.J. and Naidoo, K.J. 2014. Simple link atom saccharide hybrid (SLASH) treatment for glycosidic bonds at the QM/MM boundary. *Journal of Chemical Theory and Computation*, 10: 1727-1738.

Cruickshank, D.L., Younis, Y., Njuguna, N.M., Ongarora, D.S.B., Chibale, K. and Caira, M.R. 2014. Alternative solid-state forms of a potent antimalarial aminopyridine:

- x-ray crystallographic, thermal and solubility aspects. *CrystEngComm*, 16(26): 5781-5792.
- Denti, P., Sharp, S.-K., Kröger, W.L., Schwager, S.L., Mahajan, A., Njoroge, M., Gibhard, L., Smit, I., Chibale, K., Wiesner, J.L., Sturrock, E.D. and Davies, N.H. 2014. Pharmacokinetic evaluation of lisinopril-tryptophan, a novel C-domain ACE inhibitor. *European Journal of Pharmaceutical Sciences*, 56: 113-119.
- Douglas, R.G., Sharma, R.K., Masuyer, G., Lubbe, L., Zamora, I., Acharya, K.R., Chibale, K. and Sturrock, E.D. 2014. Fragment-based design for the development of N-domain-selective angiotensin-1-converting enzyme inhibitors. *Clinical Science*, 126: 305-313.
- Govender, K., Gao, J. and Naidoo, K.J. 2014. AM1/d-CB1: a semiempirical model for QM/MM simulations of chemical glycobiochemistry systems. *Journal of Chemical Theory and Computation*, 10: 4694-4707.
- Govender, K.K. and Naidoo, K.J. 2014. Evaluating AM1/d-CB1 for chemical glycobiochemistry QM/MM simulations. *Journal of Chemical Theory and Computation*, 10: 4708-4717.
- Govender, P., Edafe, F., Makhubela, B.C.E., Dyson, P.J., Therrien, B. and Smith, G.S. 2014. Neutral and cationic osmium(II)-arene metallodendrimers: synthesis, characterisation and anticancer activity. *Inorganica Chimica Acta*, 409: 112-120.
- Govender, P., Lemmerhirt, H., Hutton, A.T., Therrien, B., Bednarski, P.J. and Smith, G.S. 2014. First- and second-generation heterometallic dendrimers containing ferrocenyl-ruthenium(II)-arene motifs: synthesis, structure, electrochemistry, and preliminary cell proliferation studies. *Organometallics*, 33: 5535-5545.
- Grases, F., Saez-Torres, C., Rodriguez, A., Costa-Bauza, A., Rodrigo, D., Frontera, G., Berga, F. and Fakier, S. 2014. Urinary phytate (myo-inositol hexaphosphate) in healthy school children and risk of nephrolithiasis. *Journal of Renal Nutrition*, 24(4): 219-223.
- Hendricks, U., Crous, W. and Naidoo, K.J. 2014. Computational rationale for the selective inhibition of the herpes simplex virus type 1 uracil-DNA glycosylase enzyme. *Journal of Chemical Information and Modeling*, 54: 3362-3372.
- Husain, A. and Oliver, C.L. 2014. A C-shaped *p*-sulfonatocalix[4]arene-based supermolecule exhibiting mutual-inclusion and bilayer insertion of dipicolinate. *CrystEngComm*, 16: 3749-3757.
- Jackson, G.E., Gamielien, R., Mugumbate, G.C. and Gäde, G. 2014. Structural studies of adipokinetic hormones in water and DPC micelle solution using NMR distance restrained molecular dynamics. *Peptides*, 53: 270-277.
- Joubert, J., Samsodien, H., Baber, Q.R., Cruickshank, D., Caira, M.R. and Malan, S.F. 2014. Synthesis and structural analysis of novel neuroprotective pentacyclo[5.4.1.0^{2,6}.0^{3,10}.0^{5,9}] undecane- and adamantane-derived propargylamines. *Journal of Chemical Crystallography*, 44: 194-204.
- Karmakar, A., Oliver, C.L., Platero-Prats, A.E., Laurila, E. and Öhrström, L. 2014. Crystal structures and hydrogen bond analysis of five amino acid conjugates of terephthalic and benzene-1,2,3-tricarboxylic acids. *CrystEngComm*, 16: 8243-8251.
- Kigundu, E.M., Njoroge, M., Singh, K., Njuguna, N., Warner, D.F. and Chibale, K. 2014. Synthesis and synergistic antimycobacterial screening of chlorpromazine and its metabolites. *MedChemComm*, 5: 502-506.
- Kigundu, E.M., Wasuna, A., Warner, D.F. and Chibale, K. 2014. Pharmacologically active metabolites, combination screening and target identification-driven drug repositioning in antituberculosis drug discovery. *Bioorganic & Medicinal Chemistry*, 22: 4453-4461.
- Kinfe, H.H., Moshapo, P.T., Makolo, F.L., Gammon, D.W., Ehlers, M. and Schmuck, C. 2014. Preparation and antimalarial activity of a novel class of carbohydrate-derived, fused thiochromans. *European Journal of Medicinal Chemistry*, 87: 197-202.
- Kuter, D., Benjamin, S.J. and Egan, T.J. 2014. Multiple spectroscopic and magnetic techniques show that chloroquine induces formation of the μ -oxo dimer of ferriprotoporphyrin IX. *Journal of Inorganic Biochemistry*, 133: 40-49.
- Kuter, D., Streltsov, V., Davydova, N., Venter, G.A., Naidoo, K.J. and Egan, T.J. 2014. Molecular structures and solvation of free monomeric and dimeric ferriheme in aqueous solution: insights from molecular dynamics simulations and extended x-ray absorption fine structure spectroscopy. *Inorganic Chemistry*, 53: 10811-10824.
- Kuttel, M., Gordon, M. and Ravenscroft, N. 2014. Comparative simulation of pneumococcal serogroup 19 polysaccharide repeating units with two carbohydrate force fields. *Carbohydrate Research*, 390: 20-27.
- Le Manach, C., Cabrera, D.G., Douelle, F., Nchinda, A.T., Younis, Y., Taylor, D., Wiesner, L., White, K.L., Ryan, E., March, C., Duffy, S., Avery, V.M., Waterson, D., Witty, M.J., Wittlin, S., Charman, S.A., Street, L.J. and Chibale, K. 2014. Medicinal chemistry optimization of antiplasmodial imidazopyridazine hits from high throughput screening of a SoftFocus kinase library: part 1. *Journal of Medicinal Chemistry*, 57: 2789-2798.
- Le Manach, C., Paquet, T., Cabrera, D.G., Younis, Y., Taylor, D., Wiesner, J., Lawrence, N., Schwager, S., Waterson, D., Witty, M.J., Wittlin, S., Street, L.J. and Chibale, K. 2014. Medicinal chemistry optimization of antiplasmodial imidazopyridazine hits from high throughput screening of a SoftFocus kinase library: part 2. *Journal of Medicinal Chemistry*, 57: 8839-8848.

- Li, Y., De Kock, C., Smith, P.J., Chibale, K. and Smith, G.S. 2014. Synthesis and evaluation of a carbosilane congener of ferroquine and its corresponding half-sandwich Ruthenium and Rhodium complexes for antiplasmodial and β -hematin inhibition activity. *Organometallics*, 33: 4345-4348.
- Lu, L., Chellan, P., Smith, G.S., Zhang, X., Yan, H. and Mao, J. 2014. Thiosemicarbazone salicylaldiminato palladium(II)-catalyzed alkynylation couplings between arylboronic acids and alkynes or alkynyl carboxylic acids. *Tetrahedron*, 70: 5980-5985.
- Mahajan, A., Hans, R., Chibale, K. and Kumar, V. 2014. Synthesis and medicinal chemistry of selected antitubercular natural products and natural product derivatives. *RSC Advances*, 4: 15180-15215.
- Mahamo, T., Moss, J.R., Mapolie, S.F., Smith, G.S., Slootweg, J.C. and Lammertsma, K. 2014. Platinacycloalkane complexes containing [P,N] bidentate ligands: synthesis and decomposition studies. *Dalton Transactions*, 43: 5546-5557.
- Makhubela, B.C.E., Meyer, M. and Smith, G.S. 2014. Evaluation of trimetallic Ru(II)- and Os(II)-arene complexes as potential anticancer agents. *Journal of Organometallic Chemistry*, 772-773: 229-241.
- Mehlana, G., Ramon, G. and Bourne, S.A. 2014. The role of C-H $\times \times \times \pi$ interactions in modulating the breathing amplitude of a 2D square lattice net: alcohol sorption studies. *CrystEngComm*, 16: 8160-8168.
- Micoli, F., Ravenscroft, N., Cescutti, P., Stefanetti, G., Londero, S., Rondini, S. and MacLennan, C.A. 2014. Structural analysis of O-polysaccharide chains extracted from different *Salmonella Typhimurium* strains. *Carbohydrate Research*, 385: 1-8.
- Mjambili, F., Njoroge, M., Naran, K., De Kock, C., Smith, P.J., Mizrahi, V., Warner, D. and Chibale, K. 2014. Synthesis and biological evaluation of 2-aminothiazole derivatives as antimycobacterial and antiplasmodial agents. *Bioorganic & Medicinal Chemistry Letters*, 24: 560-564.
- Msutu, A. and Hunter, R. 2014. Acetals: a new organocatalysis chemotype for one-pot enantioselective α -amination. *Tetrahedron Letters*, 55: 2295-2298.
- Nassimbeni, L.R., Su, H. and Patel, L.D. 2014. Enclathration by a xanthenol host: structures, kinetics of formation and guest exchange. *Journal of Chemical Crystallography*, 44: 190-193.
- Njoroge, M., Njuguna, N.M., Mutai, P., Ongarora, D.S.B., Smith, P.W. and Chibale, K. 2014. Recent approaches to chemical discovery and development against Malaria and the neglected tropical diseases human African Trypanosomiasis and Schistosomiasis. *Chemical Reviews*, 114: 11138-11163.
- Nkoana, W., Nyoni, D., Chellan, P., Stringer, T., Taylor, D., Smith, P.J., Hutton, A.T. and Smith, G.S. 2014. Heterometallic half-sandwich complexes containing a ferrocenyl motif: synthesis, molecular structure, electrochemistry and antiplasmodial evaluation. *Journal of Organometallic Chemistry*, 752: 67-75.
- Nokwequ, M.G., Nkambule, C.M. and Gammon, D.W. 2014. A serendipitous formation of a cysteine-bridged disaccharide. *South African Journal of Chemistry-Suid-Afrikaanse Tydskrif Vir Chemie*, 67: 180-183.
- Odisitse, S. and Jackson, G.E. 2014. Potentiometric and blood plasma simulation studies of nickel(II) complexes of poly(amino)amido pentadentate ligands: computer aided metal-based drug design. *Bioinorganic Chemistry and Applications*, 2014: 863612 (7pp).
- Perold, Z., Cairns, M.R. and Brits, M. 2014. The risk of recrystallization: changes to the toxicity and morphology of Pyrimethamine. *Journal of Pharmacy and Pharmaceutical Sciences*, 17(2): 190-206.
- Raj, R., Mehra, V., Gut, J., Rosenthal, P.J., Wicht, K.J., Egan, T.J., Hopper, M., Wrischnik, L.A., Land, K.M. and Kumar, V. 2014. Discovery of highly selective 7-chloroquinoline-thiohydantoin with potent antimalarial activity. *European Journal of Medicinal Chemistry*, 84: 425-432.
- Ramon, G., Davies, K. and Nassimbeni, L.R. 2014. Structures of benzoic acids with substituted pyridines and quinolines: salt *versus* co-crystal formation. *CrystEngComm*, 16: 5802-5810.
- Ray, G.J., Ravenscroft, N., Siekmann, J., Zhang, Z., Sanders, P., Shaligram, U., Szabo, C.M. and Kosma, P. 2014. Complete structural elucidation of an oxidized polysialic acid drug intermediate by nuclear magnetic resonance spectroscopy. *Bioconjugate Chemistry*, 25: 665-676.
- Rodgers, A.L. 2014. Urinary saturation: casual or causal risk factor in urolithiasis? *BJU International*, 114: 104-110.
- Rodgers, A.L., Allie-Hamdulay, S., Jackson, G.E. and Sutton, R.A.L. 2014. Enteric hyperoxaluria secondary to small bowel resection: use of computer simulation to characterize urinary risk factors for stone formation and assess potential treatment protocols. *Journal of Endourology*, 28(8): 985-994.
- Rodgers, A., Gauvin, D., Edeh, S., Allie-Hamdulay, S., Jackson, G. and Lieske, J.C. 2014. Sulfate but not Thiosulfate reduces calculated and measured urinary ionized calcium and supersaturation: implications for the treatment of calcium renal stones. *PLoS One*, 9(7): e103602(12pp). DOI: 10.1371/journal.pone.0103602.
- Rodgers, A.L., Webber, D., De Charmoy, R., Jackson, G.E. and Ravenscroft, N. 2014. Malic acid supplementation increases urinary citrate excretion and urinary pH: implications for the potential treatment of calcium oxalate stone disease. *Journal of Endourology*, 28(2): 229-236.

- Rodgers, A.L., Webber, D., Ramsout, R. and Gohel, M.D.I. 2014. Herbal preparations affect the kinetic factors of calcium oxalate crystallization in synthetic urine: implications for kidney stone therapy. *Urolithiasis*, 42: 221-225.
- Salie, S., Hsu, N.-J., Semenya, D., Jardine, A. and Jacobs, M. 2014. Novel non-neuroleptic phenothiazines inhibit *Mycobacterium tuberculosis* replication. *Journal of Antimicrobial Chemotherapy*, 69: 1551-1558.
- Samipillai, M., Nassimbeni, L.R. and Weber, E. 2014. Pyridine and morpholine inclusion by a binaphthyl host. *Journal of Chemical Crystallography*, 44: 293-300.
- Sandlin, R.D., Fong, K.Y., Wicht, K.J., Carrell, H.M., Egan, T.J. and Wright, D.W. 2014. Identification of β -hematin inhibitors in a high-throughput screening effort reveals scaffolds with *in vitro* antimalarial activity. *International Journal for Parasitology*, 4: 316-325.
- Schäfer, G. and Kaschula, C.H. 2014. The immunomodulation and anti-inflammatory effects of garlic organosulfur compounds in cancer chemoprevention. *Anti-Cancer Agents in Medicinal Chemistry*, 14: 233-240.
- Shaban, E., Wicht, K.J., Wang, N., Mei, Z.-W., Hayashi, I., El Gokha, A.A.A., Kaiser, M., El Sayed, I.E.T., Egan, T.J. and Inokuchi, T. 2014. Synthesis and antimalarial activity of some neocryptolepine analogues carrying a multifunctional linear and branched carbon-side chains. *Heterocycles*, 89(4): 1055-1064.
- Shirinkam, B., Tabatabaee, M., Kukovec, B.-M., Oliver, C.L. and Ghassemzadeh, M. 2014. Preparation, spectroscopic characterization, and crystal structure of a mixed-ligand silver(I) complex with 1,2,4-triazole-based Schiff base and triphenylphosphine. *Monatshefte für Chemie*, 145: 1753-1757.
- Singh, K., Kaur, G., Mjambili, F., Smith, P.J. and Chibale, K. 2014. Synthesis of metergoline analogues and their evaluation as antiplasmodial agents. *MedChemComm*, 5: 165-170.
- Singh, K., Kaur, H., Smith, P., De Kock, C., Chibale, K. and Balzarini, J. 2014. Quinoline-pyrimidine hybrids: synthesis, antiplasmodial activity, SAR, and mode of action studies. *Journal of Medicinal Chemistry*, 57: 435-448.
- Singh, K., Kumar, M., Pavadai, E., Naran, K., Warner, D.F., Ruminski, P.G. and Chibale, K. 2014. Synthesis of new verapamil analogues and their evaluation in combination with rifampicin against *Mycobacterium tuberculosis* and molecular docking studies in the binding site of efflux protein Rv1258c. *Bioorganic & Medicinal Chemistry Letters*, 24: 2985-2990.
- Stiebler, R., Majerowicz, D., Knudsen, J., Gondim, K.C., Wright, D.W., Egan, T.J. and Oliveira, M.F. 2014. Unsaturated glycerophospholipids mediate heme crystallization: biological implications for hemozoin formation in the kissing bug *Rhodnius prolixus*. *PLoS One*, 9(2): e88976(10pp). DOI: 10.1371/journal.pone.0088976.
- Sudding, L.C., Payne, R., Govender, P., Edafe, F., Clavel, C.M., Dyson, P.J., Therrien, B. and Smith, G.S. 2014. Evaluation of the *in vitro* anticancer activity of cyclometalated half-sandwich rhodium and iridium complexes coordinated to naphthalaldimine-based poly(propyleneimine) dendritic scaffolds. *Journal of Organometallic Chemistry*, 774: 79-85.
- Theka, T.T., Rodgers, A.L., Webber, D. and O’Ryan, C. 2014. Variability in Kidney stone incidence between black and white South Africans: AGT Pro11Leu Polymorphism is not a factor. *Journal of Endourology*, 28(5): 577-581.
- Thelingwani, R., Bonn, B., Chibale, K. and Masimirembwa, C.. 2014. Physicochemical and drug metabolism characterization of a series of 4-aminoquinoline-3-hydroxypyridin-4-one hybrid molecules with antimalarial activity. *Expert Opinion on Drug Metabolism & Toxicology*, 10(10): 1313-1324.
- Trollope, L., Cruickshank, D.L., Noonan, T., Bourne, S.A., Sorrenti, M., Catenacci, L. and Caira, M.R. 2014. Inclusion of *trans*-resveratrol in methylated cyclodextrins: synthesis and solid-state structures. *Beilstein Journal of Organic Chemistry*, 10: 3136-3151.
- Vandekerckhove, S., Desmet, T., Tran, H.G., De Kock, C., Smith, P.J., Chibale, K. and D’hooge, M. 2014. Synthesis of halogenated 4-quinolones and evaluation of their antiplasmodial activity. *Bioorganic & Medicinal Chemistry Letters*, 24: 1214-1217
- Wang, N., Wicht, K., Shaban, E., Ngoc, T.A., Wang, M.-Q., Hayashi, I., Hossain, M.I., Takemase, Y., Kaiser, M., El Tantawy El Sayed, I., Egan, T.J. and Inokuchi, T. 2014. Synthesis and evaluation of artesunate-indoloquinoline hybrids as antimalarial drug candidates. *MedChemComm*, 5: 927-931.
- Wang, N., Wicht, K., Imai, K., Wang, M.-Q., Ngoc, T.A., Kiguchi, R., Kaiser, M., Egan, T.J. and Inokuchi, T. 2014. Synthesis, β -haematin inhibition, and *in vitro* antimalarial testing of isocryptolepine analogues: SAR study of indolo[3,2-c]quinolines with various substituents at C2, C6 and N11. *Bioorganic & Medicinal Chemistry*, 22: 2629-2642.

DEPARTMENT OF COMPUTER SCIENCE

**Head of Department: Associate
Professor Sonia Berman**

Departmental Profile

The Department's main research themes are Information and Communication Technology for Development (ICT4D) and High Performance Computing (HPC). ICT4D is a multi-disciplinary field that looks at the design and creation of computer systems for the developing world. These systems could cover any sub-discipline of computing, such as the Internet of Things, virtual environments, security, interaction design, artificial intelligence and information retrieval. However they differ in that design constraints for the developing world are different: power is limited, networks scarce, users can be illiterate, etc. ICT4D deals with the creation of ICT solutions that address defined developmental and social challenges like education, medical care, identity and human dignity. High Performance Computing is an enabling technology that seeks to improve the performance of computing applications. For example, a molecular simulation might be reduced from years to months, or digital 3D content may be produced in real time rather than requiring minutes to generate. A major theme of this HPC research is improving the speed of discipline-specific computational solutions.

The Department has two research centres and several research laboratories. The Collaborative Visual Computing Laboratory works in five main areas: procedural modelling, geometric compression, graphical simulation, virtual environments and computer games. The Digital Libraries Laboratory covers information storage and retrieval, including multilingual retrieval and cultural heritage preservation. The High Performance Computing Laboratory applies GPU programming and high throughput computing to areas such as scientific computing, visualisation and information retrieval, particularly in the domains of cultural heritage, radio astronomy and computational chemistry. The Network and Information Security Laboratory on algorithms and systems for safe and secure information access.

ICT is an enabling technology, and thus highly cross-disciplinary. The UCT Centre in ICT for Development seeks to design, create and evaluate technologies that address the needs of the developing world, and to study the impacts of existing technology. This centre also includes staff from diverse UCT departments, such as Civil Engineering and Film and Media. It is closely associated with the Hasso-Plattner Research School in ICT for Development, through which the Hasso-

Plattner Institute (Germany) funds African PhD students working in ICT for Development. The Samsung Mobile Innovation Lab is a joint Information Systems – Computer Science unit. The Telkom-Siemens Centre of Excellence in Broadband Networks and their Applications includes UCT's Communications Research Group in Electrical Engineering and the Departments of Computer Science at UCT and at Stellenbosch University.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	1
Associate Professors	5
Senior Lecturers	4
Scientific and Technical Staff	3
Administrative and Support Staff	4
Total	17

Adjunct and Honorary staff

Adjunct Professors	1
Honorary Professors	2
Total	3

Students and Postdoctoral Fellows

Postdoctoral Fellows	2
Doctoral	32
Master's	87
Honours	38
Undergraduate	1088
Total	1247

Research Fields and Staff

Permanent Staff

ASSOCIATE PROFESSOR SONIA BERMAN

Head of Department; Data management

PROFESSOR EDWIN BLAKE

ICT for Development; Human-Computer Interaction; User Experience in Games and Virtual Environments

DR MELISSA DENSMORE

ICTD, HCI, Health Informatics, Mobile Health

DR ANNE KAYEM

Information Security

DR MARIA KEET

Logic-based Knowledge Representation, Ontology Development, Biological Data Characteristics and Granularity

ASSOCIATE PROFESSOR MICHELLE KUTTEL

Computational Science; Parallel Processing; Scientific Visualisation and Design

ASSOCIATE PROFESSOR PATRICK MARAIS

Computer Graphics; Image Processing, GPU Computing

DR AUDREY MBOGHO

Human Language Technologies; e-Health; Intelligent Systems and User Interfaces

DR GEOFF NITSCHKE

Artificial Intelligence; Co-evolution; Robotics

ASSOCIATE PROFESSOR HUSSEIN SULEMAN

Digital Libraries; Information Retrieval; Internet technology; High Performance Computing; Computer Science Education

Scientific and Technical Officers

MR STEPHAN JAMIESON

Senior Scientific Officer

MR CRAIG BALFOUR

Computer Systems Administrator

MR SAMUEL CHETTY

Computer Systems Administrator

Administrative and Support Staff

MRS SALEGGA VALLEY

Administrative Officer

MRS EVE GILL

Administrative Assistant

MRS THELMA JENNEKER

Senior Secretary

MS BERNIE SAM

Departmental Assistant

Postdoctoral Fellows

DR SIMON PERKINS

High Performance Computing for Radio Astronomy

DR HENDRANUS VERMEULEN

Serious Games and Gamification

Adjunct and Honorary Professors

HONORARY PROFESSOR JUDITH BISHOP

Software Engineering; Programming Languages; Distributed Systems

HONORARY PROFESSOR MATT JONES

Human-Computer Interaction, Information Retrieval, World Wide Web

ADJUNCT PROFESSOR ANDREW HUTCHISON

Information Security

Contact Details

Postal address: Department of Computer Science, University of Cape Town, Private Bag X3, Rondebosch, 7701

Telephone: SA (21) 650 2663

Fax: SA (21) 650 3551

Email: dept@cs.uct.ac.za

Web: www.cs.uct.ac.za/

RESEARCH OUTPUT

Chapters in books

Nitschke, G. and Goss, R. 2014. Automating network protocol identification. In B. Issac, N. Israr (ed), *Case Studies in Intelligent Computing: Achievements and Trends*, pp. 109-125. New York: Auerbach Publications. ISBN 9781482207033.

Rivett, U.K., Marsden, G. and Blake, E.H. 2014. ICT for development – extending computing design concepts. In B. Cooper and R. Morrell (eds), *Africa-Centred Knowledges: Crossing Fields and Worlds*, pp. 126-141 Woodbridge, Surrey, UK: James Currey Publishers. ISBN 9781847010957.

Articles in peer-reviewed journals

Blake, E.H., Glaser, M. and Freudenthal, A. 2014. Teaching design for development in computer science. *Interactions*, 21(2): 6pp.

Blake, E.H., Tucker, W. and Glaser, M. 2014. Towards communication and information access for deaf people. *South African Computer Journal*, 54: 10-19.

Gain, J.E., Marais, P.C. and Kenwood, J. 2014. Efficient procedural generation of forests. *Journal of WSCG*, 22(1): 8pp.

Gain, J.E., Marais, P.C. and Neeser, R. 2014. City sketching. *Journal of WSCG*, 22(1): 10pp.

Joseph, J., Warton, C.M.R., Jacobson, S.W., Jacobson, J.L., Molteno, C.D., Eicher, A., Marais, P.C., Phillips, O.R., Narr,

K.L. and Meintjes, E.M. 2014. Three-dimensional surface deformation-based shape analysis of hippocampus and caudate nucleus in children with fetal alcohol spectrum disorders. *Human Brain Mapping*, 35: 659-672.

Keet, M. 2014. Preventing, detecting, and revising flaws in object property expressions. *Journal on Data Semantics*, 3(3): 189-206.

Keet, M. and Barbour, G. 2014. Limitations of regular terminology development practices: the case of the isiZulu computing terminology. *Alternation: International Journal for the Study of Southern African Literature and Languages*, 12: 13-48.

Kuttel, M., Gordon, M. and Ravenscroft, N. 2014. Comparative simulation of pneumococcal serogroup 19 polysaccharide repeating units with two carbohydrate force fields. *Carbohydrate Research*, 390: 20-27.

Merry, B., Gain, J.E. and Marais, P.C. 2014. Moving least-squares reconstruction of large models with GPUs. *IEEE Transactions on Visualization and Computer Graphics*, 20(2): 249-261.

Perkins, S., Questiaux, J., Finniss, S., Tyler, R., Blyth, S.L. and Kuttel, M. 2014. Scalable desktop visualisation of very large radio astronomy data cubes. *New Astronomy*, 30: 1-7.

Suleman, H. and Munyaradzi, N. 2014. A system for high quality crowdsourced indigenous language transcription. *International Journal on Digital Libraries*, 14: 117-125.

Yinka-Banjo, C., Osunmakinde, I. and Bagula, A. 2014. Cooperative behaviours with swarm intelligence in multirobot systems for safety inspections in underground terrains. *Mathematical Problems in Engineering*, 2014: 678210(20pp). DOI: 10.1155/2014/678210.

Peer-reviewed published conference proceedings

Agwang, F., Nitschke, G. and van Heerden, W. 2014. Lifetimes of migration behavior. *Proceedings of the Genetic and Evolutionary Computation Conference*, July 12-16, Vancouver, Canada. New York: ACM. ISBN 18003426626.

Bidwell, N., Robinson, S., Vartiainen, E., Jones, M., Masbulele, J.S.M., Reitmaier, T., Marsden, G. and Lalmas, M. 2014. Designing social media for community information sharing in rural South Africa. *Proceedings of SAICSIT 2014*, 28 September to 1 October 2014, Centurion, Gauteng, South Africa. South Africa: ACM. ISBN 9781450332460.

Blake, E.H. 2014. Mobile aid for deaf people learning computer literacy skills. *Proceedings of SATNAC 2014*, 1-3 September 2014, Port Elizabeth, South Africa. South Africa: EE Publishers (Pty) Ltd. ISBN 9783642357633.

Blake, E.H., Peters, A.N., Bidwell, N., Winschiers-Theophilus, H., Aworia, A., Kumar, A. and Chivuno-Kuria, S. 2014. Collaborating with communities in Africa: a hitchhikers guide. *Proceedings of CHI'14 Extended Abstracts on Human factors in Computing Systems*, 26 April – 1 May 2014, Toronto, Canada. Canada: ACM. ISBN 9781450324748.

Chavula, C. and Keet, M. 2014. Is lemon sufficient for building multilingual ontologies for Bantu languages? In C.M. Keet and V. Tamma (eds), *Proceedings of the 11th International Workshop on OWL: Experiences and Directions (OWLED 2014)*, 17-18 October 2014, Riva del Garda, Italy. Italy: CEUR. ISBN 16130073.

Fillottrani, P.R. and Keet, M. 2014. Conceptual model interoperability: a metamodel-driven approach. In A. Bikakis, P. Fodor and D. Roman (eds), *Proceedings of the 8th International Symposium, RuleML 2014: Rules on the Web, from Theory to Applications*, 18-20 August 2014, Prague, Czech Republic. Switzerland: Springer International Switzerland. ISBN 9783319098692.

Haji, H.A., Suleman, H. and Rivett, U.K. 2014. Mobile graphic-based communication: Investigating reminder notifications to support tuberculosis treatment in Africa. In Y. Zhang, G. Yao, J. He, L. Wang, N.R. Smalheiser and X. Yin (eds), *Health Information Science. Proceedings of the Third International Conference, HIS 2014*, 22-23 April 2014, Shenzhen, China. Switzerland: Springer International Publishing Switzerland. ISBN 9783319062686.

Keet, M. 2014. A core ontology of macroscopic stuff. In K. Janowicz, S. Schlobach, P. Lambrix and E. Hyvönen (eds), *Proceedings of Knowledge Engineering and Knowledge Management: 19th International Conference, EKAW 2014*, 24-28 November 2014, Linköping, Sweden. Switzerland: Springer International Switzerland. ISBN 9783319137032.

Keet, M. and Khumalo, L. 2014. Basics for a grammar engine to verbalize logical theories in isiZulu. In A. Bikakis, P. Fodor and D. Roman (eds), *Proceedings of the 8th International Symposium, RuleML 2014: Rules on the Web, from Theory to Applications*, 18-20 August 2014, Prague, Czech Republic. Switzerland: Springer International Switzerland. ISBN 9783319098692.

Keet, M., d'Amato, C., Khan, Z. and Lawryniewicz, A. 2014. Exploring reasoning with the DMOP ontology. In S. Bail, B. Glimm, E. Jimenez-Ruiz, N. Matentzoglou, B. Parsia and A. Steigmiller (eds), *Proceedings of the 3rd International Workshop on OWL Reasoner Evaluation (ORE 2014)*, 13 July, Vienna, Austria. Austria: Ruzica Piskac. ISSN 1613-0073.

Keet, M. and Khumalo, L. 2014. Toward verbalizing ontologies in isiZulu. In B. Davis, K. Kaljurand and T. Kuhn (eds), *Proceedings of the Controlled Natural Language, 4th International Workshop (CNL 2014)*, 20-22 August 2014, Galway, Ireland. Switzerland: Springer International Switzerland. ISBN 9783319102221.

- Khan, Z. and Mashiane, T. 2014. An analysis of Facebook's graph search. In H.S. Venter, M. Coetzee, M. Looock and M.M. Eloff (eds), Proceedings of the 2014 Information Security for South Africa (ISSA 2014) Conference, 13-14 August 2014, Johannesburg, South Africa. Danvers: IEEE. ISBN 9781479933839.
- Khan, Z. and Keet, M. 2014. Feasibility of automated foundational ontology interchangeability. In K. Janowicz, S. Schlobach, P. Lambrix and E. Hyvnen (eds), Proceedings of Knowledge Engineering and Knowledge Management: 19th International Conference, EKAW 2014, 24-28 November 2014, Linkoping, Sweden. Switzerland: Springer International Switzerland. ISBN 9783319137032.
- Kumaran, A., Densmore, M. and Kumar, S. 2014. Online gaming for crowd-sourcing phrase-equivalents. Proceedings of COLING 2014, the 25th International Conference on Computational Linguistics: Technical Papers, 23-29 August 2014, Dublin, Ireland. Dublin: Creative Commons. ISBN 9781941643266.
- Ladeira, I. and Marsden, G. 2014. Interactive personal storytelling: a ethnographic study and simulation of apartheid-era narratives. Proceedings of the 2014 ACM SIGCHI Conference on Designing Interactive Systems, 21-25 June 2014, Vancouver, Canada. New York, USA: Association for Computing Machinery (ACM). ISBN 9781450329026.
- Marais, P.C. and Leach, C. 2014. A GPU-based level of detail system for the real-time simulation and rendering of large-scale granular terrain. In V. Skala (ed), Proceedings of WSCG 2014 Communication Papers Proceedings: 22nd International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision, 2-5 June 2014, Plzen. Plzen, Czech Republic: Vaclav Skala Union Agency. ISBN 9788086943718.
- Mbogo, C.C., Blake, E.H. and Suleman, H. 2014. Initial evaluation of a mobile scaffolding application that seeks to support novice learners of programming. In I.A. Sanchez and P. Isaias (eds), Proceedings 10th International Conference Mobile Learning 2014, 28 February – 2 March 2014, Madrid, Spain. USA: International Association for Development of the Information Society (IADIS). ISBN: 9789898704023.
- Mbogo, C.C., Blake, E.H. and Suleman, H. 2014. Supporting the construction of programs on a mobile device: a scaffolding framework. In I. Niang, C. Scharff and C. Wamala (eds), Proceedings of the 4th International Conference on M4D Mobile Communication for Development (M4D 2014), 7-9 April 2014, Dakar, Senegal. Sweden: Karlstad University Studies. ISBN 9789170635571.
- Mgala, M. and Mbogho, A. 2014. Selecting relevant features for classifier optimization. In A.E. Hassanien, M.F. Tolba and A.T. Azar (eds), Proceedings of Advanced Machine Learning Technologies and Applications – Second International Conference, AMLTA 2014, 28-30 November 2014, Cairo, Egypt. Egypt: Springer. ISBN 9783319134604.
- Nasubo Ongoma, E.A., Keet, M. and Meyer, T. 2014. Transition constraints for temporal attributes. In M. Bienvenu, M. Ortiz, R. Rosati and M. Simkus (eds), Proceedings of the 27th International Workshop on Description Logic (DL 2014), 17-20 July 2014, Vienna, Austria. Germany: Ruzica Piskac. ISSN 16130073.
- Poulo, L., Phiri, L. and Suleman, H. 2014. Fine-grained scalability of digital library services in the cloud. Proceedings of SAICSIT 2014, 28 September to 1 October 2014, Centurion, Gauteng, South Africa. South Africa: ACM. ISBN 9781450332460.
- Rybicki, S. and Gain, J.E. 2014. Skywriter: drawing curves from a first-person perspective. Proceedings SAICSIT 2014, 28 September to 1 October 2014, Centurion, Gauteng, South Africa. South Africa: ACM. ISBN 9781450332460.
- Shorten, D. and Nitschke, G. 2014. Generational neuro-evolution: restart and retry for improvement. In C. Igel (ed), Proceedings of the 2014 Genetic and Evolutionary Computation Conference (GECCO 2014), July 12-16, Vancouver, Canada. New York: ACM. ISBN 9781450326629.
- Shorten, D. and Nitschke, G. 2014. How evolvable is novelty search? Proceedings of the 2014 IEEE Symposium Series in Computational Intelligence (IEEE SSCI 2014), 9-12 December 2014, Orlando, Florida. Piscataway, USA: IEEE. ISBN 9781450328.
- Ssekakubo, G., Suleman, H. and Marsden, G. 2014. A streamlined mobile user-interface for improved access to LMS services. In M. Marquand, S. White and M.A. Lakhani (eds), Proceedings of eLmL 2014 – The Sixth International Conference on Mobile, Hybrid, and On-line Learning, 23-27 March 2014, Barcelona, Spain. Spain: IARIA. ISBN 9781612083285.
- Wang, S., Gain, J.E. and Nitschke, G. 2014. Comparing crossover operators in neuro-evolution with crowd simulations. Proceedings of the 2014 IEEE Congress on Evolutionary Computation (CEC 2014), 6-11 July 2014, Beijing, China. China: IEEE. ISBN 9781479914883.
- Yinka-Banjo, C., Osunmakinde, I. and Bagula, A. 2014. Multi-robot systems: a cooperative behaviour and performance evaluations for mine safety inspections. Proceedings of SAICSIT 2014, 28 September to 1 October 2014, Centurion, Gauteng, South Africa. South Africa: ACM. ISBN 9781450332460.

DEPARTMENT OF ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE

Head of Department: Professor Michael Meadows

Departmental Profile

Major research themes covered by staff in the department reflect the interaction between humans and their environment and the variability of this environment, and the dynamic socio-economic and political conditions affecting society as a whole. Members of staff in the department draw empirical evidence from Africa to explore and engage these themes at various scales ranging from the global to the national, while also paying attention to specific challenges of reconstruction and development in South Africa. In the past six years, much of the research in the department focused on climate change, adaptation and modelling; ecology and society; environmental impact assessment; palaeoenvironment, geomorphology and remote sensing; theories, policies and practices in natural resource governance and management; biodiversity conservation and benefit sharing; and urban theory, policy and planning.

The department has ongoing research initiatives and collaboration with **49** institutions that are spread in six (**6**) continents. It has strong working relationships with institutions in Africa, Asia, Europe, North America, and South America. It has, through research themes mentioned above, engaged with policy and development, and played advisory roles in government and international bodies.

Structurally, the research enterprise in the department is diversified to accommodate various research cultures/ approaches and interests. Academic staff members carry out research within and outside research nodes. There are four formally established research nodes, which include the Climate System Analysis Group (CSAG), which applies core research to meet the knowledge needs of responding to climate variability and change; the African Climate and Development Initiative (ACDI), which is not a formally established research node within EGS, but a cross-faculty initiative, in which EGS is a major contributor through CSAG and other staff; EGS also plays a highly appreciated support role as being the host department for the administration of the interdisciplinary MSc/MPhil in Climate Change and Sustainable Development; and the African Centre for Cities (ACC) which is an interdisciplinary research and teaching programme focusing on quality scholarship regarding the dynamics of sustainable urban

processes in Africa, with an eye on identifying systemic responses. The fourth research grouping on Social and Environmental Dimensions of the Bio-economy has been established and is growing.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	4
Associate Professors	3
Senior Lecturers	5
Lecturers	4
Research Staff	7
Research Associates	3
Administrative & Support Staff	15
Total	41

Honorary and Emeritus Staff

Honorary Professors	3
Emeritus Professor	1
Total	4

Students and Postdoctoral Fellows

Postdoctoral Fellows	10
Doctoral	38
Masters	74
Honours	24
Undergraduate	827
Total	973

Research Fields and Staff

Permanent Staff

DR BABATUNDE ABIODUN

Senior Lecturer; Atmospheric Science, Climatology

DR PIPPIN ANDERSON

Lecturer; Postgraduate co-ordinator

DR SHARI DAYA

Lecturer; Gender, Modernity

DR FRANK ECKARDT

Senior Lecturer; Geomorphology, Remote Sensing

PROFESSOR BRUCE HEWITSON

Chair in Climate Change
Atmospheric Science, Climatology

DR RICHARD HILL

Senior Lecturer; Environmental Assessment
and Management

DR PETER JOHNSTON

Research Officer; Seasonal Forecasting Applications;
Climate Change

PROFESSOR MIKE MEADOWS

Head of Department; Quaternary Environmental Change

ASSOCIATE PROFESSOR SOPHIE OLDFIELD

Political and Economic Geography

PROFESSOR SUE PARNELL

Urban Studies, Historical Geography

DR ZARINA PATEL

Senior Lecturer; Environmental Governance and Politics

DR SERGE RAEMAEEKERS

Lecturer; Small-scale Fisheries Governance

PROFESSOR MAANO RAMUTSINDELA

Political Geography, Transnational Regionalism

ASSOCIATE PROFESSOR MERLE SOWMAN

Environmental Planning and Management, Coastal and
Small-Scale Fisheries Management

MS ANNA STEYNOR

Research Officer; Stakeholder Engagement

DR KEVIN WINTER

Lecturer; Environmental Management, Water Resources,
Monitoring and Evaluation

DR PIOTR WOLSKI

Senior Research Officer; Hydrology

ASSOCIATE PROFESSOR RACHEL WYNBERG

Chair in Environmental and Social Dimensions of the
Bio-economy

Biodiversity and Social Justice, Commercial Use of
Biodiversity, Access and Benefit Sharing; Genetic
Resources for Food and Agriculture

DR GINA ZIERVOGEL

Senior Lecturer; Vulnerability and Adaptation

Contract Research Staff**DR OLIVIER CRESPO**

Agricultural and Water Research Modelling

DR CHRIS LENNARD

Atmospheric Science

DR BRADLEY RINK

Human Geography

MS KATE SUTHERLAND

Research Assistant; Climate Data Analysis

Administrative and Support Staff**MRS SHARON ADAMS**

Administrative Officer

MR ALDINO ARENDESE

Administrative and Financial Co-ordinator

MRS SHARON BARNARD

Administrative Assistant

MS LISA COOP

Research Assistant

MR ROGER DUFFETT

IT Manager

MR TONY GEORGE

Library Assistant

MS FAHDELAH HARTLEY

Senior Secretary

MR SAYED HESS

Technical Assistant

DR CHRIS JACK

Senior Scientific Technical Officer

MS VUYOKAZI MAFANYA

Senior Secretary

MR PHILLIP MUKWENHA

IT Assistant

MRS SHAADA REDDY

Librarian

MS SHAHIEDA SAMSODIEN

Senior Secretary

MS MATHILDA JACI VAN NIEKERK

Research Assistant

MS RUWANI WALAWEGE

Research Assistant

Postdoctoral Fellows**DR ROSS BLAMEY**

Atmospheric Science

DR JOSEPH DARON

Climate uncertainties and adaptation

DR TRISTAN HAUSER

Uncertainty quantification and statistical modelling

DR KELLY KIRSTEN-SARDINHA

Palaeo Science

DR KAZEEM OARE OKOSUN

Epidemiological Modelling and Climate Impact

DR LAURA PEREIRA

Bio-Economy/Climate Change

DR LYNNE QUICK

Palaeo Science

DR ALEX SHABALA

Climate Modelling and Analysis

DR SAMANTHA WILLIAMS

Coastal and Small-scale Fisheries

DR MODATHIR ABDALLA ZAROUG

Climate Change Adaptation

Honorary Professors

PROFESSOR JOHN BOARDMAN

Soil Erosion, Land Degradation

PROFESSOR JONATHAN CRUSH

International Migration, Transnationalism

PROFESSOR DAVE THOMAS

Arid Zone Geomorphology, Quaternary Science

Research Associates

Dr Maria Hauck

Dr Laurence Nathan

Dr David Fig

Emeritus Professor

EMERITUS PROFESSOR RICHARD FUGGLE

Contact Details

Postal address: Department of Environmental and Geographical Science, University of Cape Town, Private Bag X3, Rondebosch, 7701

Telephone: SA (21) 650 2873/4

Fax: SA (21) 650 3456

Email: admin@enviro.uct.ac.za

Web: www.egs.uct.ac.za/

RESEARCH OUTPUT

Edited books

Parnell, S. and Pieterse, E.A. (eds) 2014. Africa's Urban Revolution. 309pp. London: Zed books. ISBN 9781780325200.

Parnell, S. and Oldfield, S.E. (eds) 2014. The Routledge Handbook on Cities of the Global South. 635pp. London and New York: Routledge. ISBN 9780415818650.

Ramutsindela, M.F. (ed) 2014. Cartographies of Nature: How Nature Conservation Animates Borders. 271pp. Newcastle upon Tyne, UK: Cambridge Scholars Publishing. ISBN 9781443860147.

Sowman, M. and Wynberg, R.P. (eds) 2014. Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa. 368pp. Abingdon, Oxon: Routledge. ISBN 9780415523592.

Wynberg, R.P. and Hauck, M.B. (eds) 2014. Sharing Benefits from the Coast: Rights, Resources and Livelihoods. 189pp. Claremont, South Africa: UCT Press. ISBN 9781 775820062.

Chapters in books

Allsopp, N., Anderson, P., Holmes, P.M., Melin, A. and O'Farrell, P.J. 2014. People, the Cape floristic region, and sustainability. In N. Allsopp, J.F. Colville, and G.A Verboom (eds), Fynbos Ecology, Evolution, and Conservation of a Megadiverse Region, pp. 337-360. New York: Oxford University Press. ISBN 9780199679584.

Bavinck, M., Sowman, M. and Menon, A. 2014. Theorizing participatory governance in contexts of legal pluralism – a conceptual reconnaissance of fishing conflicts and their resolution. In M. Bavinck, L. Pellegrini and E. Mostert (eds), Conflicts Over Natural Resources in the Global South: Conceptual Approaches, pp. 147-171. London: CRC Press, Taylor & Francis Group. ISBN 9781138020405.

Benit-Gbaffou, C., Oldfield, S.E., Belarbi, W., Iraki, A. and Owuor, S. 2014. Mouvements sociaux urbains et injustice spatiale: la difficile mobilisation des 'droits'. In P. Gervais-Lambony, C. Benit-Gbaffou, A. Musset, J.-L. Piermay and S. Planel (eds), La Justice Spatiale et la Ville: Regards du Sud, pp. 227-243. Paris: Editions Karthala. ISBN 97828111110833.

Benit-Gbaffou, C. and Oldfield, S.E. 2014. Claiming 'rights' in the African city: popular mobilization and the politics of informality. In S. Parnell and S. Oldfield (eds), The Routledge Handbook on Cities of the Global South, pp. 281-295. London and New York: Routledge.. ISBN 9780415818650.

- Crush, J. 2014. Approaching food security in cities of the global south. In S. Parnell and S. Oldfield (eds), *The Routledge Handbook on Cities of the Global South*, pp. 543-555. London and New York: Routledge. ISBN 9780415818650.
- Crush, J. and Frayne, G.B. 2014. Feeding African cities: the growing challenge of urban food insecurity. In S. Parnell and E. Pieterse (eds), *Africa's Urban Revolution*, pp. 110-132. London: Zed books. ISBN 9781780325200.
- Hauck, M.B., Mbatha, P. and Wynberg, R.P. 2014. Coastal communities and livelihoods in South Africa and Mozambique. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, 17-36. Claremont, South Africa: UCT Press. ISBN 9781775820062.
- Hauck, M.B., Mbatha, P. and Raemaekers, S. 2014. Enhancing benefits to small-scale fishers along the east coast of South Africa. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, pp. 37-66. Claremont, South Africa: UCT Press. ISBN 9781775820062.
- Kozanayi, W., Wynberg, R.P. and Matose, F. 2014. Customary governance of baobab in Eastern Zimbabwe: impacts of state-led interventions. In M. Sowman and R. Wynberg (eds), *Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa*, pp. 242-262. Abingdon, Oxon: Routledge. ISBN 9780415523592.
- Mbatha, P. and Wynberg, R.P. 2014. Mining and the myth of benefits in South African rural coastal communities. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, pp. 67-94. Claremont, South Africa: UCT Press. ISBN 9781775820062.
- Oldfield, S.E. and Parnell, S. 2014. 'From the South'. In S. Parnell and S. Oldfield (eds), *The Routledge Handbook on Cities of the Global South*, pp. 1-4. London and New York: Routledge. ISBN 9780415818650.
- Parnell, S. 2014. Big stories of urban change. In S. Parnell and S. Oldfield (eds), *The Routledge Handbook on Cities of the Global South*, pp. 541-542. London and New York: Routledge. ISBN 9780415818650.
- Parnell, S. 2014. Conceptualizing the built environment: accounting for southern urban complexities. In S. Parnell and S. Oldfield (eds), *The Routledge Handbook on Cities of the Global South*, pp.431-433. London and New York: Routledge. ISBN 9780415818650.
- Parnell, S. 2014. The urban: past, present, future. In S. Parnell and S. Oldfield (eds), *The Routledge Handbook on Cities of the Global South*, pp. 73-74. London and New York: Routledge. ISBN 9780415818650.
- Parnell, S. 2014. Inclusionary approaches to urban planning: lessons in poverty reduction from South Africa. In O.M. Mathur (ed), *Inclusive Urban Planning: State of the Urban Poor Report 2013*, pp.116-133. New Delhi: Oxford University Press. ISBN 9780198097419.
- Parnell, S. and Simon, D. 2014. National urbanisation and urban strategies: necessary but absent policy instruments in Africa. In S. Parnell and E. Pieterse (eds), *Africa's Urban Revolution*, pp. 237-256. London: Zed books. ISBN 9781780325200.
- Pereira, M. and Hauck, M.B. 2014. Sharing benefits from tourism in Mozambique: pitfalls and possibilities. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, pp. 95-124. Claremont, South Africa: UCT Press. ISBN 9781775820062.
- Pieterse, E.A. and Parnell, S. 2014. Africa's urban revolution in context. In S. Parnell and E. Pieterse (eds), *Africa's Urban Revolution*, pp.1-17. London: Zed books. ISBN 9781780325200.
- Ramutsindela, M.F. 2014. Ecology, borders and society. In M. Ramutsindela (ed), *Cartographies of Nature: How Nature Conservation Animates Borders*, pp. 1-16. Newcastle upon Tyne, UK: Cambridge Scholars Publishing. ISBN 9781443860147.
- Ramutsindela, M.F. 2014. Events, sites, border research and knowledge. In M. Ramutsindela (eds), *Cartographies of Nature: How Nature Conservation Animates Borders*, pp. 239-254. Newcastle upon Tyne, UK: Cambridge Scholars Publishing. ISBN 9781443860147.
- Ramutsindela, M.F. 2014. The edges of nature. In M. Ramutsindela (ed), *Cartographies of Nature: How Nature Conservation Animates Borders*, pp. 17-29. Newcastle upon Tyne, UK: Cambridge Scholars Publishing. ISBN 9781443860147.
- Sinthumule, N. and Ramutsindela, M.F. 2014. Bordering the transfrontier: conservation and borders in transnational context. In M. Ramutsindela (ed), *Cartographies of Nature: How Nature Conservation Animates Borders*, pp. 169-192. Newcastle upon Tyne, UK: Cambridge Scholars Publishing. ISBN 9781443860147.
- Sowman, M. and Wynberg, R.P. 2014. Governance, equity and sustainability in sub-Saharan Africa: an introduction to the discourse. In M. Sowman and R. Wynberg (eds), *Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa*, pp. 1-22. Abingdon, Oxon: Routledge. ISBN 9780415523592.
- Sowman, M., Rajagopalan, R., Sharma, C. and Sunde, J. 2014. Making space for small-scale fishing communities: use and misuse of spatial management instruments. In S. M. Garcia, J. Rice, A. Charles (eds), *Governance of Marine Fisheries and Biodiversity Conservation: Interaction and Coevolution*, pp. 346-359. West Sussex, UK: John Wiley and Sons, Ltd. ISBN 9781118392645.

Sowman, M., Raemaekers, S. and Sunde, J. 2014. Shifting gear: a new governance framework for small-scale fisheries in South Africa. In M. Sowman and R. Wynberg (eds), *Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa*, pp. 200-219. Abingdon, Oxon: Routledge. ISBN 9780415523592.

Sowman, M. and Wynberg, R.P. 2014. Towards robust governance for justice and environmental sustainability: lessons from natural resource sectors in sub-Saharan Africa. In M. Sowman and R. Wynberg (eds), *Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa*, pp. 333-358. Abingdon, Oxon: Routledge. ISBN 9780415523592.

Wynberg, R.P. and van Niekerk, J. 2014. Governance, equity and sustainability in non-timber forest product value chains. In M. Sowman and R. Wynberg (eds), *Governance for Justice and Environmental Sustainability: Lessons Across Natural Resource Sectors in Sub-Saharan Africa*, pp. 279-304. Abingdon, Oxon: Routledge. ISBN 9780415523592.

Wynberg, R.P. and Hauck, M.B. 2014. People, power and the coast: towards an integrated, just and holistic approach. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, pp. 143-165. Claremont, South Africa: UCT Press. ISBN 9781775820062.

Wynberg, R.P. and Fig, D. 2014. Realising environmental rights: civic action, leverage, and litigation. In M. Langford, B. Cousins, J. Dugard, T. Madlingozi (eds), *Socio-economic Rights in South Africa: Symbols or Substance?* pp. 310-340. New York: Cambridge University Press. ISBN 9781107021143.

Wynberg, R.P. and Hauck, M.B. 2014. Sharing benefits from the coast. In R. Wynberg and M. Hauck (eds), *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*, pp.1-16. Claremont, South Africa: UCT Press. ISBN 9781775820062.

Ziervogel, G. and Parnell, S. 2014. Tackling barriers to climate change adaptation in South African coastal cities. In B.C. Glavovic and G. P Smith (eds), *Adapting to Climate Change: Lessons from Natural Hazards Planning*, pp. 57-73. Dordrecht: Springer Science + Business Media. ISBN 9789401786300.

Articles in peer-reviewed journals

Abatan, A.A., Abiodun, B.J. and Omotosho, B.J. 2014. On the characteristics of sea breezes over Nigerian coastal region. *Theoretical and Applied Climatology*, 116: 93-102.

Abiodun, B.J., Ojumu, A.M., Jenner, S. and Ojumu, T.V. 2014. The transport of atmospheric NO_x and HNO₃ over Cape Town. *Atmospheric Chemistry and Physics*, 14: 559-575.

Anderson, P.M.L., Avlonitis, G. and Ernstson, H. 2014. Ecological outcomes of civic and expert-led urban greening projects using indigenous plant species in Cape Town, South Africa. *Landscape and Urban Planning*, 127: 104-113.

Angelil, O., Stone, D.A. and Pall, P. 2014. Attributing the probability of South African weather extremes to anthropogenic greenhouse gas emissions: spatial characteristics. *Geophysical Research Letters*, 41(9): 3238-3243.

Arendse, W. and Patel, Z. 2014. 'No messing in Bonteheuwel': the role of social capital and partnership building in sustainable community development. *Town and Regional Planning*, 65: 1-10.

Battersby-Lennard, J.E. and Crush, J. 2014. Africa's urban food deserts. *Urban Forum*, 25: 143-151.

Battersby-Lennard, J.E. and Peyton, S. 2014. The geography of supermarkets in Cape Town: supermarket expansion and food access. *Urban Forum*, 25: 153-164.

Boardman, J. 2014. How old are the gullies (dongas) of the Sneeuberg uplands, Eastern Karoo, South Africa? *Catena*, 113: 79-85.

Boardman, J. and Favis-Mortlock, D.T. 2014. The significance of drilling date and crop cover with reference to soil erosion by water, with implications for mitigating erosion on agricultural land in South East England. *Soil Use and Management*, 30: 40-47.

Boom, A., Carr, A.S., Chase, B.M., Grimes, H.L. and Meadows, M.E. 2014. Leaf wax n-alkanes and ¹³C values of CAM plants from arid Southwest Africa. *Organic Geochemistry*, 67: 99-102.

Butt, N., Malhi, Y., New, N., Macia, M.J., Lewis, S.L., Lopez-Gonzalez, G., Laurence, W.F., Laurence, S., Luizao, R., Andrade, A., Baker, T.R., Almeida, S.S. and Phillips, O.L. 2014. Shifting Dynamics of Climate-Functional Groups in Old-Growth Amazonian Forests. *Plant Ecology & Diversity*, 7(1-2): 267-279.

Carr, A.S., Boom, A., Grimes, H.L., Chase, B.M., Meadows, M.E. and Harris, A. 2014. Leaf wax n-alkane distributions in arid zone South African flora: environmental controls, chemotaxonomy and palaeoecological implications. *Organic Geochemistry*, 67: 72-84.

Clark, K.E., Torres, M.A., West, A.J., Hilton, R.G., New, N., Horwath, A.B., Fisher, J.B., Rapp, J.M., Robles Caceres, A. and Malhi, Y. 2014. The hydrological regime of a forested tropical Andean catchment. *Hydrology and Earth System Sciences*, 18: 5377-5397.

Cole, M., Bailey, R. and New, N. 2014. Tracking sustainable development with a national barometer for South Africa using a downscaled "safe and just space" framework. *Proceedings of the National Academy of Sciences of the United States of America*, 111(42): e4399-e4408.

- Cowan, O. and Anderson, P.M.L. 2014. The peninsula shale Renosterveld of Devil's Peak, Western Cape: a study into the vegetation and seedbank with a view toward potential restoration. *South African Journal of Botany*, 95: 135-145.
- Crush, J. and Caesar, M. 2014. City without choice: urban food insecurity in Msunduzi, South Africa. *Urban Forum*, 25: 165-175.
- Crush, J. and Tawodzera, G. 2014. Exclusion and discrimination: Zimbabwean migrant children and South African schools. *Revue de l'integration et de la Migration Internationale/Journal of International Migration and Integration*, 15: 677-693.
- Crush, J. and Tawodzera, G. 2014. Medical xenophobia and Zimbabwean migrant access to public health services in South Africa. *Journal of Ethnic and Migration Studies*, 40(4): 655-670.
- Daron, J.D. and Stainforth, D.A. 2014. Assessing pricing assumptions for weather index insurance in a changing climate. *Climate Risk Management*, 1: 76-91.
- Daya, S. 2014. Beyond exploitation/empowerment: re-imagining Southern producers in commodity stories. *Social & Cultural Geography*, 15(7): 812-833.
- Daya, S.L. 2014. Saving the other: exploring the social in social enterprise. *Geoforum*, 57: 120-128.
- Earle, L. 2014. Stepping out of the twilight? Assessing the governance implications of land titling and regularization programmes. *International Journal of Urban and Regional Research*, 38(2): 628-645.
- Eze, P. and Meadows, M.E. 2014. Multi-proxy palaeosol evidence for late quaternary (MIS 4) environmental and climate shifts on the coasts of South Africa. *Quaternary International*, 343: 159-168.
- Eze, P. and Meadows, M.E. 2014. Texture contrast profile with stonelayer in the Cape Peninsula, South Africa: autochthony and polygenesis. *Catena*, 118: 103-114.
- Eze, P., Udeigwe, T.K. and Meadows, M.E. 2014. Plinthite and its associated evolutionary forms in soils and landscapes: a review. *Pedosphere*, 24(2): 153-166.
- Eze, P.N. and Meadows, M.E. 2014. Mineralogy and micromorphology of a late Neogene paleosol sequence at Langebaanweg, South Africa: inference of paleoclimates. *Palaeogeography Palaeoclimatology Palaeoecology*, 409: 205-216.
- Gbobaniyi, E., Sarr, A., Sylla, M.B., Diallo, I., Lennard, C., Dosio, A., Dhiedioui, A., Kamga, A., Klutse, N.A.B., Hewitson, B.C., Nikulin, G. and Lamptey, B.L. 2014. Climatology, annual cycle and interannual variability of precipitation and temperature in CORDEX simulations over West Africa. *International Journal of Climatology*, 34: 2241-2257.
- Herrick, C. and Parnell, S. 2014. Introduction: alcohol, poverty and the South African city. *South African Geographical Journal*, 96(1): 1-14.
- Hewitson, B.C., Daron, J.D., Crane, R., Zermoglio, M.F. and Jack, C.D. 2014. Interrogating empirical-statistical downscaling. *Climatic Change*, 122: 539-554.
- Kim, J., Waliser, D.E., Matmann, C.A., Goodale, C.E., Hart, A.F., Zimdars, P.A., Crichton, D.J., Jones, C., Nikulin, G., Hewitson, B.C., Jack, C.D., Lennard, C. and Favre, A. 2014. Evaluation of the CORDEX-Africa multi-RCM hindcast: systematic model errors. *Climate Dynamics*, 42: 1189-1202.
- King, C. and Thomas, D.S.G. 2014. Monitoring environmental change and degradation in the irrigated oases of the northern Sahara. *Journal of Arid Environments*, 103: 36-45.
- Kolawole, O.D., Wolski, P., Ngwenya, B. and Mmopelwa, G. 2014. Ethno-meteorology and scientific weather forecasting: small farmers and scientists' perspectives on climate variability in the Okavango Delta, Botswana. *Climate Risk Management*, 4-5: 43-58.
- Lawhon, M., Herrick, C. and Daya, S.L. 2014. Researching sensitive topics in African cities: reflections on alcohol research in Cape Town. *South African Geographical Journal*, 96(1): 15-30.
- Leighton, C.L., Bailey, R. and Thomas, D.S.G. 2014. Interpreting and modelling late quaternary dune accumulation in the southern Arabian Peninsula. *Quaternary Science Reviews*, 102: 1-13.
- Leighton, C.L., Thomas, D.S.G. and Bailey, R. 2014. Reproducibility and utility of dune luminescence chronologies. *Earth-Science Reviews*, 129: 24-39.
- Lennard, C. 2014. Simulating an extreme wind event in a topographically complex region. *Boundary-Layer Meteorology*, 153: 237-250.
- Lotter, J.M., Archer van Garderen, E., Tadross, M.A. and Valentine, A.J. 2014. Seasonal variation in the nitrogen nutrition and carbon assimilation in wild and cultivated *Aspalathus linearis* (rooibos tea). *Australian Journal of Botany*, 62: 65-73.
- Lotter, J.M., Valentine, A.J., Archer van Garderen, E. and Tadross, M.A. 2014. Physiological responses of a fynbos legume, *Aspalathus linearis* to drought stress. *South African Journal of Botany*, 94: 218-223.
- Mackellar, N., New, M. and Jack, C.D. 2014. Observed and modelled trends in rainfall and temperature for South Africa: 1960-2010. *South African Journal of Science*, 110(7/8): 51-63.
- Matmann, C.A., Waliser, D.E., Kim, J., Goodale, C.E., Hart, A.F., Ramirez, P., Crichton, D.J., Zimdars, P.A., Boustani, M., Lee, H., Loikith, P., Whitehall, K., Jack, C.D. and Hewitson, B.C. 2014. Cloud computing and virtualization within the regional climate model and evaluation system. *Earth Science Informatics*, 7: 1-12.
- Meadows, M.E. 2014. Recent methodological advances in Quaternary palaeoecological proxies. *Progress in Physical Geography*, 38(6): 807-817.

- Mladenov, N., Wolski, P., Hettiarachchi, G.M., Murray-Hudson, M.A., Enriquez, H., Damaraju, S., Galkaduwa, M.B., McKnight, D.M. and Masamba, W. 2014. Abiotic and biotic factors influencing the mobility of arsenic in groundwater of a through-flow island in the Okavango Delta, Botswana. *Journal of Hydrology*, 518: 326-341.
- Murray-Hudson, M.A., Wolski, P., Murray-Hudson, F., Brown, M.T. and Kashe, K. 2014. Disaggregating hydroperiod: components of the seasonal flood pulse as drivers of plant species distribution in floodplains of a tropical wetland. *Wetlands*, 34: 927-942.
- Nasterlack, H., Von Blottnitz, H. and Wynberg, R.P. 2014. Are biofuel concerns globally relevant? Prospects for a proposed pioneer bioethanol project in South Africa. *Energy for Sustainable Development*, 23: 1-14.
- Nzotungicimpaye, C.M., Abiodun, B.J. and Steyn, D.G. 2014. Tropospheric ozone and its regional transport over Cape Town. *Atmospheric Environment*, 87: 228-238.
- Oguntunde, P.G., Abiodun, B.J., Lischeid, G. and Merz, C. 2014. Modelling the impacts of reforestation on the projected hydroclimatology of Niger River Basin, West Africa. *Ecology*, 7: 163-176.
- Oguntunde, P.G., Lischeid, G., Abiodun, B.J. and Dietrich, O. 2014. Analysis of spatial and temporal patterns in onset, cessation and length of growing season in Nigeria. *Agricultural and Forest Meteorology*, 194: 77-87.
- Oldfield, S.E. 2014. Intertwining lives and logics: household and informal economies in Cape Town. *Urbanization*, 25 (Supplement 2014 Special Issue): S36-S46.
- Oldfield, S.E. 2014. The uneven "thickening" of civil society through donor-funded capacity building in South African cities. *Estudios Moambicanos*, 23(Special): 63-93.
- Patel, Z. 2014. South Africa's three waves of environmental policy: (mis)aligning the goals of sustainable development, environmental justice and climate change. *Geography Compass*, 8(3): 169-181.
- Pendleton, W., Crush, J. and Nickanor, N. 2014. Migrant Windhoek: rural-urban migration and food security in Namibia. *Urban Forum*, 25: 191-205.
- Pereira, L., Cuneo, C.N. and Twine, W.C. 2014. Food and cash: understanding the role of the retail sector in rural food security in South Africa. *Food Security*, 6: 339-357.
- Rahiz, M. and New, N. 2014. Does a rainfall-based drought index simulate hydrological droughts? *International Journal of Climatology*, 34: 2853-2871.
- Siebrits, R., Winter, K.J. and Jacobs, I. 2014. Water research paradigm shifts in South Africa. *South African Journal of Science*, 110(5/6): 1-9.
- Siebrits, R., Winter, K.J., Barnes, J., Dent, M.C., Ekama, G.A., Ginster, M., Harrison, J., Jackson, B., Jacobs, I., Jordaan, A., Kasan, H.C., Kloppers, W., Le Roux, R., Maree, J., Momba, M.N.B., Munnik, A.V., O'Keeffe, J., Schulze, R.E., Silberbauer, M., Still, D. and Van Zyl, J. 2014. Priority water research questions for South Africa developed through participatory processes. *Water SA*, 40(2): 199-209.
- Sowman, M., Sunde, J., Raemaekers, S. and Schultz, O. 2014. Fishing for equality: policy for poverty alleviation for South Africa's small-scale fisheries. *Marine Policy*, 46: 31-42.
- Tererai, F. and Wood, A.R. 2014. On the present and potential distribution of *Ageratina adenophora* (Asteraceae) in South Africa. *South African Journal of Botany*, 95: 152-158.
- Tachie-Obeng, E., Hewitson, B.C., Gyasi, E.A., Abekoe, M.K. and Owusu, G. 2014. Downscaled climate change projections for Wa District in the Savanna zone of Ghana. *Journal of Disaster Research*, 9(4): 422-431.
- Tozuka, T., Abiodun, B.J. and Engelbrecht, F. 2014. Impacts of convection schemes on simulating tropical-temperate troughs over southern Africa. *Climate Dynamics*, 42: 433-451.
- Wolski, P., Stone, D.A., Tadross, M.A., Wehner, M.F. and Hewitson, B.C. 2014. Attribution of floods in the Okavango basin, Southern Africa. *Journal of Hydrology*, 511: 350-358.
- Wynberg, R.P. and Hauck, M.B. 2014. People, power and the coast: a conceptual framework for understanding and implementing benefit sharing. *Ecology and Society*, 19(1): 27(16pp).
- Wynberg, R.P. and van Niekerk, J. 2014. Global ambitions and local realities: achieving equity and sustainability in two high-value natural product trade chains. *Forests, Trees and Livelihoods*, 23(1-2): 19-35.
- Ziervogel, G., New, N., Archer van Garderen, E., Midgley, G., Taylor, A., Hamann, R., Stuart-Hill, S., Myers, J.E. and Warburton, M. 2014. Climate change impacts and adaptation in South Africa. *Wiley Interdisciplinary Reviews-Climate Change*, 5: 605-620.
- Zinyengere, N.Z., Crespo, O., Hachigonta, S. and Tadross, M. 2014. Local impacts of climate change and agronomic practices on dry land crops in Southern Africa. *Agriculture Ecosystems & Environment*, 197: 1-10.

Peer-reviewed published conference proceedings

- Dieppois, B., Rouault, M. and New, N. 2014. Austral summer relationship between ENSO and Southern African rainfall in CMIP5 coupled models. *Proceedings of 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere*. Peer reviewed conference proceedings (SASAS 2014), 01-02 October 2014, Potchefstroom, South Africa, South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

Oldfield, S.E. and Wafer, A. 2014. Beyond participation or resistance: contesting participation in Cape Town. In N. Kotze, R. Donaldson and G. Visser (eds), Proceedings of Life in a Changing Urban Landscape: Proceedings of the IGU Urban Geography Commission (Urban Challenges in a Complex World), 21-26 July 2013, Johannesburg and Stellenbosch, Johannesburg: University of Johannesburg. ISBN 9780869707692.

Reckson, S. and Madhlopa, A. 2014. Assessment of perceived characteristics of solar lamps in Khayelitsha. Proceedings of the Twenty Second Conference on the Domestic Use of Energy (DUE 2014), 31 March – 2 April 2014, Cape Town, South Africa. South Africa: CPUT. ISBN 9780992204143.

Wolski, P., Jack, C.D., Tadross, M.A., Coop, L.J. and Hewitson, B.C. 2014. Separating local- and synoptic-scale variability in African rainfall. Proceedings of 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere. Peer reviewed conference proceedings (SASAS 2014), 01-02 October 2014, Potchefstroom, South Africa. South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

DEPARTMENT OF GEOLOGICAL SCIENCES

Head of Department: Professor Chris Harris

Departmental Profile

Research in the Department of Geological Sciences covers a wide range of disciplines. The Department has strengths in geochemistry, structural geology and tectonics, igneous and metamorphic petrology, sedimentology, marine geology, economic geology and geophysics. General research interests include: global tectonics and geodynamics with emphasis on Gondwana geology; oceanic and continental igneous processes and the geochemical evolution of the underlying mantle; kimberlites and the genesis of diamonds; evolution of the Kaapvaal craton and gold genesis; paleoenvironments; marine geoscience and sedimentary geochemistry. Analytical facilities include X-ray fluorescence, X-ray diffraction, electron microprobe, fluid inclusion stage, stable isotope extraction lines and access to a stable isotope mass spectrometer, quadrupole (single collector) and magnetic sector (multi-collector) inductively coupled plasma mass spectrometers (solution and laser analysis) and associated clean laboratories.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	3
Associate Professors	1
Senior Lecturers	5
Lecturers	2
Senior Research Officer	1
Technical Support Staff	13
Administrative & Clerical Staff	2
Total	27

Honorary and Emeritus Staff

Honorary Research Associates	3
Emeritus Professors	1
Emeritus Associate Professors	2
Total	6

Students and Postdoctoral Fellows

Postdoctoral Fellows	1
Doctoral	10
Master's	28
Honours	18
Undergraduate	409
Total	466

Research Fields and Staff

Permanent Staff

PROFESSOR CHRIS HARRIS

Head of Department: Stable isotope geochemistry; igneous petrology.

PROFESSOR STEPHEN RICHARDSON

Isotope geochemistry; geochronology; diamonds; continental mantle evolution.

PROFESSOR ANTON LE ROEX

Dean of Science: Igneous geochemistry; analytical geochemistry; mantle evolution.

ASSOCIATE PROFESSOR JOHN COMPTON

Low-temperature and sedimentary geochemistry; marine geology.

DR EMESE BORDY

Senior Lecturer: Sedimentology

DR JOHANN DIENER

Senior Lecturer: Metamorphic petrology.

DR AKE FAGERENG

Senior Lecturer: Structural geology.

DR PHIL JANNEY

Senior lecturer: Igneous geochemistry; analytical geochemistry; cosmochemistry

MR GEORGE SMITH

Senior Lecturer: Petroleum geophysics.

DR LYNNETTE GREYLING

Lecturer: Mineralised copper and gold systems, fluid inclusion microthermometry

DR BETH KAHLE

Lecturer: Geophysics; active faulting, uplift history; history of active structures

Honorary Research Associates

EMERITUS PROFESSOR JOHN GURNEY

Upper mantle research, diamonds, diamond exploration and instrumental analysis of minerals

EMERITUS ASSOCIATE PROFESSOR ANDY DUNCAN

Igneous Petrology; X-Ray Fluorescence Spectroscopy

EMERITUS ASSOCIATE PROFESSOR JAMES WILLIS

X-Ray Fluorescence Spectroscopy

PROFESSOR HARTWIG FRIMMEL

Metamorphic petrology.

DR WENDY TAYLOR

Paleontology

DR ROBYN PICKERING

Isotope geochemistry

Contact Details

Postal address: Department of Geological Sciences, University of Cape Town, Private Bag X3, Rondebosch, 7701

Telephone: +27 21 650 2931

Fax: +27 21 650 3783

Web: www.geology.uct.ac.za/

UCT General enquiries: +27 21 650 9111

UCT web: www.uct.ac.za

RESEARCH OUTPUT

Chapters in books

Werz, B., Cawthra, H. and Compton, J.S. 2014. Recent developments in African offshore prehistoric archaeological research, with an emphasis on South Africa. In A.M. Evans, J.C. Flatman and N.C. Flemming (eds), *Prehistoric Archaeology on the Continental Shelf*, pp. 233-253. New York, USA: Springer Heidelberg New York Dordrecht London. ISBN 9781461496342.

Articles in peer-reviewed journals

Angielczyk, K.D., Huertas, S., Smith, R.M.H., Tabor, N.J., Sidor, C.A., Steyer, J.S., Tsuji, L.A. and Gostling, N.J. 2014. New dicynodonts (Therapsida, Anomodontia) and updated tetrapod stratigraphy of the Permian Ruhuhu formation (Songea Group, Ruhuhu Basin) of southern Tanzania. *Journal of Vertebrate Paleontology*, 34(6): 1408-1426.

Cawthra, H., Bateman, M., Carr, A.S., Compton, J.S. and Holmes, P.J. 2014. Understanding late quaternary change at the landocean interface: a synthesis of the evolution of the Wilderness coastline, South Africa. *Quaternary Science Reviews*, 99: 210-223.

Day, J.M.D., Peters, J. and Janney, P.E. 2014. Oxygen isotope systematics of South African olivine melilitites and implications for HIMU mantle reservoirs. *Lithos*, 202-203: 76-84.

- Diener, J.F.A. 2014. Low-P-high-T metamorphism of the Aggeney's terrane, Namaqua metamorphic complex, South Africa. *South African Journal of Geology*, 117(1): 31-44.
- Diener, J.F.A., White, R.W. and Hudson, T.J.M. 2014. Melt production, redistribution and accumulation in mid-crustal source rocks, with implications for crustal-scale melt transfer. *Lithos*, 200-201: 212-225.
- Diener, J.F.A. and Fagereng, A. 2014. The influence of melting and melt drainage on crustal rheology during orogenesis. *Journal of Geophysical Research-Solid Earth*, 119: 6193-6210.
- Dziggel, A., Diener, J.F.A., Kolb, J. and Kokfelt, T. 2014. Metamorphic record of accretionary processes during the Neoproterozoic: the Nuuk region, southern West Greenland. *Precambrian Research*, 242: 22-38.
- Faber, C., Rowe, C.D., Miller, J., Fagereng, A. and Neethling, J.H. 2014. Silica gel in a fault slip surface: field evidence for palaeo-earthquakes? *Journal of Structural Geology*, 69: 108-121.
- Fagereng, A., Hillary, G. and Diener, J.F.A. 2014. Brittle-viscous deformation, slow slip, and tremor. *Geophysical Research Letters*, 41: 4159-4167.
- Fagereng, A. and Harris, C. 2014. Interplay between fluid flow and fault fracture mesh generation within underthrust sediments: geochemical evidence from the Chrystalls beach complex, New Zealand. *Tectonophysics*, 612-613: 147-157.
- Fagereng, A. 2014. Significant shortening by pressure solution creep in the Dwyka diamictite, Cape Fold Belt, South Africa. *Journal of African Earth Sciences*, 97: 9-18.
- Fagereng, A., Smith, Z., Rowe, C.D., Makhubu, B. and Sylvester, F.Y.G. 2014. Stress, strain, and fault behavior at a thrust ramp: insights from the Naukluft thrust, Namibia. *Journal of Structural Geology*, 58: 95-107.
- Frimmel, H.E., Schedel, S. and Bratz, H. 2014. Uraninite chemistry as forensic tool for provenance analysis. *Applied Geochemistry*, 48: 104-121.
- Hhn, S., Frimmel, H.E. and Pasava, J. 2014. The rare earth element potential of kaolin deposits in the Bohemian Massif (Czech Republic, Austria). *Mineralium Deposita*, 49: 967-986.
- Harris, C., Hlongwane, W.S., Gule, N.K. and Scheepers, R. 2014. Origin of tanzanite and associated gemstone mineralization at Merelani, Tanzania. *South African Journal of Geology*, 117(1): 15-30.
- Le Roex, A.P. and Class, C. 2014. Metasomatism of the Pan-African lithospheric mantle beneath the Damara belt, Namibia, by the Tristan mantle plume: geochemical evidence from mantle xenoliths. *Contributions to Mineralogy and Petrology*, 168: 1046 (21pp).
- Le Roux, P.J., Lee-Thorp, J., Copeland, S.R., Sponheimer, M. and de Ruiter, D. 2014. Strontium isotope analysis of curved tooth enamel surfaces by laser-ablation multi-collector ICP-MS. *Palaeogeography Palaeoclimatology Palaeoecology*, 416: 142-149.
- Lissner, M., Konig, S., Luguët, A., Le Roux, P., Schuth, S., Heuser, A. and Le Roex, A.P. 2014. Selenium and tellurium systematics in MORBs from the southern Mid-Atlantic ridge (47-50S). *Geochimica et Cosmochimica Acta*, 144: 379-402.
- Marsicano, C.A.M., Wilson, A. and Smith, R.M.H. 2014. A Temnospondyl trackway from the early mesozoic of Western Gondwana and its implications for basal tetrapod locomotion. *PLoS One*, 9(8): e103255(15pp). DOI: 10.1371/journal.pone.0103255.
- Melosh, B.L., Rowe, C.D., Smit, L., Groenewald, C., Lambert, C.W. and Macey, P.H.M. 2014. Snap, crackle, pop: dilational fault breccias record seismic slip below the brittle-plastic transition. *Earth and Planetary Science Letters*, 403: 432-445.
- Meneghini, F., Kisters, A., Buick, I. and Fagereng, A. 2014. Fingerprints of late Neoproterozoic ridge subduction in the Pan-African Damara belt, Namibia. *Geology*, 42(10): 903-906.
- Meyer, N.A., Vogeli, J., Becker, M.E., Broadhurst, J.L., Reid, D.L. and Franzidis, J.-P. 2014. Mineral carbonation of PGM mine tailings for CO₂ storage in South Africa: a case study. *Minerals Engineering*, 59: 45-51.
- Nesbitt, S.J., Sidor, C.A., Angielczyk, K.D., Smith, R.M.H. and Tsuji, L.A. 2014. A new archosaur from the Manda beds (Anisian, Middle Triassic) of southern Tanzania and its implications for character state optimizations at Archosauria and Pseudosuchia. *Journal of Vertebrate Paleontology*, 34(6): 1357-1382.
- Powell, R., White, R.W., Green, E.C.R., Holland, T.J.B. and Diener, J.F.A. 2014. On parameterizing thermodynamic descriptions of minerals for petrological calculations. *Journal of Metamorphic Geology*, 32: 245-260.
- Ringrose, S., Cassidy, L., Diskin, S., Coetzee, S., Matheson, W., Mackay, A. and Harris, C. 2014. Diagenetic transformations and silcrete-calcrete intergrade duricrust formation in palaeo-estuary sediments. *Earth Surface Processes and Landforms*, 39(6): 1167-1187.
- Roychoudhury, A. and Petersen, J. 2014. Geochemical evaluation of soils and groundwater affected by infiltrating effluent from evaporation ponds of a heavy mineral processing facility, West Coast, South Africa. *Journal of Geochemical Exploration*, 144: 478-491.
- Samadi, R., Mirnejad, H., Kawabata, H., Harris, C., Valizadeh, M. and Gazel, E. 2014. Magmatic garnet in the Triassic (215 Ma) Dehnow pluton of NE Iran and its petrogenetic significance. *International Geology Review*, 56(5): 596-621.
- Samadi, R., Miller, N.R., Mirnejad, H., Harris, C., Kawabata, H. and Shirdashtzadeh, N. 2014. Origin of

garnet in aplite and pegmatite from Khajeh Morad in northeastern Iran: a major, trace element, and oxygen isotope approach. *Lithos*, 208-209: 378-392.

Smith, R.M.H. and Botha-Brink, J. 2014. Anatomy of a mass extinction: sedimentological and taphonomic evidence for drought-induced die-offs at the Permo-Triassic boundary in the main Karoo Basin, South Africa. *Palaeogeography Palaeoclimatology Palaeoecology*, 396: 99-118.

Toms, A., Compton, J.S., Smale, M.J. and von der Heyden, S. 2014. Variation in palaeo-shorelines explains contemporary population genetic patterns of rocky shore species. *Biology Letters*, 10: 20140330(4pp).

Torgersen, E., Viola, G., Zwingmann, H. and Harris, C. 2014. Structural and temporal evolution of a reactivated brittle-ductile fault – Part II: timing of fault initiation and reactivation by KAr dating of synkinematic illite/muscovite. *Earth and Planetary Science Letters*, 407: 221-233.

Viljoen, K.S., Harris, J.W., Ivanic, T., Richardson, S.H. and Gray, K. 2014. Trace element chemistry of peridotitic garnets in diamonds from the Premier (Cullinan) and Finsch kimberlites South Africa: contrasting styles of mantle metasomatism. *Lithos*, 208-209: 1-15.

Will, T.M.W., Frimmel, H.E., Gaucher, C. and Bossi, J. 2014. Geochemical and isotopic composition of Pan-African metabasalts from southwestern Gondwana: evidence of Cretaceous South Atlantic opening along a Neoproterozoic back-arc. *Lithos*, 202-203: 363-381.

DEPARTMENT OF MATHEMATICS AND APPLIED MATHEMATICS

(Including the Cosmology and Gravity Group, the Laboratory for Discrete Mathematics and Theoretical Computer Science (DMTCS Lab), the Marine Resource Assessment and Management Group (MARAM), the Centre for Research in Computational and Applied Mechanics (CERECAM), the Category Theory and Topology Research Group and the Laboratory for Quantum Gravity and Strings.)

Head of Department: Professor Hans-Peter Kunzi

Departmental Profile

The Department of Mathematics and Applied Mathematics houses a number of research groups and individual activities which, in total, cover a large part of the mathematical spectrum. Examples are: cosmology and relativity, computational and applied mechanics, marine resource assessment and management, rangeland modelling, industrial mathematics, discrete mathematics and theoretical computer science, topology, category theory, nonlinear mathematical physics, functional analysis, cryptography, string theory, financial mathematics and algebra. The Department has active research collaboration with other groups in the country and abroad. There is a strong postgraduate program, with M.Sc. and Ph.D. students in a variety of fields. A number of staff have NRF A-ratings and B-ratings. The Department has a good technical and administrative infrastructure, and regularly hosts visitors from abroad. More information can be found on the website www.mth.uct.ac.za.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	7
Associate Professors	4
Senior Lecturers	12
Lecturers (full-time)	13
Senior Scholar	1
Research Staff	3

Technical Support Staff	1
Administrative and Clerical Staff	10
Total	51

Honorary and Emeritus Staff

Emeritus Professors	7
Emeritus Associate Professor	1
Visiting Professor and Principal Research Officer	4
Honorary Research Associate	5
Honorary Member	1
Total	18

Students and Postdoctoral Fellows

Postdoctoral Fellows	12
Doctoral	30
Master	51
Honours	6
Undergraduate	7185
Total	7284

Research Fields and Staff

Permanent and long-term Contract Staff

PROFESSOR IGOR BARASHENKOV

Nonlinear waves and solitons; nonlinear dynamics; mathematical physics

PROFESSOR BRUCE BASSETT

Observational and theoretical cosmology; machine learning, astrostatistics and nonlinear optimization

PROFESSOR PETER DUNSBY

Co-Director of the Astrophysics, Cosmology and Gravitation Centre; cosmological perturbations; cosmic microwave background anisotropies; gravitational lensing; inflationary cosmology; cosmological magnetic fields; teaching with technology

PROFESSOR GEORGE JANELIDZE

Category theory, Algebra, Topology, Sets and Logic

PROFESSOR HANS-PETER KÜNZI

Topology, orders, categories, combinatorics and their applications in analysis and algebra; particular focus

being the theory of asymmetric topology; leader of topology and category theory research group

PROFESSOR DAYA REDDY

South African Research Chair in Computational Mechanics

Director, UCT Centre for Research in Computational and Applied Mechanics (CERECAM); mathematical and computational aspects of continuum mechanics; the finite element method

ASSOCIATE PROFESSOR PETER BRUYNS

Senior Lecturer; group theory; permutation groups

ASSOCIATE PROFESSOR CHRISTOPHER CLARKSON

Theoretical Cosmology – relativistic perturbation theory, dark energy, gravitational lensing

ASSOCIATE PROFESSOR CHRISTOPHER GILMOUR

Pointfree topology and sigma-frames; categorical topology

ASSOCIATE PROFESSOR CHARLES HELLABY

General relativity; cosmology; gravity

ASSOCIATE PROFESSOR ALEXANDAR IANOVSKY

Dynamical systems – finite and infinite dimensions; differential geometric methods in the theory of dynamical systems

DR FRANCOISE EBOBISSE BILLE

Senior Lecturer; calculus of variations; PDE; mathematical and computational aspects of continuum mechanics; the finite element method

DR FILIP COOLS

Senior lecturer; algebraic geometry, commutative algebra and combinatorics

DR DAVID ERWIN

Senior Lecturer; classical, applied and algebraic graph theory

DR JOHN FRITH

Senior Lecturer; frame theory; topos theory; categorical topology; mathematical education

DR HENRI LAURIE

Senior Lecturer; mathematical biology, in particular ecology; industrial mathematics; mathematics education

DR JEFF MURUGAN

Senior Lecturer; string theory, quantum gravity, neurophysics

MR KENNETH RAFEL (RETIRED 31/04/2014)

Senior Lecturer; mathematics education

DR NEILL ROBERTSON

Senior Lecturer; functional analysis; locally convex spaces; descriptive set theory; infinite-dimensional holomorphy

DR FRANCESCO G. RUSSO

Senior Lecturer; Topology, Group theory, Homology, Lie theory, Geometric measure theory, Mathematical models in music

DR ANNELIESE SCHAUERTE

Senior Lecturer; frame and biframe theory; categorical topology; uniform and quasi-uniform structures

DR HARIS SKOKOS

Senior Lecturer; nonlinear dynamical systems, chaotic dynamics, Hamiltonian systems and computational mathematics

DR AMANDA WELTMAN

Senior Lecturer; string theory, cosmology, gravity

DR NORA ALEXEEVA

Lecturer; nonlinear dynamics and solitons; pattern formation in reaction-diffusion systems; synchronization of chaotic systems

DR TIRI CHINYOKA

Lecturer; modelling and analysis of complex fluids and flows

DR EBRAHIM FREDERICKS

Lecturer; lie symmetries analysis of stochastic differential equations; lie symmetries analysis of partial differential equations; lie symmetries analysis of ordinary differential equations; applying lie symmetries to fluid mechanics, applying lie symmetries to mathematics of finance

MS MARIOLA KIROVA

Lecturer; mathematics education

DR ROBERT MARTIN

Lecturer; functional analysis; operator theory

DR BOB OSANO

Lecturer; Theoretical cosmology, General Relativity and Mathematics education

DR JESSE RATZKIN

Lecturer; geometric analysis

DR JONATHAN SHOCK

Lecturer: string theory, mathematical biology, neuroscience and symbolic computation

DR DEON SOLOMONS (LEFT 31/10/2014)

Lecturer; thermodynamics of spacetime; Interference and diffraction phenomena in gravitational lensing; structure formation in the universe; theories of higher order gravity

DR HOLGER SPAKOWSKI

Lecturer; theoretical computer science; computational complexity

DR CHRISTINE SWART

Lecturer; cryptography

DR VITALI VOUGALTER (LEFT 30/06/2014)

Lecturer; nonlinear analysis, partial differential equations, mathematical biology

MR THOMAS VAN HEERDEN

Lecturer; nonlinear dynamics; mathematics education

Temporary Lecturer with Collaborations**PROFESSOR NIC HEIDEMAN**

Senior Lecturer; Mathematics education

Senior Scholar**EMERITUS DISTINGUISHED PROFESSOR
GEORGE ELLIS**

Distinguished Professor of complex systems; cosmology and general relativity theory; emergence and functioning of complex systems, including the human brain; science policy; mathematics and science education; metaphysics of cosmology and its connections to ethics and religion; social indicators

Research Staff**DR ANABELA BRANDÃO**

Senior Research Officer, MARAM; Southern Ocean toothfish assessment; SA west coast rock lobster surveys; minke whales, SA abalone assessment.

DR CARRYN DE MOOR

Senior Research Officer, MARAM; S.A. sardine and anchovy assessment and management

DR SUSAN HOLLOWAY

Senior Research Officer, MARAM; S.A. west and south coast rock lobster and horse mackerel assessment; whale management procedures

PROFESSOR VASCO BRATKA

Honorary Research Associate; Computability theory, effective set theory; algorithmic randomness

DR ÉVA PLAGÁNYI-LLOYD

Honorary Research Associate; multispecies modelling; Fisheries assessment and management ecological modeling, S.A. abalone assessment

DR ANDRIY POTOTSKYY

Honorary Research Associate: rectification of brownian motion, directed transport of particles in molecular rectifiers; many body systems: non-equilibrium dynamical density functional theory; fluctuations and noise induced motion: stochastic differential equations, jump processes, collective phenomena in coupled stochastic networks; pattern formation in complex systems

DR REBECCA RADEMEYER

Honorary Research Associate: MARAM; Fisheries assessment and management

DR DAVID RICHARDSON

Research Associate; Rangeland Modelling Group; modelling grazing animal production systems; relations between complex and simple models

Distinguished Visitors

EMERITUS PROFESSOR BERNHARD BANASCHEWSKI

McMaster University, Hamilton, Ontario, Canada – pointfree topology; partially ordered algebraic systems; applied category theory

PROFESSOR SHAMIT KACHRU

Professor of Physics at Stanford University with research interests in String Theory, Cosmology and Mathematical Physics

PROFESSOR HORATIU NASTASE

Senior member of the IFT in Sao Paulo, Brazil with research interests in string Theory and Mathematical Physics

Emeritus Staff

EMERITUS PROFESSOR RONALD BECKER

Differential equations (bifurcations, abstract equations); theory of algorithms (graph partitioning, sorting networks) and Mathematical Finance

EMERITUS PROFESSOR GUILLAUME BRÜMMER

Topology and category theory group; categorical topology; asymmetric topology and uniformity

EMERITUS PROFESSOR DOUG BUTTERWORTH

Director, Marine Resource Assessment and Management Group (MARAM); particular focus on South African fisheries, northwest Atlantic fisheries, and bluefin tuna, Antarctic whale and krill resources

EMERITUS PROFESSOR KATHY DRIVER

Special functions, orthogonal polynomials and approximation theory

EMERITUS PROFESSOR KEITH HARDIE (PASSED AWAY 19/05/2014)

Homotopy theory; algebraic topology; digital topology; categorical topology

EMERITUS PROFESSOR JOHN WEBB

Mathematics education

EMERITUS ASSOCIATE PROFESSOR RONALD CROSS

Functional analysis; unbounded linear operators; linear relations

Honorary Staff

DR KENNETH HUGHES

Number theory; algebra; algebraic geometry; topological quantum field theory; p-adic analysis, nil-theta functions

PROFESSOR PATRICIA WHITELOCK

Visiting Professor and Principal Research Officer; SAAO

Postdoctoral Fellows

DR MICHEAL ABBOTT

String Theory

DR VINCENT BOUILLOT

Cosmology

DR VINICIUS BUSTI

Cosmology

DR PHILIPPE DUBARD

Nonlinear waves, solitons and rogue waves

DR DAVID JACOBS

Cosmology

DR SUGUMI KANNO

Cosmology and String Theory

DR MARC LILLEY

Cosmology

DR CRISTHIAM LOPEZ ARCOS

String Theory

DR MICHELLE MACDEVETTE

Computational Fluid Dynamics

DR EMANUEL MALEK

String Theory

DR ROBERT POLTIS

Cosmology

DR DIEGO SAEZ GOMEZ

Cosmology

Contact Details

Postal address: Department of Mathematics & Applied Mathematics, University of Cape Town, Private Bag, Rondebosch, 7701

Telephone: SA (21) 650 3191

Fax: SA (21) 650 2334

Email: mam-admin@uct.ac.za

Web: www.mth.uct.ac.za

RESEARCH OUTPUT

Authored books

Han, W. and Reddy, B.D. 2013. *Plasticity Mathematical Theory and Numerical Analysis*. 421pp. 2nd edition. New York: Springer. ISBN 9781461449392.

Edited books

Bonizzoni, P., Brattka, V. and Löwe, B. (eds) 2013. *The Nature of Computation: Logic, Algorithms, Applications*, 9th Conference on Computability in Europe, CIE 2013, Milan, Italy. 446pp. Berlin: Springer. ISBN 9783642390524.

Brattka, V., Diener, H. and Spreen, D. (eds) 2014. *Logic, Computation, Hierarchies*. 413 pp. Berlin: Walter De Gruyter & Co. ISBN 9781614517832.

Chapters in books

Avigad, J. and Brattka, V. 2014. *Computability and analysis: the legacy of Alan Turing*. In R. Downey (ed), *Turing's Legacy: Developments from Turing's ideas in logic*, pp. 1-47. UK: Cambridge University Press, uk.cambridge.org/, United Kingdom. ISBN 9781107043480.

Collins-Amburo, C., Haihambo, P. and Kunzi, H. 2014. *Tight extensions of To-Quasi-Metric Spaces*. In V. Brattka, H. Diener and D. Spreen (eds), *Logic, Computation, Hierarchies*, pp. 9-22. Berlin: Walter De Gruyter & Co. ISBN 9781614517832.

Ellis, G.F.R. 2014. *Kenotic Ethics and SETI: a present-day view*. In D. A. Vakoch (ed), *Extraterrestrial Altruism Evolution and Ethics in the Cosmos*, pp. 223-229. The Frontiers Collection. Heidelberg: Springer. ISBN 9783642377495.

Yanovski, A.B. 2014. *Some properties of the spectral decompositions for the recursion operators related to the Caudrey-Beals-Coifman system in the presence of Z_p reductions of Mikhailov type*. In A. Slavova (ed), *Mathematics in Industry*, pp. 321-334. UK: Cambridge Scholars Publishing. ISBN 1443864013.

Yeoman, M.S., Reddy, B.D., Bezuidenhout, D., Bowles, H.C., Zilla, P. and Franz, T. 2014. *Development of a fabric-reinforced porous graft for vascular tissue engineering using finite element methods and genetic algorithms*. In T. Franz (ed), *Cardiovascular and Cardiac Therapeutic Devices*, pp. 29-61. Heidelberg: Springer Berlin Heidelberg. ISBN 9783642538360.

Articles in peer-reviewed journals

Abbott, M., Murugan, J., Prinsloo, A. and Rughoonauth, N. 2014. *Meromorphic functions and the topology of giant gravitons*. *Physics Letters B*, 730: 215-220.

Abou Salem, W., Chen, T. and Vougalter, V. 2014. *Existence and nonlinear stability of stationary states for the semi-relativistic Schrödinger-Poisson system*. *Annales Henri Poincaré*, 15: 1171-1196.

Abramowicz, M., Ellis, G.F.R., Hork, J. and Wielgus, M. 2014. *The perihelion of mercury advance and the light bending calculated in (enhanced) Newton's theory*. *General Relativity and Gravitation*, 46: 1630(14pp).

Alexeeva, N.V., Barashenkov, I.V., Rayanov, K. and Flach, S. 2014. *Actively coupled optical waveguides*. *Physical Review A*, 89(1): 13848(5pp).

Alghamdi, A.M.A. and Russo, F.G. 2014. *Remarks on the relative tensor degree of finite groups*. *Filomat*, 28(9): 1929-1933.

Aliniaiefard, F., Behboodi, M., Mehdi-Nezhad, E. and Rahimi, A.M. 2014. *The annihilating-ideal graph of a commutative ring with respect to an ideal*. *Communications in Algebra*, 42: 2269-2284.

Andrianomena, S., Clarkson, C.A., Patel, P., Umeh, O. and Uzan, J. 2014. *Non-linear relativistic contributions to the cosmological weak-lensing convergence*. *Journal of Cosmology and Astroparticle Physics*, 2014(06): 023(27pp).

Antonopoulos, C.H.G., Bountis, T., Skokos, C.H. and Drossos, L. 2014. *Complex statistics and diffusion in nonlinear disordered particle chains*. *Chaos*, 24: 0244005: (7pp).

Armengaud, E., Avignone, F.T., Betz, M., Brax, P., Brun, P., Cantatore, G., Carmona, J.M., Carosi, G.P., Caspers, F., Caspi, S., Cetin, S.A., Chelouche, D., Christensen, F.E., Dael, A., Dafni, T., Davenport, M., Derbin, A.V., Desch, K., Diago, A., Dbrich, B., Dratchnev, I., Dudarev, A., Eleftheriadis, C., Fanourakis, G., Ferrer-Ribas, E., Galn, J., Garza, J.G., Garca, J.A., Geralis, T., Gimeno, B., Giomataris, I., Gninenko, S., Gomez, H., Gonzalez-Daz, D., Guendelman, E., Hailey, C.J., Hiramatsu, T., Hoffmann, D.H.H., Horns, D., Iguaz, F.J., Irastorza, I.G., Isern, J., Imai, K., Jakobsen, A.C., Jaeckel, J., Jakovcic, K., Kaminski, J., Kawasaki, M., Karuza, M., Krcmar, M., Kousouris, K., Krieger, C., Lacic, B., Limousin, O., Lindner, A., Liolios, A., Luzn, G., Matsuki, S., Muratova, V.N., Nones, C., Ortega, I., Papaevangelou, T., Pivovarov, M.J., Raffelt, G., Redondo, J., Ringwald, A., Russenschuck, S., Ruz, J., Saikawa, K., Savvidis, I., Sekiguchi, T., Semertzidis, Y.K., Shilon, I., Sikivie, P., Silva, H., ten Kate, H., Tomas, A., Troitsky, S., Vafeiadis, T., van Bibber, K., Veldre, P., Villar, J.A., Vogel, J.K., Walckiers, L., Weltman, A., Wester, W., Yildiz, S.C. and Zioutas, K. 2014. *Conceptual design of the international axion observatory (IAXO)*. *Journal of Instrumentation*, 9(5): T05002(42pp). DOI: 10.1088/1748-0221/9/05/T05002.

Bacon, D., Andrianomena, S., Clarkson, C.A., Bolejko, K. and Maartens, R. 2014. *Cosmology with Doppler lensing*. *Monthly Notices of The Royal Astronomical Society*, 443(3): 1900-1915.

- Bamba, B., Nojiri, S., Odintsov, S. and Saez Gomez, D. 2014. Inflationary universe from perfect fluid and F(R) gravity and its comparison with observational data. *Physical Review D*, 90: 124061(12pp).
- Bamba, B., Nojiri, S., Odintsov, S. and Saez Gomez, D. 2014. Possible antigravity regions in F(R) theory? *Physics Letters B*, 730: 136-140.
- Banaschewski, B. and Gilmour, C.R. 2014. Realcompact Alexandroff frames. *Topology and its Applications*, 161: 26-36.
- Barashenkov, I.V. 2014. Hamiltonian formulation of the standard PT-symmetric nonlinear Schrödinger dimer. *Physical Review A*, 90: 045802(4pp). DOI: 10.1103/PhysRevA.90.045802.
- Barashenkov, I.V. and Gianfreda, M. 2014. An exactly solvable PT-symmetric dimer from a Hamiltonian system of nonlinear oscillators with gain and loss. *Journal of Physics A-Mathematical and Theoretical*, 47(2014): 282001(18pp).
- Bargmann, S., Reddy, B.D. and Klusemann, B. 2014. A computational study of a model of single-crystal strain-gradient viscoplasticity with an interactive hardening relation. *International Journal of Solids and Structures*, 51: 2754-2764.
- Bertacca, D., Maartens, R. and Clarkson, C.A. 2014. Observed galaxy number counts on the lightcone up to second order: I. main result. *Journal of Cosmology and Astroparticle Physics*, 2014(9): 037(9pp).
- Bertacca, D., Maartens, R. and Clarkson, C.A. 2014. Observed galaxy number counts on the lightcone up to second order: II. derivation. *Journal of Cosmology and Astroparticle Physics*, 2014(11): 013(61pp).
- Betoule, M., Kessler, R., Guy, J., Mosser, J., Hardin, D., Biswas, R., Astier, P., El-Hage, P., König, M., Kuhlmann, S., Marriner, J., Pain, R., Regnault, N., Balland, C., Bassett, B.A., Brown, P.J., Campbell, H., Carlberg, R.G., Cellier-Holzem, F., Cinabro, D., Conley, A., D'Andrea, C.B., DePoy, D.L., Doi, M., Ellis, R.S., Fabbro, S., Filippenko, A., Foley, R.J., Frieman, J., Fouchez, D., Galbany, L., Goobar, A., Gupta, R., Hill, G.J., Hlozek, R., Hogan, C.J., Hook, I.M., Howell, D.A., Jha, S., Le Guillou, L., Leloudas, G., Lidman, C., Marshall, J.L., Miller, A., Muro, A.M., Neveu, J., Nichol, R., Olmstead, M.D., Palanque-DeLabrouille, N., Perlmutter, S., Prieto, J.L., Pritchet, C.J., Richmond, M., Riess, A.G., Rühlmann-Kleider, V., Sako, M., Schahmanche, K., Schneider, D., Smith, M., Sollerman, J., Sullivan, M., Walton, N.A. and Wheeler, C.J. 2014. Improved cosmological constraints from a joint analysis of the SDSS-II and SNLS supernova samples. *Astronomy & Astrophysics*, 568: A22(32pp). DOI: 10.1051/0004-6361/201423413.
- Blair, C.D.A., Malek, E. and Routh, A.J. 2014. An O(D,D) invariant Hamiltonian action for the superstring. *Classical and Quantum Gravity*, 31: 205011(18pp).
- Blamey, L., Plaganyi-Lloyd, E.E. and Branch, G.M. 2014. Was overfishing of predatory fish responsible for a lobster-induced regime shift in the Benguela? *Ecological Modelling*, 273: 140-150.
- Bogaers, A., Kok, S., Reddy, B.D. and Franz, T. 2014. Quasi-Newton methods for implicit black-box FSI coupling. *Computer Methods in Applied Mechanics and Engineering*, 279: 113-132.
- Brummer, G.C.L. 2014. Sergio Salbany and his mathematical legacy. *Topology and its Applications*, 168: 2-7.
- Busti, V., Clarkson, C.A. and Seikel, M. 2014. Evidence for a lower value for H_0 from cosmic chronometers data? *Monthly Notices of the Royal Astronomical Society*, 441: L11-L15.
- Butterworth, D.S., Rademeyer, R., Brandao, A.D.G., Geromont, H. and Johnston, S.J. 2014. Does selectivity matter? A fisheries management perspective. *Fisheries Research*, 158: 194-204.
- Carroll, T. and Ratzkin, J. 2014. A reverse holder inequality for extremal Sobolev functions. *Potential Analysis*, 6: 1-10.
- Castrick, W. and Cools, F. 2014. A minimal set of generations for the canonical ideal of a nondegenerate curve. *Journal of the Australian Mathematical Society*, 42(6): 1-14.
- Cembranos, J.A.R., de la Cruz-Dombriz, A. and Jimeno Romero, P. 2014. Kerr-Newman black holes in f(R) theories. *International Journal of Geometric Methods in Modern Physics*, 11(1): 1450001(22pp).
- Chama, A and Reddy, BD 2014. Stability and convergence of two three-field finite element formulations for elasticity. *Computational Methods in Applied Mathematics*, 14 (3) 305-316.
- Chama, A. and Reddy, B.D. 2014. Stability and convergence of two three-field finite element formulations for elasticity. *Computational Methods in Applied Mathematics*, 14(3): 1-12.
- Chinyoka, T. and Makinde, O.D. 2014. Analysis of non-Newtonian flow with reacting species in a channel filled with a saturated porous medium. *Journal of Petroleum Science and Engineering*, 121: 1-8.
- Chinyoka, T. and Makinde, O.D. 2014. Computational dynamics of arterial blood flow in the presence of magnetic field and thermal radiation therapy. *Advances in Mathematical Physics*, 2014: 915640(9pp).
- Clarkson, C.A., Umeh, O., Maartens, R. and Durrer, R. 2014. What is the distance to the CMB? *Journal of Cosmology and Astroparticle Physics*, 2014(11): 036(21pp).
- Clementino, M.M., Hofmann, D. and Janelidze, G. 2014. The monads of classical algebra are seldom weakly cartesian. *Journal of Homotopy and Related Structures*, 9: 175-197.

- Collins-Amburo, C., Haihambo, P. and Kunzi, H. 2014. Endpoints in To-quasi-metric spaces. *Topology and its Applications*, 168: 82-93.
- Cunnama, D., Andrianomena, S., Cress, C.M., Faltenbacher, A., Gibson, B.K. and Theuns, T. 2014. The environmental dependence of neutral hydrogen in the GIMIC simulations. *Monthly Notices of the Royal Astronomical Society*, 438: 2530-2537.
- Dankelmann, P., Erwin, D., Goddard, W., Mukwembi, S. and Swart, H. 2014. A characterisation of eccentric sequences of maximal outerplanar graphs. *Australasian Journal of Combinatorics*, 58(3): 376-391.
- de la Cruz-Dombriz, A., Dunsby, P.K.S. and Saez Gomez, D. 2014. Junction conditions in extended teleparallel gravities. *Journal of Cosmology and Astroparticle Physics*, 12(048): 1-18.
- de la Cruz-Dombriz, A., Dunsby, P.K.S., Busti, V. and Kandhai, S. 2014. Tidal forces in $f(R)$ theories of gravity. *Physical Review D*, 89: 064029(9pp).
- de la Cruz-Dombriz, A., Montero, M. and Shahbazi, C.S. 2014. Topological solutions in ungauged supergravity. *Physical Review D*, 89: 065005(7pp).
- De Villiers, M. and Heideman, N.J. 2014. Conjecturing, refuting and proving within the context of dynamic geometry. *Learning and Teaching Mathematics*, 17: 20-26.
- Donev, I. and Reddy, B.D. 2014. Time-dependent finite element simulations of a shear-thinning viscoelastic fluid with application to blood flow. *International Journal for Numerical Methods in Fluids*, 75: 668-686.
- Driver, K.A. and Muldoon, M.E. 2014. Zeros of pseudo-ultraspherical polynomials. *Analysis and Applications*, 12(5): 563-581.
- Ellis, G.F.R. 2014. On the philosophy of cosmology. *Studies in History and Philosophy of Modern Physics*, 46: 5-23.
- Ellis, G.F.R. 2014. Stephen Hawking's 1966 Adams prize essay. *European Physical Journal H*, 39: 403-411.
- Ellis, G.F.R. 2014. The evolving block universe and meshing together of times. *Annals of the New York Academy of Sciences*, 1326: 26-41.
- Ellis, G.F.R. 2014. The trace-free Einstein equations and inflation. *General Relativity and Gravitation*, 46: 1619(14pp).
- Ellis, G.F.R. 2014. Time really exists! The evolving block universe. *Euresis Journal*, 7: 11-25.
- Ellis, G.F.R. and Gibbons, G.W. 2014. Discrete Newtonian cosmology. *Classical and Quantum Gravity*, 31: 025003(24pp).
- Ellis, G.F.R. and Silk, J. 2014. Defend the integrity of physics. *Nature*, 516: 321-323.
- Ellis, G.F.R. and Uzan, J. 2014. Inflation and the Higgs particle. *Astronomy & Geophysics*, 55(1): 1.19-1.20.
- Ellis, G.F.R., Goswami, R., Hamid, A.I.M. and Maharaj, S.D. 2014. Astrophysical black hole horizons in a cosmological context: nature and possible consequences on Hawking radiation. *Physical Review D*, 90: 084013(13pp).
- February, S., Larena, J., Clarkson, C.A. and Pollney, D. 2014. Evolution of linear perturbations in spherically symmetric dust spacetimes. *Classical and Quantum Gravity*, 31: 175008(25pp).
- Frith, J.L. and Schauerte, A. 2014. A method for constructing coreflections for nearness frames. *Applied Categorical Structures*, 22: 741-753.
- Frith, J.L. and Schauerte, A. 2014. Uniformities and covering properties for partial frames (I). *Categories and General Algebraic Structures with Applications*, 2(1): 1-21.
- Frith, J.L. and Schauerte, A. 2014. Uniformities and covering properties for partial frames (II). *Categories and General Algebraic Structures with Applications*, 2(1): 23-35.
- Fröb, M.B., Garriga, J., Kanno, S., Sasaki, M., Soda, J., Tanaka, T. and Vilenkin, A. 2014. Schwinger effect in de Sitter space. *Journal of Cosmology and Astroparticle Physics*, 2014(04): 009(34pp).
- Gaba, Y.U. 2014. Startpoints and (x,y) -Contractions in Qasi-Pseudometric Spaces. *Journal of Mathematics*, 709253: 1-8.
- Gao, X., Lilley, M. and Peter, P. 2014. Production of non-gaussianities through a positive spatial curvature bouncing phase. *Journal of Cosmology and Astroparticle Physics*, 2014(07): 010(1)-010(33).
- Gerdjikov, V.S. and Yanovski, A.B. 2014. CBC systems with Mikhailov reductions by Coxeter automorphism: I. Spectral theory of the recursion operators. *Studies in Applied Mathematics*, 134: 145-180.
- Gottwald, G.A. and Skokos, C.H. 2014. Preface to the focus issue: chaos detection methods and predictability. *Chaos*, 24: 024201(2pp). DOI: 10.1063/1.4884603.
- Gran, M., Janelidze, G. and Ursini, A. 2014. Weighted commutators in semi-abelian categories. *Journal of Algebra*, 397: 643-665.
- Gurtin, M.E. and Reddy, B.D. 2014. Gradient single-crystal plasticity within a Mises-Hill framework based on a new formulation of self-and latent-hardening. *Journal of the Mechanics and Physics of Solids*, 68: 134-160.
- Heavens, A., Seikel, M., Nord, B.D., Aich, M., Bouffanais, Y., Bassett, B.A. and Hobson, M.P. 2014. Generalized Fisher matrices. *Monthly Notices of the Royal Astronomical Society*, 445: 1687-1693.
- Holanda, R.F.L. and Busti, V. 2014. Probing cosmic opacity at high redshifts with gamma-ray bursts. *Physical Review D*, 89: 103517(7pp).

- Holanda, R.F.L., Busti, V. and Pordeus da Silva, G. 2014. Robustness of H_0 determination at intermediate redshifts. *Monthly Notices of the Royal Astronomical Society*, 443: L74-L78.
- Iribarrem, A., Andreani, P., February, S., Gruppioni, C., Lopes, A.R., Ribeiro, M.B. and Stoeger, W.R. 2014. Relativistic cosmology number densities in void-Lemaitre-Tolman-Bondi models. *Astronomy and Astrophysics Review*, 563: A20(11pp). DOI: 10.1051/0004-6361/201322507.
- Iyiola, O.S. and Gaba, Y.U. 2014. On metric type spaces and fixed point theorems. *Applied Mathematical Sciences*, 8(79): 3905-3920.
- Jack, S., Hoffman, M.T., Rohde, R., Durbach, I.N. and Archibald, M.L. 2014. Blow me down: a new perspective on *Aloe dichotoma* mortality from windthrow. *BMC Ecology*, 14: 7(12pp).
- Janelidze, G. 2014. To Professor Hvedri Inassaridze's 80th birthday. *Journal of Homotopy and Related Structures*, 9: 1-5.
- Janelidze, G. and Sobral, M. 2014. What are effective descent morphisms of Priestley spaces? *Topology and its Applications*, 168: 135-143.
- Javili, A., McBride, A.T., Steinmann, P. and Reddy, B.D. 2014. A unified computational framework for bulk and surface elasticity theory: a curvilinear-coordinate-based finite element methodology. *Computational Mechanics*, 54: 745-762.
- Jimnez, J.B., de la Cruz-Dombriz, A., Dunsby, P.K.S. and Saez Gomez, D. 2014. Backreaction mechanism in multifluid and extended cosmologies. *Journal of Cosmology and Astroparticle Physics*, 2014(05): 031(32pp).
- Kanno, S., Murugan, J., Shock, J. and Soda, J. 2014. Entanglement entropy of $-$ vacua in de Sitter space. *Journal of High Energy Physics*, 2014(07): 072(20pp).
- Kunzi, H. 2014. A construction of the B-completion of a To-quasi-metric space. *Topology and its Applications*, 170: 25-39.
- Kunzi, H. and Losonczi, A. 2014. Maximal pairwise complementary families of quasi-uniformities. *Topology and its Applications*, 165: 64-68.
- Kyriakopoulos, N., Koukouloyannis, V., Skokos, C.H. and Kevrekidis, P. 2014. Chaotic behavior of three interacting vortices in a confined Bose-Einstein condensate. *Chaos*, 24: 024410(12pp).
- Leanizbarrutia, I. and Saez Gomez, D. 2014. Parametrizing the transition to the phantom epoch with supernovae Ia and standard rulers. *Physical Review D*, 90: 063508(16pp).
- Legner, D., Skatulla, S., Mbewu, J., Rama, R., Reddy, B.D., Sansour, C., Davies, N.H. and Franz, T. 2014. Studying the influence of hydrogel injections into the infarcted left ventricle using the element-free Galerkin method. *International Journal for Numerical Methods in Biomedical Engineering*, 30: 416-429.
- Lim, W.C., Regis, M. and Clarkson, C.A. 2014. Spherically symmetric cosmological spacetimes with dust and radiation – numerical implementation. *Journal of Cosmology and Astroparticle Physics*, 10: 1-16.
- Lopez-Arcos, C., Nastase, H., Rojas, F. and Murugan, J. 2014. Conductivity in the gravity dual to massive ABJM and the membrane paradigm. *Journal of High Energy Physics*, 2014(1): 036(5pp).
- Martin, R. 2014. Near invariance and symmetric operators. *Operators and Matrices*, 8(2): 513-528.
- Murugan, J., Nastase, H., Rughoonauth, N. and Shock, J. 2014. Particle-vortex and Maxwell duality in the AdS₄CP³/ABJM correspondence. *Journal of High Energy Physics*, 2014: 51(27pp).
- Niroomand, P. and Russo, F.G. 2014. Some restrictions on the Betti numbers of a nilpotent Lie algebra. *Bulletin of the Belgian Mathematical Society-Simon Stevin*, 21(3): 403-413.
- Nzioki, A., Goswami, R. and Dunsby, P.K.S. 2014. Jebsen-Birkhoff theorem and its stability in $f(R)$ gravity. *Physical Review D*, 89: 064050(12pp).
- Olmstead, M.D., Brown, P.J., Sako, M., Bassett, B.A., Bizyaev, D., Brinkmann, J., Brownstein, J.R., Brewington, H., Campbell, H., D'Andrea, C.B., Dawson, K.S., Ebelke, G.L., Frieman, J., Galbany, L., Garnavich, P.M., Gupta, R., Hlozek, R., Jha, S., Kunz, M., Lampeitl, H., Malanushenko, E., Malanushenko, V., Marriner, J., Miquel, R., Montero-Dorta, A.D., Nichol, R.C., Oravetz, D.J., Pan, K., Schneider, D., Simmons, A., Smith, M. and Snedden, S.A. 2014. Host galaxy spectra and consequences for supernova typing from the SDSS SN survey. *Astronomical Journal*, 147(4): 75(24pp).
- Patel, P., Abdalla, F.B., Bacon, D., Rowe, B., Smirnov, O.M. and Beswick, R.J. 2014. Weak lensing measurements in simulations of radio images. *Monthly Notices of the Royal Astronomical Society*, 444: 2893-2909.
- Pelteret, J. and Reddy, B.D. 2014. Development of a computational biomechanical model of the human upper-airway soft-tissues toward simulating obstructive sleep apnea. *Clinical Anatomy*, 27: 182-200.
- Plaganyi, E.E., Ellis, N., Blamey, L., Morello, E.B., Norman-Lopez, A., Robinson, W., Sporcic, M. and Sweatman, H. 2014. Ecosystem modelling provides clues to understanding ecological tipping points. *Marine Ecology-Progress Series*, 512: 99-113.
- Povall, T., McBride, A.T. and Reddy, B.D. 2014. Finite element simulation of large-strain single-crystal viscoplasticity: an investigation of various hardening relations. *Computational Materials Science*, 81: 386-396.

- Punt, A.E., A'mar, T., Bond, N.A., Butterworth, D.S., De Moor, C., De Oliveira, J., Haltuch, M.A., Hollowed, A.B. and Szuwalski, C. 2014. Fisheries management under climate and environmental uncertainty: control rules and performance simulation. *Ices Journal of Marine Science*, 71(8): 2208-2220.
- Russo, F.G. 2014. On a problem of P.Hall for Engel words II. *Bulletin of the Australian Mathematical Society*, 90(2): 237-246.
- Shankar, F., Guo, H., Bouillot, V., Rettura, A., Meert, A., Buchan, S., Kravtsov, A., Bernardi, M., Sheth, R., Vikram, V., Marchesini, D., Behroozi, P., Zheng, Z., Maraston, C., Ascaso, B., Lemaux, B.C., Capozzi, D., Huertas-Company, M., Gal, R.R., Lubin, L.M., Conselice, C.J., Carollo, M. and Cattaneo, A. 2014. On the intermediate-redshift central stellar mass-halo mass relation, and implications for the evolution of the most massive galaxies since $z \sim 1$. *Astrophysical Journal Letters*, 797: L27(6pp). DOI: 10.1088/2041-8205/797/2/L27.
- Skokos, C.H., Gerlach, E., Bodyfelt, J.D., Papamikos, G. and Eggl, S. 2014. High order three part split symplectic integrators: efficient techniques for the long time simulation of the disordered discrete nonlinear Schrödinger equation. *Physics Letters A*, 378: 1809-1815.
- Smith, M., Bacon, D., Nichol, R.C., Campbell, H., Clarkson, C.A., Maartens, R., D'Andrea, C.B., Bassett, B., Cinabro, D., Finley, D.A., Frieman, J., Galbany, L., Garnavich, P.M., Olmstead, M.D., Schneider, D., Shapiro, C. and Sollerman, J. 2014. The effect of weak lensing on distance estimates from supernovae. *Astrophysical Journal*, 780: 24(13pp).
- Suchkov, S.V., Dmitriev, S.V., Sukhorukov, A.A., Barashenkov, I.V., Andriyanova, E.R., Badgetdinova, K.M. and Kivshar, Y.S. 2014. Phase sensitivity of light dynamics in PT-symmetric couplers. *Applied Physics A-Materials Science & Processing*, 115: 443-447.
- Tieleman, O., Skokos, C.H. and Lazarides, A. 2014. Chaoticity without thermalisation in disordered lattices. *Europhysics Letters*, 105(2): 20001(5pp).
- Umeh, O., Clarkson, C.A. and Maartens, R. 2014. Nonlinear relativistic corrections to cosmological distances, redshift and gravitational lensing magnification: I. key results. *Classical and Quantum Gravity*, 31: 202001(13pp).
- Umeh, O., Clarkson, C.A. and Maartens, R. 2014. Nonlinear relativistic corrections to cosmological distances, redshift and gravitational lensing magnification: II. derivation. *Classical and Quantum Gravity*, 31: 205001(34pp).
- Valkenburg, W., Marra, V. and Clarkson, C.A. 2014. Testing the Copernican principle by constraining spatial homogeneity. *Monthly Notices of the Royal Astronomical Society*, 438: L6-L10.
- Volpert, V. and Vougalter, V. 2013. Emergence and propagation of patterns in nonlocal reaction-diffusion equations arising in the theory of speciation. *Lecture Notes in Mathematics*, 2071: 331-353.
- Wielgus, M., Ellis, G.F.R., Vincent, F.H. and Abramowicz, M.A. 2014. Cosmic background radiation in the vicinity of a Schwarzschild black hole: no classic firewall. *Physical Review D*, 90: 124024(13pp).
- Wieser, A., Storz, E., Liegl, G., Peter, A., Pritsch, M., Shock, J., Wai, S.N. and Schubert, S. 2014. Efficient quantification and characterization of bacterial outer membrane derived nano-particles with flow cytometric analysis. *International Journal of Medical Microbiology*, 304: 1032-1037.
- Yahya, S., Seikel, M., Clarkson, C.A., Maartens, R. and Smith, M. 2014. Null tests of the cosmological constant using supernovae. *Physical Review D*, 89: 023503(9pp).

Peer-reviewed published conference proceedings

- de la Cruz-Dombriz, A. 2014. Towards degeneracy problem breaking by large scale structures methods. In A. Garcia-Parrado, F.C. Mena, F. Moura and E. Vaz (eds), *Progress in Mathematical Relativity, Gravitation and Cosmology. Proceedings of the Spanish Relativity Meeting ERE2012, 3-7 September 2012, University of Minho, Guimares, Portugal*. Berlin: Springer Berlin Heidelberg. ISBN 9783642401565.
- Ellis, G.F.R. 2014. Lectures on cosmology. In F. Roig, C.B. Pereira, J.S. Alcaniz, S. Daflon and R. de la Reza (eds), *Proceedings of the XVII Special Courses at the National Observatory of Rio de Janeiro (CCE), 5-9 November 2012, Rio de Janeiro, Brazil*. USA: AIP. ISBN 9780735412774.
- Gerdjikov, V.S. and Yanovski, A.B. 2014. On soliton equations with Zh and Dh, reductions: conservation laws and generating operators. In B. Aneva, G. Grahovski, R. Ivanov and D. Mladenov (eds), *Proceedings of the International Conference on Integrability, recursion operators and Soliton interactions, 29-31 August 2012, Sofia, Bulgaria*. Sofia, Bulgaria: Avangard Prima. ISBN 9786191603138.
- Gerdjikov, V.S. and Yanovski, A.B. 2014. Riemann-Hilbert problems, families of commuting operators and soliton equations. In B.G. Konopelchenko, G. Landolfi, L. Martina, R. Vitolo (eds), *Proceedings of, Physics and Mathematics of Nonlinear Phenomena (PMNP 2013)*. Journal of Physics: Conference Series 482 (2014), 22-29 June 2013, Gallipoli, Italy. London: Institute of Physics Publishing. ISBN 17426596.
- Ireka, I., Wakeni, M. and Baghai-Wadji, A.R. 2014. A novel Ab-initio finite difference-based method for convenient implementation of the mass-loading effect in microacoustic devices. *Proceedings of 2014 IEEE International Ultrasonics Symposium (IUS 2014), 3-6 September 2014, Chicago, Illinois, USA*. United States of America: IEEE. ISBN 9781479970506.
- Keresztes, Z., Forsberg, M., Bradley, M., Dunsby, P.K.S. and Gergely, L.A. 2014. Perturbations of Kantowski-

Sachs models with a cosmological constant. In A. Garcia-Parrado, F.C. Mena, F. Moura, E. Vaz (eds), *Proceedings of Progress in Mathematical Relativity, Gravitation and Cosmology. Proceedings of the Spanish Relativity Meeting ERE2012*, 3-7 September 2012, University of Minho, Guimares, Portugal. Berlin: Springer Berlin Heidelberg. ISBN 9783642401565.

Kunzi, H. 2014. The q-hyperconvex hull of a To-quasi-metric space. In J. Rodriguez-Lpez, S. Romaguera and P. Tirado (eds), *Proceedings of the International Summer Workshop in Applied Topology*, 1-2 September 2014, Valenica. Spain: Editorial Universitate Politcnica de Valncia. ISBN 9788490482827.

Oozeer, N., Bassett, B.A. and De Boer, K. 2014. Education and public outreach activities in radio astronomy with the SKA South Africa. In V. Monebhurrun (ed), *Proceedings of 2nd Radio and Antenna Days of the Indian Ocean (RADIO 2014) – IOP Conference Series: Materials and Engineering 67 (2014)*, 7-10 April 2014, Mauritius. London: Institute of Physics Publishing. ISBN 1757-899X.

Yanovski, A.B. 2014. Recursion operators and expansions over adjoint solutions for the Caudrey-Beals-Coifman system with Z_p reductions of Mikhailov type. In B. Aneva, G. Grahovski, R. Ivanov and D. Mladenov (eds), *Proceedings of the International Conference on Integrability, recursion operators and Soliton interactions*, 29-31 August 2012, Sofia, Bulgaria. Sofia, Bulgaria: Avangard Prima. ISBN 9786191603138.

Zemlyanaya, E., Alexeeva, N.V. and Atanasova, P.K. 2014. Ac-driven nonlinear Schrödinger equation and double sine-Gordon equation: Numerical study of complexes of localized states. In MD Todorov(eds), *Proceedings of Applications of Mathematics in Technical and Natural Sciences: 6th International Conference for Promoting the Application of Mathematics in Technical and Natural Sciences – AMITaNS '14*, 26 June-1 July 2014, Albena, Bulgaria. USA: American Institute of Physics. ISBN 9780735412682.

DEPARTMENT OF MOLECULAR AND CELL BIOLOGY

Head of department: Associate Professor Vernon Coyne

Departmental profile

The Department has interests and expertise in diverse areas of biology. The problem of desiccation in plants is being tackled by a combination of physiological and molecular approaches. "Biofarming" research involves the expression of pharmaceutically-important proteins in plants and insect cells, including vaccine candidates for human and animal diseases such as bluetongue, human papillomaviruses, human rotavirus and psittacine beak and feather disease. Plant biotechnology research for plant improvement is focused on developing virus-resistant and drought tolerant crops and the molecular basis of nickel hyperaccumulation in plants. Plant defence responses are studied in both model and crop plants. Metabolic fingerprinting of plants with potential medicinal properties is performed with a view to production of natural medicinal products. Circadian rhythms and their role in plant development and responses, as well as sports performance in humans, are studied. Eukaryotic gene expression projects include the role of chromatin modifications in regulating the rhythms of gene expression and gene expression during neuronal differentiation and stress. Basic mechanisms underlying the regulation of gene expression are studied in human cells and in *Plasmodium*, with a view to pinpointing *Plasmodium*-specific mechanisms that can be exploited to develop novel anti-malarial drugs. Misfolding of DNA sequences is being investigated as a possible cause of inheritable mental diseases. In addition, the actions of mammalian hormones, synthetic contraceptives and steroid receptors are being investigated with a view to understanding mechanisms, integration of signalling pathways and role in HIV pathogenesis. Research on viral pathogenesis includes virus-host genomic and proteomic interaction studies for Maize streak virus, and protein structure-function studies of the envelope protein and its role in HIV transmission. Evolutionary biology projects focus on mechanisms that shape both genomic and population-level diversity, as well as evolution of limb development in bats. Molecular virology studies focus on the genetic diversity and molecular biology of single-stranded DNA viruses of plants and animals, of the marine virome, and of papillomaviruses of primates and humans. Structural studies are being carried out by electron microscopy and X-ray crystallography on a number of proteins, including glutamine synthetase and members of the nitrilase

superfamily, to obtain insights necessary for rational drug and industrial enzyme design. Research in marine biotechnology includes genetic and proteomic studies of the immune response of the abalone (*Haliotis midae*). In addition, probiotics are being developed to improve the growth rate and disease resistance of farmed abalone. Research in microbiology includes molecular-genetic investigations of industrially and medically important anaerobic bacteria such as *Corynebacterium*, *Bacteroides fragilis*, *Bifidobacterium* and the fibre-degrading bacteria in the ostrich gut. The taxonomy of antibiotic-producing actinobacteria is being investigated. The Department also runs an analytical facility (amino acid analysis, DNA sequencing, DNA synthesis, DNA microarrays and protein identification). The instrumentation in the facility consists of HPLCs, a GC MS/MS and LC-ESI QTOF and MALDI instruments for mass spectrometry.

Departmental Statistics

Permanent and long-term Contract Staff

Professor	4
Associate Professor	3
Senior Lecturers	5
Lecturers	3
Research Staff	8
Technical Support Staff	10
Administrative and Clerical Staff	5
Departmental Assistant	8
Total	46

Emeritus Staff

Emeritus Professor	2
Total	2

Students and Postdoctoral Fellows

Postdoctoral Fellows	14
Doctoral	51
Masters	26
Honours	21
Undergraduates	297
Total	409

Research Fields and Staff

Permanent Staff

ASSOCIATE PROFESSOR VERNON COYNE

Head of Department, marine biotechnology; abalone immune system; abalone stress and disease response; abalone haemocyte proteome; abalone probiotics; fish vaccine production; phage display; aquaculture

PROFESSOR JILL FARRANT

Desiccation tolerance; resurrection plants; seeds; plant physiology; molecular biology; systems biology; metabolic fingerprinting of medicinal plants

PROFESSOR JANET HAPGOOD

Molecular mechanisms of cell signalling and eukaryotic gene regulation via steroid receptors: role in HIV pathogenesis, immune and reproductive function

PROFESSOR NICOLA ILLING

Evolution of development; regulation of gene expression; limb development, comparative genomics

PROFESSOR EDWARD RYBICKI

Plant and tissue culture-derived vaccines; oceanic viromics; Human papillomavirus (HPV); rotavirus; bluetongue virus; Beak and feather disease virus; geminivirus; Maize streak virus; molecular virology; molecular biotechnology

ASSOCIATE PROFESSOR VAL ABRATT

Bacteroides fragilis; nitrogen metabolism; virulence; metronidazole; DNA damage and repair; *Bifidobacterium*; *Lactobacillus*; probiotics

ASSOCIATE PROFESSOR SHARON REID

Gram-positive and anaerobic bacteria; *Clostridium acetobutylicum*; *Bifidobacterium*; *Lactobacillus*, gene regulation of nitrogen- and carbon-substrate utilisation; probiotics; molecular systematics; biofuels

DR ROBERT INGLE

Senior lecturer, interactions between plants and their environment: regulation of innate immunity by the circadian clock, molecular basis of nickel hyperaccumulation, mechanisms of vegetative desiccation tolerance

DR PAUL MEYERS

Senior lecturer, actinobacterial taxonomy; family *Streptosporangiaceae*; *Microbispora*; *Nonomuraea*; *Kribbella*; bioprospecting; novel antitubercular antibiotics

DR COLLEEN O'RYAN

Senior lecturer, genotype-phenotype association of Autism Spectrum Disorders; genetics; epigenetics; population genetics

DR LAURA RODEN

Senior lecturer, plant and human circadian rhythms; flowering time and photoperiodism; circadian regulation of plant defences; chronotype and performance

DR SUHAIL RAFUDEEN

Senior lecturer, abiotic and biotic stress tolerance in plants; signalling and regulation of plant gene expression during stress; plant molecular biology; proteomics (protein expression profiling, protein mining); *Xerophyta viscosa*; maize; Tef

DR THOMAS OELGESCHLÄGER

Lecturer, molecular mechanisms of RNA polymerase II transcription regulation in eukaryotes; core promoter-selective transcription regulation mechanisms; transcription regulation in *Plasmodium falciparum*

DR ZENDA WOODMAN

Lecturer, HIV: structure-function and viral fitness; biochemical analysis of envelope's role in HIV pathogenesis

Contract Staff

DR INGA HITZEROTH

Senior research officer, plant-derived vaccines; Human Papillomaviruses (HPV), Beak and feather disease virus (BFDV), rotavirus and Influenza virus

DR ANN MEYERS

Research officer, plant-produced proteins, monoclonal antibodies and vaccines; bluetongue virus; Rift Valley fever virus; Crimean Congo haemorrhagic fever virus; foot and mouth disease virus

DR DIONNE SHEPHERD

Research officer, virology and plant biotechnology; development of maize streak virus resistant maize; maize streak virus diversity; plant-virus interactions

DR SHANE MURRAY

Lecturer, crop genomics and transcriptomics; resistance in maize and grapevine to pathogens (fungi, viruses and phytoplasma)

DR KERSHINI IYER

Senior scientific officer, plant biotechnology; promoter studies and RNA silencing of stress-associated genes from *Zea mays*

Emeritus Professors

EMERITUS PROFESSOR HORST KLUMP

Energy landscapes of dynamic ensembles of rolling triplet repeat bulge loops: implications for DNA expansion associated with mental-disease states

EMERITUS PROFESSOR JENNIFER THOMSON

Transgenic maize for resistance to the African Maize streak virus and tolerance to drought

Postdoctoral Research Fellows

DR BRUNA GALVÃO

Discovery and characterisation of novel putative virulence factors of the human opportunistic pathogen *Bacteroides fragilis*; membrane-associated adhesins; cell surface appendages; proteases

DR SUZANNE HUDDY

Plant and algal biotechnology; plant-produced enzymes and pharmaceuticals; plant and algal tissue culture and transformation studies; Influenza

DR RODRICK KATETE

Glycosylation profile of matching transmitter/founder and chronic subtype C HIV-1 gp140

DR BRIAN KULLIN

Clostridium difficile (epidemiology, factors involved in host colonisation and mechanisms of antibiotic resistance); oxalate utilisation by probiotic gut bacteria (possible role in kidney stone prevention)

DR NASHIED PETON

LEA proteins from resurrection plants and their role in plant stress tolerance; plant biotechnology

DR JEFFREY ROHLAND

Biomaterial design using actinobacterial tyrosinases; actinobacterial laccase gene discovery and cloning; actinobacterial taxonomy and characterisation

DR MEGAN HENDRIKSE

Human papillomavirus (HPV) pseudovirion neutralization assay; second generation vaccines (HPV)

DR SOPHIA.STATHOPOULOS

Autism; DNA methylation

DR ELIZABETH MORTIMER

Human papillomavirus (HPV) pseudovirion neutralization assay; plant produced influenza vaccine

DR ROSEMARY MEGGERSEE

Fish vaccine production; phage display library; aquaculture

DR NATASHIA MUNA

Evolutionary genetics; population genetics; figwasps

DR RENATE LAMPRECHT

Human papillomavirus; recombinant protein production; biopharming; therapeutic vaccine development; pseudovirion-based neutralisation assays; tissue culture

DR ALTA VAN ZYL

Human papillomavirus; plant-based expression; virus-like particles; vaccines

DR NICOLETTE ADAMS

Molecular basis of nickel hyperaccumulation in plants

Contact Details

Postal address: Department of Molecular and Cell
Biology University of Cape Town, Private Bag X3,
Rondebosch, 7701
Telephone: +27 21 650 3270
Fax: +27 21 650-1861
Email: ethne.liebenberg@uct.ac.za
Web: www.mcb.uct.ac.za

RESEARCH OUTPUT

Chapters in books

Govea-Alonso, D.O., Rybicki, E.P. and Rosales-Mendoza, S. 2014. Plant-based vaccines as a Global vaccination approach: current perspectives. In S. Rosales-Mendoza (ed), *Genetically Engineered Plants as a Source of Vaccines Against Wide Spread Diseases*, pp. 265-280. 2014. New York: Springer Heidelberg New York Dordrecht London. ISBN 9781493908493.

Ingle, R.A. and Roden, L.C. 2014. Circadian regulation of Plant immunity to Pathogens. In J. M. Walker (ed), *Plant Circadian Networks Methods and Protocols*, pp. 273-285. 2014. New York: Springer Heidelberg New York Dordrecht London. ISBN 9781493906994.

Thomson, J.A. 2014. Africa. In S. J. Smith (ed), *Handbook on Agriculture, Biotechnology and development*, pp. 99-111. UK: Edward Elgar Publishing. ISBN 9780857938343.

Thomson, J.A. and Morris, J. 2014. Genetically modified crops commercialized in South Africa. In F.Wambugu and D.Kamanga (eds), *Biotechnology in Africa*, pp. 53-65. Switzerland: Springer Heidelberg New York Dordrecht London. ISBN 9783319040004.

Thomson, J.A., Mundree, S., Shepherd, D.N. and Rybicki, E.P. 2014. The use of African indigenous genes in the development of transgenic maize tolerant to drought and resistant to maize streak virus. In F.Wambugu and D.Kamanga (eds), *Biotechnology in Africa*, pp. 135-155. Switzerland: Springer Heidelberg New York Dordrecht London. ISBN 9783319040004.

Articles in peer-reviewed journals

Africander, D., Strobeck, K.H. and Hapgood, J. 2014. A comparative study of the androgenic properties of progesterone and progestins, medroxyprogesterone acetate (MPA) and norethisterone acetate (NET-A). *Journal of Steroid Biochemistry and Molecular Biology*, 143(2014): 404-415.

Carstens, M., McCrindle, T., Adams, N., Diener, A., Guzha, D., Murray, S.L., Parker, J., Denby, K. and Ingle, R.A. 2014. Increased resistance to biotrophic pathogens

in the *Arabidopsis* constitutive induced resistance 1 Mutant is EDS1 and PAD4-dependent and modulated by environmental temperature. *PLoS One*, 9(10): e109853(8pp). DOI: 10.1371/journal.pone.0109853.

Chapman, R.E., Bourn, W.R., Shephard, E.G., Stutz, H., Douglass, N., Mgwebi, T., Meyers, A.E., Chin'ombe, N. and Williamson, A.-L. 2014. The use of directed evolution to create a stable and immunogenic recombinant BCG expressing a modified HIV-1 gag antigen. *PLoS One*, 9(7): e103314. DOI: 10.1371/journal.pone.0103314.

Drechlsler, N., Thieme, T., Shepherd, D.N. and Schubert, J. 2014. Evaluation of the resistance of German cultivars of maize and sorghum to maize streak virus. *Journal of Plant Diseases and Protection*, 121: 3-9.

El Sayed, A.I., Rafudeen, M.S. and Golldack, D. 2014. Physiological aspects of raffinose family oligosaccharides in plants: protection against abiotic stress. *Plant Biology*, 16: 1-8.

Everest, G., Le Roes-Hill, M., Rohland, J., Enslin, S. and Meyers, P. 2014. *Amycolatopsis roodepoortensis* sp.nov. and *Amycolatopsis speibonae* sp.nov.: antibiotic-producing actinobacteria isolated from South African soils. *Journal of Antibiotics*, 67: 813-818.

Galvao, B., Weber, B.W., Rafudeen, M.S., Ferreira, E.O., Patrick, S. and Abratt, V.R. 2014. Identification of a Collagen Type I Adhesin of *Bacteroides fragilis*. *PLoS One*, 9(3): e91141. DOI: 10.1371/journal.pone.0091141.

Govender, Y., Avenant, C., Verhoog, N., Ray, R., Grantham, N., Africander, D. and Hapgood, J. 2014. The injectable-only contraceptive medroxyprogesterone acetate, unlike norethisterone acetate and progesterone, regulates inflammatory genes in endocervical cells via the glucocorticoid receptor. *PLoS One*, 9(5): e96497. DOI: 10.1371/journal.pone.0096497.

Hapgood, J., Ray, R., Govender, Y., Avenant, C. and Tomasicchio, M. 2014. Differential glucocorticoid receptor-mediated effects on immunomodulatory gene expression by progestin contraceptives: implications for HIV-1 pathogenesis. *American Journal of Reproductive Immunology*, 71(6): 505-512.

Hapgood, J., Africander, D., Louw, R., Ray, R. and Rohwer, J. 2014. Potency of progestogens used in hormonal therapy: toward understanding differential actions. *Journal of Steroid Biochemistry and Molecular Biology*, 142: 39-47.

Huddy, R. and Coyne, V.E. 2014. Detection and localisation of the Abalone probiotic vibrio *midiae* SY9 and its extracellular protease, *VmproA*, within the digestive tract of the South African Abalone, *Haliotis midiae*. *PLoS One*, 9(1): e866233(9pp). DOI: 10.1371/journal.pone.0086623.

Kullin, B., Tannock, G.W., Loach, G.W., Kimura, K., Abratt, V.R. and Reid, S.J. 2014. A functional analysis of the formyl-coenzyme A (*frc*) gene from *Lactobacillus*

- reuteri 100-23C. *Journal of Applied Microbiology*, 116: 1657-1667.
- Kunorozva, L., Roden, L.C. and Rae, D. 2014. Perception of effort in morning-type cyclists is lower when exercising in the morning. *Journal of Sports Sciences*, 32(10): 917-925.
- Louw-Du Toit, R., Hapgood, J. and Africander, D. 2014. Medroxyprogesterone acetate differentially regulates Interleukin (IL)-12 and IL-10 in a human ectocervical epithelial cell line in a glucocorticoid receptor (GR)-dependent manner. *Journal of Biological Chemistry*, 289(45): 31136-31149.
- Lyall, R., Ingle, R.A. and Illing, N. 2014. The window of desiccation tolerance shown by early-stage Germinating Seedlings remains open in the resurrection plant, *Xerophyta viscosa*. *PLoS One*, 9(3): e93093(9pp). DOI: 10.1371/journal.pone.0093093.
- Meyers, P. 2014. Gyrase subunit B amino acid signatures for the actinobacterial family Streptosporangiaceae. *Systematic and Applied Microbiology*, 37(2014): 252-260.
- Monjane, A., Martin, D.P., Lakay, F.M., Muhire, B., Pande, D., Varsani, A., Harkins, G.W., Shepherd, D.N. and Rybicki, E.P. 2014. Extensive recombination-induced disruption of genetic interactions is highly deleterious but can be partially reversed by small numbers of secondary recombination events. *Journal of Virology*, 88(14): 7843-7851.
- Mthembu, Y., Lotz, Z., Tyler, M., De Beer, C., Rodrigues, J.D.E.A., Schoeman, L. and Mall, A.S. 2014. Purified human breast milk MUC1 and MUC4 inhibit human immunodeficiency virus. *Neonatology*, 105: 211-217.
- Muhire, B., Golden, M., Murrell, B., Lefevre, P., Lett, J.-M., Gray, A., Poon, A., Ngandu, N., Semegni, Y., Tanov, P., Monjane, A., Harkins, G.W., Varsani, A., Shepherd, D.N. and Martin, D.P. 2014. Evidence of pervasive biologically functional secondary structures within the genomes of eukaryotic single-stranded DNA viruses. *Journal of Virology*, 88(4): 1972-1989.
- Nicholson, S., Smalley, D.S., Smith, C.J. and Abratt, V.R. 2014. The recA: a novel stress response gene cluster in *Bacteroides fragilis*. *Research in Microbiology*, 165: 290-299.
- Oluwafemi, S., Kraberger, S., Shepherd, D.N., Martin, D.P. and Varsani, A. 2014. A high degree of African streak virus diversity within Nigerian maize fields includes a new mastrevirus from *Axonopus compressus*. *Archives of Virology*, 159: 2765-2770.
- Plancot, B., Vanier, G., Maire, F., Bardor, M., Lerouge, P., Farrant, J.M., Moore, J.P., Driouich, A., Vire-Gibouin, M., Afonso, C. and Loutelier-Bourhis, C. 2014. Structural characterization of arabinoxylans from two African plant species *Eragrostis nindensis* and *Eragrostis tef* using various mass spectrometric methods. *Rapid Communications in Mass Spectrometry*, 28: 908-916.
- Rybicki, E.P. 2014. Plant-based vaccines against viruses. *Virology Journal*, 11: 205(20pp).
- Rybicki, E.P. and Martin, D.P. 2014. Virus-derived ssDNA vectors for the expression of foreign proteins in plants. *Current Topics in Microbiology and Immunology*, 375(2014): 19-45.
- Shepherd, D.N., Dugdale, B., Martin, D.P., Varsani, A., Lakay, F., Bezuidenhout, M.E., Monjane, A., Thomson, J.A., Dale, J. and Rybicki, E.P. 2014. Inducible resistance to maize streak virus. *PLoS One*, 9(8): e105932. DOI: 10.1371/journal.pone.0105932.
- Smart, M. and Roden, L.C. 2014. Initiation of flowering in *Protea compacta* x *Protea neriifolia* hybrid 'carnival' coincides with expression of the flowering locus T homologue. *Plant Molecular Biology Reporter*, 32: 372-381.
- Solofoharivelo, M.C., Van Der Walt, A., Stephan, D., Burger, J.T. and Murray, S.L. 2014. MicroRNAs in fruit trees: discovery, diversity and future research directions. *Plant Biology*, 16(2014): 856-865.
- Stathopoulos, S., Bishop, J. and O'Ryan, C. 2014. Genetic signatures for enhanced olfaction in the African mole-rats. *PLoS One*, 9(4): e93336. DOI: 10.1371/journal.pone.0093336.
- Theka, T.P., Rodgers, A., Webber, D. and O'Ryan, C. 2014. Variability in Kidney stone incidence between black and white South Africans: AGT Pro11Leu Polymorphism Is not a factor. *Journal of Endourology*, 28(5): 577-581.
- Tonnabel, J., Mignot, A., Douzery, E.J., Rebelo, A.G., Schurr, F.M., Midgley, J.J., Illing, N., Justy, F., Orcel, D. and Olivieri, I. 2014. Convergent and correlated evolution of major life-history traits in the angiosperm Genus *Leucadendron* (Proteaceae). *Evolution*, 68(10): 2775-2792.
- Verhoog, N., Reid, F., Vanden Berghe, W., Smith, C., Haegemand, G., Hapgood, J. and Louw, A. 2014. Inhibition of corticosteroid-binding Globulin gene expression by Glucocorticoids involves C/EBPB. *PLoS One*, 9(10): e110702(14pp). DOI: 10.1371/journal.pone.0110702.
- Volker, J., Plum, G.E., Gindikin, V., Klump, H. and Breslauer, K. 2014. Impact of bulge loop size on DNA triplet repeat domains: implications for DNA repair and expansion. *Biopolymers*, 101(1): 1-12.
- Wehmeyer, L., Kotitschke, A., Lang, D.M. and Hapgood, J. 2014. Lipid Raft-and Protein kinase C-mediated Synergism between glucocorticoid- and gonadotropin-releasing hormone signaling results in decreased cell proliferation. *Journal of Biological Chemistry*, 289: 10235-10251.
- Whitehead, M., Ohlschlager, P., Almajhdi, F., Alloza, L., Marzabal, P., Meyers, A.E., Hitzeroth, I.I. and Rybicki, E.P. 2014. Human papillomavirus (HPV) type 16 E7 protein

bodies cause tumour regression in mice. BMC Cancer, 14(2014): 1-15.

Woodenberg, W.R., Berjak, P., Pammenter, N.W. and Farrant, J.M. 2014. Development of cycad ovules and seeds. 2. Histological and ultrastructural aspects of ontogeny of the embryo in *Encephalartos natalensis* (Zamiaceae). Protoplasma, 251: 797-816.

Woodward, J. and Wepf, R. 2014. Macromolecular 3D SEM reconstruction strategies: signal to noise ratio and resolution. Ultramicroscopy, 144(201): 43-49.

DEPARTMENT OF OCEANOGRAPHY

(Including the Nansen-Tutu Centre for Marine Environmental Research, ICEMASA, and the Research Diving Unit)

Head of Department: Professor Chris Reason

Departmental Profile

The Department of Oceanography is the only such Department in sub-Saharan Africa, and is the major focus for research in physical oceanography, atmospheric science, ocean circulation, and climate in South Africa and elsewhere in Africa. The Department has research groupings in sea-going observations, satellite marine remote sensing, coastal oceanography, ocean and atmospheric modelling, marine and coastal meteorology, severe weather, the science underpinning operational oceanography, and climate variability and change. Six scientists in the Department have been favorably evaluated in the review process of the National Research Foundation. Active international associations are maintained by collaborative projects with Norway, France, Germany, Spain, the UK, Australia, USA and Canada. The Department maintains close contact with marine science activities in the governmental, private and academic sectors in South Africa and into Africa. The UCT Research Diving Unit (RDU) is housed within the Department and is fully equipped with a decompression chamber and compressor. Most scientific diving at UCT is carried out in conjunction with the RDU.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	1
Associate Professor	1
Senior Lecturer	2
Lecturer	1
Research Staff	2
Technical Support Staff	2
Administrative and Clerical Staff	2
Total	11

Honorary and Emeritus Staff

Emeritus Professors	3
Honorary Professor	1
Honorary Research Associates	15
Total	19

Students and Postdoctoral Fellows

Postdoctoral Fellows	4
Doctoral	29
Master's	11
Honours	12
Undergraduate	210
Total	266

Research Fields and Staff

Permanent Staff

PROFESSOR C.J.C. REASON

Head of Department, Southern Hemisphere climate variability and change, Coastal and mesoscale meteorology, severe weather, regional oceanography, modelling

A/PROF MARCELLO VICHI

Biogeochemical modelling

DR I.J. ANSORGE

Senior Lecturer; Southern Ocean

DR H.N. WALDRON

Senior Lecturer; biogeochemical oceanography

DR J. JACKSON-VEITCH

Lecturer; Benguela upwelling system, modelling

DR R. ROMAN

Senior Scientific Officer; satellite marine remote sensing

MR P. TRUTER

Diving Supervisor; ocean diving

MRS C. KHAI

Administrative Officer

MRS N. JABAAR

Resource Centre Officer

DST/NRF SARCHI Chairs

To be appointed

Contract Research Staff

A/PROF M. ROUAULT (PRINCIPAL RESEARCH OFFICER)

Ocean-atmosphere interaction

DR BJORN BACKEBERG

Regional ocean modeling, data assimilation

Emeritus Professors

PROFESSOR G.B. BRUNDRIT

Operational oceanography

PROFESSOR J.G. FIELD

Marine Research Institute

PROFESSOR F.A. SHILLINGTON

Shelf oceanography, satellite marine remote sensing

Honorary Professors

PROFESSOR L.V. SHANNON

Benguela ecosystem

Honorary Research Associates

DR S. BERNARD

Optical oceanography

DR D. BYRNE

Agulhas current

DR C. DUNCOMBE RAE

Coastal ocean dynamics

DR J.C. HERMES

Regional ocean modelling

DR P. MONTEIRO

Biogeochemical oceanography

DR A. MAVUME

Tropical cyclones

DR M.J. KRUG

Agulhas current, remote sensing

DR T. LAMONT

Coastal oceanography, remote sensing

DR S. SWART

Southern ocean and gliders

DR N.C. FAUCHEREAU

Climate variability

DR C.J. ROY

Fisheries oceanography, upwelling systems

DR K. BROWN

Marine ecologist

DR S.J. THOMALLA

Southern Ocean bio-optics and the biological carbon pump.

DR S. HERBETTE

Physical oceanography

DR P. PENVEN

Numerical modelling

Postdoctoral Fellows**DR ANNE TREASURE**

Ecological modeling, Southern ocean

DR ISSUFO HALO

Ocean circulation modelling

DR MARK MATTHEWS

Cyanobacteria, lakes remote sensing

DR CHARINE COLLINS

Ocean modelling, data simulation

Contact Details

Postal Address: Department of Oceanography, University of Cape Town, Private Bag X3, Rondebosch, 7701
 Telephone: +27 21 650 3277
 Fax: +27 21 650 3979
 Email: claire.khai@uct.ac.za
 Web: www.sea.uct.ac.za
 UCT General Enquiries: +27 21 650 9111
 UCT web: www.uct.ac.za

RESEARCH OUTPUT**Chapters in books**

Bernard, S., Pitcher, G.C., Evers-King, H., Robertson, L., Matthews, M., Rabagliati, A. and Balt, C. 2014. Ocean colour remote sensing of harmful Algal blooms in the Benguela system. In V. Barale and M. Gade (eds), *Remote Sensing of the African Seas*, pp. 185-203. Netherlands: Springer. ISBN 9789401780070.

Johannessen, J.A., Chapron, B., Collard, F. and Backeberg, B. 2014. Use of SAR data to monitor the greater Agulhas current. In V. Barale and M. Gade (eds), *Remote Sensing of the African Seas*, pp. 251-262. Netherlands: Springer. ISBN 9789401780070.

Krug, M., Cipollini, P. and Dufois, F. 2014. Observing the Agulhas current with sea surface temperature and altimetry data: challenges and perspectives. In V. Barale

and M. Gade (eds), *Remote Sensing of the African Seas*, pp. 233-249. Netherlands: Springer. ISBN 9789401780070.

Articles in peer-reviewed journals

Ansorge, I.J., Baringer, M.O., Campos, E.J.D., Dong, S., Fine, R.A., Garzoli, S.L., Goni, G., Meinen, C.S., Perez, R.C., Piola, n., Roberts, M.J., Speich, S., Sprintall, J., Terre, T. and Van den Berg, M. 2014. Basin-wide oceanographic array bridges the South Atlantic. *EOS*, 95(6): 53-54.

Ansorge, I.J., Durgadoo, J.V. and Treasure, A.M. 2014. Sentinels to climate change. The need for monitoring at South Africa's Subantarctic laboratory. *South African Journal of Science*, 110(1/2): a0044(4pp).

Backeberg, B., Counillon, F., Johannessen, J.A. and Pujol, M.-I. 2014. Assimilating along-track SLA data using the EnOI in an eddy resolving model of the Agulhas system. *Ocean Dynamics*, 64: 1121-1136.

Barlow, R., Lamont, T., Morris, T., Sessions, H. and Van den Berg, M. 2014. Adaptation of phytoplankton communities to mesoscale eddies in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 106-118.

Brown, S., Nicholls, R.J., Hanson, S., Brundrit, G.B., Dearing, J.A., Dickson, M.E., Gallop, S.L., Gao, S., Haigh, I.D., Hinkel, J., Jimnez, J.A., Klein, R.J.T., Kron, W., Lzr, A.N., Neves, C.F., Newton, A., Pattiaratchi, C., Payo, A., Pye, K., Snchez-Arcilla, A., Siddall, M., Shareef, A., Tompkins, E.L., Vafeidis, A.T., Van Maanen, B., Ward, P.J. and Woodroffe, C.D. 2014. Shifting perspectives on coastal impacts and adaptation. *Nature Climate Change*, 4: 752-755.

Chevallier, C., Herbette, S., Mari, L., Le Borgne, P., Marsouin, A., Pr, S., Levier, B. and Reason, C.J.C. 2014. Observations of the Ushant front displacements with MSG/SEVIRI derived sea surface temperature data. *Remote Sensing of Environment*, 146: 3-10.

Collins, C., Hermes, J.C. and Reason, C.J.C. 2014. Mesoscale activity in the Comoros basin from satellite altimetry and a high-resolution ocean circulation model. *Journal of Geophysical Research-Oceans*, 119: 4745-4760.

Commins, M., Ansorge, I.J. and Ryan, P.G. 2014. Multi-scale factors influencing seabird assemblages in the African sector of the Southern Ocean. *Antarctic Science*, 26(1): 38-48.

Cuif, C., Kaplan, D.M., Lefvre, J., Faure, V.M., Caillaud, M., Verley, P., Vigliola, L. and Lett, C. 2014. Wind-induced variability in larval retention in a coral reef system: a biophysical modelling study in the South-West lagoon of New Caledonia. *Progress in Oceanography*, 122: 105-115.

Deshayes, J., Curry, R. and Msadek, R. 2014. CMIP5 model intercomparison of freshwater budget and circulation in the North Atlantic. *Journal of Climate*, 27(9): 3298-3317.

- Djakour, S., Penven, P., Bourls, B., Veitch, J.A. and Kon, V. 2014. Coastally trapped eddies in the north of the Gulf of Guinea. *Journal of Geophysical Research-Oceans*, 119: 6805-6819.
- Domingues, R., Goni, J., Swart, S. and Dong, S. 2014. Wind forced variability of the Antarctic circumpolar current south of Africa between 1993 and 2010. *Journal of Geophysical Research-Oceans*, 119: 1123-1145.
- Dueri, S., Bopp, L. and Maury, O. 2014. Projecting the impacts of climate change on skipjack tuna abundance and spatial distribution. *Global Change Biology*, 20: 742-753.
- Dufois, F., Hardman-Mountford, N.J., Greenwood, J., Richardson, A.J., Feng, M., Herbette, S. and Matear, R.J. 2014. Impact of eddies on surface chlorophyll in the South Indian Ocean. *Journal of Geophysical Research-Oceans*, 119: 8061-8077.
- Evers-King, H., Bernard, S., Lain, E. and Probyn, T.A. 2014. Sensitivity in reflectance attributed to phytoplankton cell size: forward and inverse modelling approaches. *Optics Express*, 22(10): 11536-11551.
- Guastella, L.A. and Smith, A.M. 2014. Coastal dynamics on a soft coastline from serendipitous webcams: KwaZulu-Natal, South Africa. *Estuarine Coastal and Shelf Science*, 150: 76-85.
- Guastella, L.A., Smith, A.M. and Breetzke, T. 2014. Coastal management and mis-management: comparing successes and failures at two lagoon outlets in KwaZulu-Natal, South Africa. *Journal of Coastal Research*, 70: 513-520.
- Halo, I., Backeberg, B., Penven, P., Anson, I.J., Reason, C.J.C. and Ullgren, J.E. 2014. Eddy properties in the Mozambique channel: a comparison between observations and two numerical ocean circulation models. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 38-53.
- Halo, I., Penven, P., Backeberg, B., Anson, I.J., Shillington, F.A. and Roman, R. 2014. Mesoscale eddy variability in the southern extension of the East Madagascar current: seasonal cycle, energy conversion terms, and eddy mean properties. *Journal of Geophysical Research-Oceans*, 119: 7324-7356.
- Herbette, S., Hochet, A., Huck, T., Colin de Verdere, A., Collin, J. and Shillington, F.A. 2014. The stability of dipolar gyres on a beta-plane. *Geophysical and Astrophysical Fluid Dynamics*, 108(5): 479-502.
- Jiping, L., Swart, S., Bhaskar, P.V., Newman, L., Meredith, M., Schofield, O. and Jianfeng, H.E. 2014. The SOOS Asian Workshop on Southern Ocean research and observations. *Polar Research*, 25(2): 121-125.
- Jose, Y., Aumont, O., Machu, B., Penven, P., Moloney, C.L. and Maury, O. 2014. Influence of mesoscale eddies on biological production in the Mozambique channel: several contrasted examples from a coupled ocean-biogeochemistry model. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 79-93.
- Joubert, W., Swart, S., Tagliabue, A., Thomalla, S. and Monteiro, P.M.S. 2014. The sensitivity of primary productivity to intra-seasonal mixed layer variability in the sub-Antarctic Zone of the Atlantic Ocean. *Biogeosciences Discussions*, 11: 4335-4358.
- Krug, M., Tournadre, J. and Dufois, F. 2014. Interactions between the Agulhas current and the eastern margin of the Agulhas bank. *Continental Shelf Research*, 81: 67-79.
- Kumar, B.P., Vialard, J., Lengaigne, M., Murty, V.S.N., Foltz, G.R., McPhaden, M.J., Pous, S. and de Boyer Montegut, C. 2014. Processes of interannual mixed layer temperature variability in the thermocline ridge of the Indian Ocean. *Climate Dynamics*, 43: 2377-2397.
- Lain, E., Bernard, S. and Evers-King, H. 2014. Biophysical modelling of phytoplankton communities from first principles using two-layered spheres: equivalent Algal populations (EAP) model. *Optics Express*, 22(14): 16745-16758.
- Lamont, T., Barlow, R. and Kyewalyanga, M. 2014. Physical drivers of phytoplankton production in the southern Benguela upwelling system. *Deep-Sea Research Part I-Oceanographic Research Papers*, 90: 1-16.
- Lamont, T., Barlow, R., Morris, T. and Van den Berg, M. 2014. Characterisation of mesoscale features and phytoplankton variability in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 94-105.
- Loveday, B., Durgadoo, J.V., Reason, C.J.C., Biastoch, A. and Penven, P. 2014. Decoupling of the Agulhas leakage from the Agulhas current. *Journal of Physical Oceanography*, 44: 1776-1797.
- Lübbecke, J.F., Burls, N.J., Reason, C.J.C., and McPhaden, M.J. 2014. Variability in the South Atlantic anticyclone and the Atlantic Niño mode. *Journal of Climate*, 27: 8135-8150.
- Lucas, A.J., Pitcher, G.C., Probyn, T.A. and Kudela, R.M. 2014. The influence of diurnal winds on phytoplankton dynamics in a coastal upwelling system off southwestern Africa. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 101: 50-62.
- Malauene, B.S., Shillington, F.A., Roberts, M.J. and Moloney, C.L. 2014. Cool, elevated chlorophyll-a waters off northern Mozambique. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 68-78.
- Manyilizu, M., Dufois, F., Penven, P. and Reason, C.J.C. 2014. Interannual variability of sea surface temperature and circulation in the tropical western Indian Ocean. *African Journal of Marine Science*, 36(2): 233-252.
- Marsac, F., Barlow, R., Ternon, J.F., Ménard, F. and Roberts, M.J. 2014. Ecosystem functioning in the Mozambique

- channel: synthesis and future research. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 212-220.
- Mashifane, T. and Moyo, N. 2014. Acute toxicity of selected heavy metals to *Oreochromis mossambicus* fry and fingerlings. *African Journal of Aquatic Science*, 39(3): 279-285.
- Matthews, M. 2014. Eutrophication and cyanobacterial blooms in South African inland waters: 10 years of MERIS observations. *Remote Sensing of Environment*, 155: 161-177.
- Morozov, E.G., Tarakanov, R.Y.u., Ansoerge, I.J. and Swart, S. 2014. Jets and transport of the Antarctic Circumpolar current in the Drake passage. *Fundamental and Applied Hydrophysics*, 7(3): 6pp.
- Muller, A.A., Reason, C.J.C., Schmidt, M., Mohrholz, V. and Eggert, A. 2014. Computing transport budgets along the shelf and across the shelf edge in the northern Benguela during summer (DJF) and winter (JJA). *Journal of Marine Systems*, 140: 82-91.
- Penven, P., Halo, I., Pous, S. and Marie, L. 2014. Cyclogeostrophic balance in the Mozambique channel. *Journal of Geophysical Research-Oceans*, 119: 1054-1067.
- Philibert, M., Waldron, H.N. and Clark, D. 2014. A geographical and seasonal comparison of nitrogen uptake by phytoplankton in the Southern Ocean. *Ocean Science Discussions*, 11: 251-267.
- Pitcher, G.C., Probyn, T.A., du Randt, A., Lucas, A.J., Bernard, S., Evers-King, H., Lamont, T. and Hutchings, L. 2014. Dynamics of oxygen depletion in the nearshore of a coastal embayment of the southern Benguela upwelling system. *Journal of Geophysical Research-Oceans*, 119: 2183-2200.
- Pohl, B., Rouault, M. and Sen Roy, S. 2014. Simulation of the annual and diurnal cycles of rainfall over South Africa by a regional climate model. *Climate Dynamics*, 43: 2207-2226.
- Porri, F., Jackson, J.M., Von der Meden, C.E.O., Weidberg, N. and McQuaid, C. 2014. The effect of mesoscale oceanographic features on the distribution of mussel larvae along the south coast of South Africa. *Journal of Marine Systems*, 132: 162-173.
- Potier, M., Bach, P., Ménard, F. and Marsac, F. 2014. Influence of mesoscale features on micronekton and large pelagic fish communities in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 184-199.
- Potts, W.M., Henriques, R., Santos, C.V., Munnik, K., Ansoerge, I.J., Dufois, F., Booth, A.J., Kirchner, C.H., Sauer, W.H.H. and Shaw, P.W. 2014. Ocean warming, a rapid distributional shift, and the hybridization of a coastal fish species. *Global Change Biology*, 20: 2765-2777.
- Pous, S., Lazure, P., Andre, G., Dumas, F., Halo, I. and Penven, P. 2014. Circulation around La Reunion and Mauritius islands in the South-Western Indian Ocean: a modeling perspective. *Journal of Geophysical Research-Oceans*, 119: 1957-1976.
- Rascle, N., Chapron, B., Ponte, A., Ardhuin, F. and Klein, P. 2014. Surface roughness imaging of currents shows divergence and strain in the wind direction. *Journal of Physical Oceanography*, 44(8): 2153-2163.
- Rouault, M., Verley, P. and Backeberg, B. 2014. Wind increase above warm Agulhas Current eddies. *Ocean Science Discussions*, 11: 2367-2389.
- Samson, G., Masson, S., Lengaigne, M., Keerthi, M.G., Vialard, J., Pous, S., Madec, G., Jourdain, N.C., Jullien, S., Menkes, C. and Marchesiello, P. 2014. The NOW regional coupled model: application to the tropical Indian Ocean climate and tropical cyclone activity. *Journal of Advances in Modeling Earth Systems*, 6: 700-722.
- Smith, A.M., Green, A.N., Cooper, J.A.G., Dixon, S., Pretorius, L., Wiles, E. and Guastella, L.A.. 2014. Cliff-top storm deposits (55-63m amsl) from Morgan Bay, South Africa. *Journal of Coastal Research*, 70: 349-355.
- Smith, A.M., Guastella, L.A. and Goble, B.J. 2014. Forecasting lagoon outlet erosion: KwaZulu-Natal, southeast Africa. *Journal of Coastal Research*, 70: 151-155.
- Smith, A.M., Guastella, L.A., Botes, Z.A., Bundy, S.C. and Mather, A.A. 2014. Forecasting cyclic coastal erosion on a multi-annual to multi-decadal scale: Southeast African coast. *Estuarine Coastal and Shelf Science*, 150: 86-91.
- Swart, S., Jiping, L., Bhaskar, P.V., Newman, L., Finney, K., Meredith, M. and Schofield, O. 2014. The SOOS Asian Workshop: Exploring possibilities for collaboration. *Advances in Polar Science*, 25(2): 138-145.
- Tagliabue, A., Salle, J.-B., Bowie, A.R., Lévy, M., Swart, S. and Boyd, P.W. 2014. Surface-water iron supplies in the Southern Ocean sustained by deep winter mixing. *Nature Geoscience*, 7: 314-320.
- Talandier, C., Deshayes, J., Treguier, A.-M., Capet, X., Benschila, R., Debrue, L., Dussin, R., Molines, J.-M. and Madec, G. 2014. Improvements of simulated Western North Atlantic current system and impacts on the AMOC. *Ocean Modelling*, 76: 1-19.
- Ternon, J.F., Bach, P., Barlow, R., Huggett, J.A., Jaquemet, S., Marsac, F., Ménard, F., Penven, P., Potier, M. and Roberts, M.J. 2014. The Mozambique channel: from physics to upper trophic levels. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 1-9.
- Ternon, J.F., Roberts, M.J., Morris, T., Hancke, L. and Backeberg, B. 2014. In situ measured current structures of the eddy field in the Mozambique channel. *Deep-Sea Research Part II-Topical Studies in Oceanography*, 100: 10-26.

Travers-Trolet, M., Shin, Y.-J. and Field, J. 2014. An end-to-end coupled model ROMS-N2P2Z2D2-OSMOSE of the southern Benguela foodweb: parameterisation, calibration and pattern-oriented validation. *African Journal of Marine Science*, 36(1): 11-29.

Travers-Trolet, M., Shin, Y.-J., Shannon, L., Moloney, C.L. and Field, J. 2014. Combined fishing and climate forcing in the Southern Benguela upwelling ecosystem: an end-to-end modelling approach reveals dampened effects. *PLoS One*, 9(4): e94286(9pp).

Treasure, A.M. and Chown, S. 2014. Antagonistic effects of biological invasion and temperature change on body size of island ectotherms. *Diversity and Distributions*, 20: 202-213.

Treguier, A.-M., Deshayes, J., Le Sommer, J., Lique, C., Madec, G., Penduff, T., Molines, J.-M., Barnier, B., Bourdalle-Badie, R. and Talandier, C. 2014. Meridional transport of salt in the global ocean from an eddy-resolving model. *Ocean Science*, 10: 243-255.

Weldon, D.J. and Reason, C.J.C. 2014. Variability of rainfall characteristics over the South coast region of South Africa. *Theoretical and Applied Climatology*, 115: 177-185.

Zinke, J., Loveday, B., Reason, C.J.C., Dullo, W.-C. and Kroon, D. 2014. Madagascar corals track sea surface temperature variability in the Agulhas current core region over the past 334 years. *Scientific Reports*, 4: 4393(8pp).

Peer-reviewed published conference proceedings

Dieppois, B., Rouault, M. and New, N. 2014. Austral summer relationship between ENSO and Southern African rainfall in CMIP5 coupled models. 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere. Peer reviewed conference proceedings (SASAS 2014), 01-02 October 2014, Potchefstroom, South Africa. South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

Halo, I. 2014. Modelling the mean-state of the oceanographic conditions in the Western Indian Ocean during September – December, using the Regional Ocean Modelling System. In M. Odido, S. Mahongo, and S. Aura, (eds), Proceedings of the First IOAFRICA Ocean Forecasting Workshop for the Western Indian, 11-15 August 2014, Nairobi, Kenya. Nairobi, Kenya: United Nations Educational, Scientific and Cultural Organization.

Longandjo, G.N. and Rouault, M. 2014. The annual cycle of Central Africa rainfall and its relationship with the surrounding tropical oceans. 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere. Peer reviewed conference proceedings (SASAS 2014), 01-02 October

2014, Potchefstroom, South Africa. South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

Rouault, M. 2014. Impact of ENSO on South African water management areas. 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere. Peer reviewed conference proceedings (SASAS 2014), 01-02 October 2014, Potchefstroom, South Africa. South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

Sacatelli, R., Schofield, T., Todoroff, K., Carandang, A., Eng, A., Lowry, I., Mather, H., Ramos, A., Swart, S., Dottor, M., Strandkov, N., Kohut, J., Schofield, O. and Glenn, S. 2014. Ocean predictive skill assessments in the South Atlantic: crowd-sourcing of student-based discovery. Proceedings of Oceans – St. Johns 2014, 14-19 September 2014, St. John's, Newfoundland. Newfoundland, Canada: Institute of Electrical and Electronics Engineers (IEEE). ISBN 9781479949205.

Sovara, M., Hermes, J.C. and Reason, C.J.C. 2014. Influence of the subtropical Indian Ocean Dipole on the Agulhas Current. 30th Annual Conference of South African Society for Atmospheric Sciences, 2014: Modelling and Observing the Atmosphere. Peer reviewed conference proceedings (SASAS 2014), 01-02 October 2014, Potchefstroom, South Africa. South Africa: South African Society for Atmospheric Sciences (SASAS). ISBN 9780620627771.

DEPARTMENT OF PHYSICS

Head of Department: Professor A Buffler

Departmental Profile

The Department of Physics is accommodated in the R W James Building, which houses research laboratories equipped for nuclear physics, computational physics and nanoelectronics production. Additional facilities available to the Department are provided within the building by the Electron Microscope Unit (Scanning Electron Microscope and Transmission Electron Microscope), and at iThemba LABS (200 MeV cyclotron, a 5 MeV Van de Graaff accelerator used for ion beam analysis, including a nuclear microprobe, high resolution X-ray diffraction, and PET scanners adapted for positron emission particle tracking). The Department is also a member of both the ATLAS and ALICE collaborations at CERN.

Major areas of interest include:

- Experimental nuclear physics at iThemba LABS (D G Aschman, A Buffler, R W Fearick): (a) Gamma ray spectroscopy with the AFRODITE array; (b) Giant resonance reactions with the magnetic spectrometer; (c) Fast neutron physics.
- Theoretical Physics (J W A Cleymans, C A Dominguez, W A Horowitz, A Peshier, S M Perez, H W G Weigert, and R D Viollier): (a) Research within the Centre for Theoretical and Mathematical Physics; (b) Structure of elementary particles; (c) Weak interactions; (d) Quantum Electrodynamics and Chromodynamics in vacuum at extreme temperatures and densities; (e) Renormalization group equations (Color Glass Condensate); (f) Nonlinear effects in QCD at high densities; (g) Phenomenology of heavy ion reactions; (h) Quark gluon plasma; (i) Nuclear structure and models.
- Experimental high energy physics (J W A Cleymans, T Dietel, A Hamilton): (a) Research within the UCT-CERN Research Centre; (b) Relativistic heavy ion collisions within the ALICE collaboration at CERN; (c) High energy proton-proton collisions within the ATLAS collaboration at CERN.
- Nanophysics and solid state physics (M D Blumenthal, D T Britton, C M Comrie and M Härting): (a) Research within the Nanosciences Innovation Centre; (b) Structural and electrical properties of thin films; (c) X-ray diffraction studies of strain fields and residual stress analysis; (d) Single electron transport and interactions.
- Applied Physics (A Buffler, I Govender, M R Nchodu, S W Peterson): (a) Positron Emission Particle Tracking at PEPT Cape Town, iThemba LABS; (b) Particulate flow and interaction characterization in engineering and biological systems by computational and mechanistic modelling; (c) Radiation transport modelling in industrial and medical systems; (d) Applied nuclear physics using neutrons.
- Tertiary physics education (M S Allie, A Buffler, D Taylor and S M Wheaton): (a) Curriculum design and evaluation; (b) Role of language; (c) Understanding of measurement and uncertainty; (d) Modelling and visualization; (e) Computational Physics Education.

Departmental Statistics

Permanent and long-term Contract Staff

Professor	3
Associate Professor	5
Senior Lecturer	4
Lecturer	4
Part-time Lecturer	0
Technical Staff	4
Administrative Staff	3
Departmental & Lab Assistants	4
Total	27

Honorary and Emeritus Staff

Honorary Professor	0
Emeritus Professor	5
Emeritus Associate Professor	3
Honorary Research Associate	5
Total	13

Students and Postdoctoral Fellows

Postdoctoral Fellows	3
Doctoral	35
Master's	20
Honours	5
Undergraduate	1505
Total	1568

Staff and Research Fields

Permanent Staff

PROFESSOR A BUFFLER, HEAD OF DEPARTMENT

Applied Nuclear Physics, Physics Education
andy.buffler@uct.ac.za

PROFESSOR D T BRITTON

Nanophysics
david.britton@uct.ac.za

PROFESSOR A PESHIER

Theoretical High Energy Physics
andre.peshier@uct.ac.za

ASSOCIATE PROFESSOR M S ALLIE (CHED)

Physics Education
saalih.allie@uct.ac.za

ASSOCIATE PROFESSOR M D BLUMENTHAL

Solid State Physics and nanophysics
mark.blumenthal@uct.ac.ac

ASSOCIATE PROFESSOR R W FEARICK

Experimental Nuclear Physics
roger.fearick@uct.ac.za

ASSOCIATE PROFESSOR M HÄRTING

Nanophysics
margit.harting@uct.ac.za

ASSOCIATE PROFESSOR H W G WEIGERT

Theoretical High Energy Physics
heribert.weigert@uct.ac.za

DR A HAMILTON

Senior Lecturer; Experimental Particle Physics (ATLAS)
andrew.hamilton@uct.ac.za

DR I GOVENDER

Senior Lecturer; Applied Physics
indresan.govender@uct.ac.za

MR G LEIGH

Senior Lecturer; Physics Education
gregor.leigh@uct.ac.za

DR S M WHEATON

Senior Lecturer; Computational Physics
spencer.wheaton@uct.ac.za

DR T DIETEL

Lecturer; Experimental Particle Physics (ALICE)
tom.dietel@uct.ac.za

DR W A HOROWITZ

Lecturer; Theoretical High Energy Physics
wa.horowitz@uct.ac.za

DR S W PETERSON

Lecturer; Applied Nuclear Physics
steve.peterson@uct.ac.za

DR D TAYLOR (CHED)

Lecturer; Physics Education
dl.taylor@uct.ac.za

Research Staff

EMERITUS PROFESSOR D G ASCHMAN

Experimental Nuclear Physics
david.aschman@uct.ac.za

EMERITUS PROFESSOR J W A CLEYMANS

Senior Scholar; Theoretical Physics
jean.cleymans@uct.ac.za

EMERITUS PROFESSOR C A DOMINGUEZ

Senior Scholar; Theoretical Physics
cesareo.dominguez@uct.ac.za

EMERITUS PROFESSOR S M PEREZ

Theoretical Nuclear Physics
sandro.perez@uct.ac.za

EMERITUS PROFESSOR R D VIOLLIER

Theoretical Particle Physics and Astrophysics
raoul.viollier@uct.ac.za

EMERITUS ASSOCIATE PROFESSOR C M COMRIE

Solid State Physics
craig.comrie@uct.ac.za

EMERITUS ASSOCIATE PROFESSOR P E SPARGO

History of Science
peter@sparco.wcape.school.za

EMERITUS ASSOCIATE PROFESSOR G ROBERTSON

Laser Physics
gerald.robertson@uct.ac.za

Honorary Research Associates

PROFESSOR JA AYALA

Universidad Nacional Autonoma de Mexico, Apartado,
Mexico
ayala@nucleares.unam.mx

PROFESSOR M LOEWE

Johannes Gutenberg-Universit, Mainz, Germany
marcelo.loewe@uct.ac.za

PROFESSOR F E LUBBEN

University of York, York, UK
fred.lubben@uct.ac.za

PROFESSOR K SCHILCHER

Johannes Gutenberg-Universit, Mainz, Germany
karl.schilcher@uni-mainz.de

PROFESSOR H SPIESBERGER

Johannes Gutenberg-Universit, Mainz, Germany
spiesber@uni-mainz.de

Research Associate

DR GARY TUPPER

University of Cape Town
gary.tupper@uct.ac.za

Postdoctoral Fellows

Dr Katie Cole
Dr Rudolf Neussl
Dr Max Richter

Distinguished Visitors

PROF CHRISTINE LINDSTROM

Oslo & Akershus University College, Norway

PROF KAI ZUBER

Technical University Dresden, Germany

PROF DAVID WOLFE

University of New Mexico, USA

PROF PAUL MICELI

University of Missouri, Columbia, USA

PROF PAUL PAPKA

University of Stellenbosch, South Africa

DR YORK SCHROEDER

Bielefeld University, Germany

DR FRANCOIS GELIS

CEA-Saclay, France

PROF MASSIMO INGUSCIO

University of Florence, Italy

MS ADRIANA MARAIS

University of Kwazulu-Natal, South Africa

CLAIRE ANTEL

University of Cape Town, South Africa

PROF HELMUT OESCHLER

GSI Helmholtz Centre for Heavy Ion Research, Germany

PROF YVES SCHUTZ

CERN, Alice, France

PROF JOHN WOOD

Georgia Tech, USA

DR DIETER MUELLER

Bochum University, Germany

Contact Details

Postal address:

Department of Physics, University of Cape Town, Private Bag X3, Rondebosch 7700

Physical location:

RW James Building, 9 University Avenue, Upper Campus

Telephone: +27 (21) 650-3326

Fax: +27 (21) 650-3324

Email: head.physics@uct.ac.za

Webpage: www.phy.uct.ac.za

Facebook: www.facebook.com/uctphysics

Twitter: www.twitter.com/uctphysics

YouTube: www.youtube.com/uctphysics

RESEARCH OUTPUT

Chapters in books

Dominguez, C.A. 2014. Quark masses in QCD. In A. Zichichi (ed), What We Would Like LHC to Give Us, pp. 119-133. Singapore: World Scientific Publishing Co Pty Ltd. ISBN 9789817603898.

Articles in peer-reviewed journals

Ayala, A., Cazaroto, E.R., Hernandez, L.A., Jalilian-Marian, J. and Tejeda-Yeomans, M.E. 2014. Small-x QCD evolution of $2n$ Wilson line correlator: the weak field limit. *Physical Review D*, 90: 074037(7pp).

Ayala, A., Dominguez, C.A., Loewe, M. and Zhang, Y. 2014. Weinberg sum rules at finite temperature. *Physical Review D*, 90: 034012(5pp).

Ayala, A., Hernandez, L.A., Mizher, A.J., Rojas, J.C. and Villavicencio, C. 2014. Chiral transition with magnetic fields. *Physical Review D*, 89: 116017(13pp).

Ayala, A., Loewe, M., Mizher, A.J. and Zamora, R. 2014. Inverse magnetic catalysis for the chiral transition induced by thermo-magnetic effects on the coupling constant. *Physical Review D*, 90: 036001(5pp).

Azmi, M.D. and Cleymans, J.W.A. 2014. Transverse momentum distributions in proton-proton collisions at LHC energies and Tsallis thermodynamics. *Journal of Physics G-Nuclear and Particle Physics*, 41: 065001(10pp).

Baker, M.J., Bordes, J., Dominguez, C.A., Penarrocha, J. and Schilcher, K. 2014. B meson decay constants f_{B_c} , f_B and f_{B^*} from QCD sum rules. *Journal of High Energy Physics*, 2014: 32(15pp).

Bilic, N. and Tupper, G.B. 2014. AdS braneworld with backreaction. *Central European Journal of Physics*, 12(3): 147-159.

Buck, B., Merchant, A. and Perez, S.M. 2014. Correlations in nuclear energy recurrence relations. *Journal of Physics G-Nuclear and Particle Physics*, 41(5): 055106(8pp). DOI: 10.1088/0954-3899/41/5/055106.

Claire, C., Collier, A.B., Lichtenberger, J. and Rodger, C.J. 2014. Investigating Dunedin whistlers using volcanic lightning. *Geophysical Research Letters*, 41: 4420-4426.

- Cole, K.E., Buffler, A., Cilliers, J.J., Govender, I., Heng, J.Y.Y., Liu, C., Parker, D.I., Shah, U.V., van Heerden, M. and Fan, X. 2014. A surface coating method to modify tracers for positron emission particle tracking (PEPT) measurements of froth flotation. *Powder Technology*, 263: 26-30.
- Dominguez, C.A. 2014. Analytical determination of the QCD quark masses. *International Journal of Modern Physics A*, 29(29): 1430069(24pp).
- Dominguez, C.A. 2014. Quark mass determinations in QCD. *Modern Physics Letters A*, 29(28): 1430031(16pp).
- Domula, A.R., Gehre, D., Zuber, K., Drohe, J.C., Nankov, N., Plompen, A.J.M., Rouki, C., Stanoiu, M., Klix, A., Buffler, A., Geduld, D., Smit, F.D., Vermeulen, C., Maleka, P., Newman, R., Nolte, R. and Wallner, A. 2014. New nuclear structure and decay results in the ^{76}Ge - ^{76}As system. *Nuclear Data Sheets*, 120: 44-47.
- Du Toit, E.F., Wyngaardt, S.M. and Perez, S.M. 2014. Cluster decay of ^{234}U and ^{232}Th by the emission of neon isotopes. *Journal of Physics G-Nuclear and Particle Physics*, 42: 015103-015110.
- Horowitz, W.A. 2014. AdS/CFT heavy quark energy loss beyond the leading order. *Nuclear Physics A*, 931: 541-545.
- Jackson, G. and Horowitz, W.A. 2014. Predictions for the spatial distribution of gluons in the initial nuclear state. *Nuclear Physics A*, 932: 280-285.
- Jonah, E., Harting, M., Gullikson, e., Aquila, A. and Britton, D.T. 2014. Investigation of surface topology of printed nano-particle layers using wide-angle low-Q scattering. *Journal of Synchrotron Radiation*, 21: 547-553.
- Khumalo, Z., Topic, M., Comrie, C.M., Blumenthal, M.D., Pineda-Vargas, C.A., Bucher, R. and Kisslinger, K. 2014. Effect of annealing on phase sequence and their composition in the Pt-coated Mo system. *Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms*, 338: 8-12.
- Loewe, M., Marquez, F. and Zamora, R. 2014. Vacuum instability by a chromoelectric field in 2+1 dimensions. *Physical Review D*, 89: 014019(6pp).
- Loewe, M., Villavicencio, C. and Zamora, R. 2014. Linear sigma model and the formation of a charged pion condensate in the presence of an external magnetic field. *Physical Review D*, 89(1): 016004(8pp).
- Mannl, U., van den Berg, C., Magunje, B., Harting, M., Britton, D.T., Jones, S., van Staden, M.J. and Scriba, M. 2014. Nanoparticle composites for printed electronics. *Nanotechnology*, 25(9): 094004(6pp).
- Morad, R. and Horowitz, W.A. 2014. Strong-coupling jet energy loss from AdS/CFT. *Journal of High Energy Physics*, 2014(11): 1-28.
- Msimanga, M., Pineda-Vargas, C.A., Hlatshwayo, T., Comrie, C.M., Ammi, H. and Nkosi, M. 2014. Electronic stopping force of ^{12}C , ^{28}Si and ^{63}Cu ions in HfO_2 and SiO_2 dielectric films. *Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms*, 322: 54-58.
- Nasrallah, N. and Schilcher, K. 2014. New sum rule determination of the nucleon mass and strangeness content. *Physical Review C*, 89: 045202(5pp).
- Nsengiyumva, s., Raji, A., Riviere, J.P., Britton, D.T. and Harting, M. 2014. Stress enhanced diffusion of krypton ions in polycrystalline titanium. *Journal of Applied Physics*, 116: 023513(8pp).
- Pahlavani, M.R. and Morad, R. 2014. Application of AdS/CFT in nuclear Physics. *Advances in High Energy Physics*, 2014: 863268(19pp).
- Papka, P., Sharpey-Shafer, J.F., Brown, B.A., Dinoko, T.S., Khaleel, E.M.A., Lawrie EA, E.A., Lawrie, J.J., Li, K.C.W., Majola, S.N.T., Richter, W.A., Shirinda, O., Stankiewicz, M., Vymers, P. and Wiedeking, C. 2014. High-resolution two-proton stripping to $2p$ - $1h$ $7/2^-$ states via the $^{59}\text{Co}(^3\text{He},n)^{61}\text{Cu}$ reaction. *European Physical Journal A*, 50: 158(5pp).
- Piccinelli, G., Sanchez, A., Ayala, A. and Mizher, A.J. 2014. Warm inflation in the presence of magnetic fields. *Physical Review D*, 90: 083504(14pp).
- Poltoratska, I., Fearick, R.W., Krumbholz, A.M., Litvinova, E., Matsubara, H., von Neumann-Cosel, P., Ponomarev, V., Richter, A. and Tamii, A. 2014. Fine structure of the isovector giant dipole resonance in ^{208}Pb : characteristicscales and level densities. *Physical Review C*, 89(5): 054322(1-10).
- Ramnath, A., Weigert, H.W.G. and Hamilton, A. 2014. Exclusive J /vector-meson production in high-energy nuclear collisions. *Nuclear Physics A*, 932: 274-279.
- Topic, M., Khumalo, Z. and Pineda-Vargas, C. 2014. Studies on Pt-Mo phases using analytical techniques with high resolution. *Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms*, 318: 163-167.
- Trompier, F., Boschung, M., Buffler, A., Domingo, C., Cale, E., Chevallier, M.-A., Esposito, A., Ferrarini, M., Geduld, D., Hager, L., Hohmann, E., Mayer, S., Musso, A., Romero-Esposito, M., Rottger, S., Smit, F.D., Sashala Naik, A., Tanner, R., Wissmann, F. and Caresana, M. 2014. A comparison of the response of PADC neutron dosimeters in high-energy neutron fields. *Radiation Protection Dosimetry*, 161(1-4): 78-81.
- van den Berg, C., Topic, M., Magunje, B., Britton, D.T. and Harting, M. 2014. Structural and electrical characteristics of printed silver and palladium nanoparticle networks. *Journal of the Southern African Institute of Mining and Metallurgy*, 114(2): 145-149.

103 publications in 2014 associated with the ATLAS collaboration and ALICE collaboration at CERN are not reflected in the list above.

Peer-reviewed published conference proceedings

Bbosa, L.S., Mainza, A.N. and Govender, I. 2014. A probability based model for the power draw of a tumbling mill. In J. Yianatos (ed), Proceedings of the XXVII International Mineral Processing Congress (IMPC 2014), 20-24 October 2014, Santiago, Chile. Santiago, Chile: IMPC 2014 Organization. ISBN 9789569393150.

Govender, I., Pathmathas, T., Richter, M. and de Klerk, D. 2014. Power dissipation modeling in tumbling mills using positron emission particle tracking. In J. Yianatos (ed), Proceedings of XXVII International Mineral Processing Congress (IMPC 2014), 20-24 October 2014, Santiago, Chile. Santiago, Chile: IMPC 2014 Organization. ISBN 9789569393150.

Herbert, M., Nchodu, M.R. and Maleka, P. 2014. Measurement and simulation of neutron beam fluence spectra. In J.J. van Rensburg (ed), Proceedings of SAIP2012: The 57th Annual Conference of the South African Institute of Physics, 9-13 July 2012, University of Pretoria. Pretoria: University of Pretoria. ISBN 9781775920700.

Horowitz, W.A. 2014. 14th International Conference on Strangeness in Quark Matter (SQM2013). In D. Evans, S. Hands, R. Lietava, R. Romita and O. Baillie (eds), Proceedings of the 14th International Conference on Strangeness in Quark Matter (SQM2013) – Journal of Physics: Conference Series Volume 509, 22-27 July 2013, Birmingham, United Kingdom. UK: IOP Publishing. ISBN 9781634392891.

Horowitz, W.A. 2014. Heavy quark energy loss and bulk physics. In D. Evans, S. Hands, R. Lietava, R. Romita and O. Baillie (eds), Proceedings of the 14th International Conference on Strangeness in Quark Matter (SQM2013) – Journal of Physics: Conference Series Volume 509, 22 – 27 July 2013, Birmingham, United Kingdom. UK: IOP Publishing. ISBN 9781634392891.

Jeyasugiththan, J., Peterson, S.W., Camero, J.N. and Symons, J. 2014. Validation of a passive beam Monte Carlo model for measuring prompt gamma rays during proton radiotherapy. In R. Botha and T. Jili (eds), Proceedings of SAIP2013: The 58th annual Conference of the South African Institute of Physics, 8-12 July 2013, University of Zululand. Pretoria: The South African Institute of Physics (SAIP). ISBN 9780620628198.

Waters, J.G., Govender, I. and Mainza, A.N. 2014. A rheological comparison of concentrator slurry streams. In J. Yianatos (ed), Proceedings of the XXVII International Mineral Processing Congress (IMPC 2014), 20-24 October 2014, Santiago, Chile. Santiago, Chile: IMPC 2014 Organization. ISBN 9789569393150.

DEPARTMENT OF STATISTICAL SCIENCES

Head of Department: Associate Professor Francesca Little

Departmental Profile

The Department of Statistical Sciences at the University of Cape Town is committed to the development of the statistical sciences within and beyond the university. In its teaching, the department recognises that there are needs both to train professionals in the statistical sciences, and to provide quantitative and decision-making skills to students in other disciplines. In its research, the department seeks to maintain a balance between the development of theory and applications of that theory. Researchers in the department collaborate with colleagues in the health and biological sciences, education, finance and industry. The research within the department is diverse but can be broadly grouped into the areas of Statistical Theory, Biomedical Statistics, Statistical Ecology, Financial Modelling, Operations Research and Decision Modelling, Data Science and Statistics in Education. The department hosts the Statistics in Ecology, the Environment and Conservation (SEEC) research unit.

Departmental Statistics

Permanent and long-term Contract Staff

Professors	2
Associate Professors	4
Senior Lecturers	7
Lecturers	9
Emeritus Professor	4
Emeritus Associate Professor	1
Scientific Officer	2
Administrative and Clerical Staff	6
Total	34

Honorary Staff

Honorary Research Associates	3
Total	3

Students and Postdoctoral Fellows

Postdoctoral Fellows	5
Doctoral	18
Master's	29
Postgraduate service courses	72
Honours	21
Undergraduate	4308
Total	4448

Research Fields and Staff

Permanent Staff

PROFESSOR GRAHAM BARR

Macroeconomic model building and financial time series analysis; problem gambling analysis; teaching with spreadsheets.
Graham.Barr@uct.ac.za

PROFESSOR DAVE BRADFIELD

Financial risk management; Robust Portfolio Construction; Structural role of Assets in achieving Pension Fund Mandates in South Africa
David.Bradfield@uct.ac.za

ASSOCIATE PROFESSOR FRANCESCA LITTLE

Head of Department. Biostatistics; Longitudinal Data Analysis; Survival Analysis; Analysis of Causality.
Francesca.Little@uct.ac.za

ASSOCIATE PROFESSOR SUGNET LUBBE

Multivariate statistics; Graphical displays; Biplots.
Sugnet.Lubbe@uct.ac.za

ASSOCIATE PROFESSOR CHRISTIEN THIART

GIS and spatial modeling.
Christien.Thiart@uct.ac.za

ASSOCIATE PROFESSOR RES ALTWEGG

Statistics for Ecology, the Environment and Conservation.
Res.Altwegg@uct.ac.za

DR BIRGIT ERNI

Senior Lecturer; environmetrics; biometrics; generalized linear models; spatial statistics.
Birgit.Erni@uct.ac.za

DR JUWA NYIRENDA

Senior Lecturer; operations research; management studies; simulation and Heuristics.
Juwa.Nyirenda@uct.ac.za

DR LEANNE SCOTT

Senior Lecturer; decision analysis; statistical methods in the social sciences and local government; operations research in developing countries; gambling; teaching with spreadsheets.
Leanne.Scott@uct.ac.za

MR KARL STIELAU

Senior Lecturer; professional teacher.
Karl.Stielau@uct.ac.za

DR FREEDOM GUMEDZE

Senior Lecturer; Biostatistics; mixed effect linear models; longitudinal data analysis; survival analysis.
Freedom.Gunedze@uct.ac.za

DR MIGUEL LACERDA

Senior Lecturer; Phylogenetics; Bioinformatics; Stochastic processes; Data Science.
Miguel.Lacerda@uct.ac.za

DR MELVIN VARUGHESE

Senior Lecturer; ecological modelling, statistical analysis of cosmological data; diffusion processes; Data Science.
Melvin.Varughese@uct.ac.za

MR STEFAN BRITZ

Lecturer; Statistics in Sport, Multivariate statistics, Bayesian hierarchical modelling.
Stefan.Britz@uct.ac.za

MR ALLAN CLARK

Lecturer; Bayesian analysis; Extreme value theory; Econometric modelling; Statistics for Ecology.
Allan.Clark@uct.ac.za

MR GREG DISTILLER

Lecturer; statistical ecology; capture-recapture models.
Greg.Distiller@uct.ac.za

DR SEBNEM ER

Lecturer; Time series analysis; Panel data; Spatial statistics; Structural Equation Modeling;
Sebnem.Er@uct.ac.za

MR CHUN-KAI HUANG

Lecturer; Probability Theory; Bayesian Theory; Financial Risk Modeling; Moment Problems; Extreme Value Theory; Sampling Theory.
Chun-Kai.Huang@uct.ac.za

MR DOMINIQUE KATSHUNGA

Lecturer; Multivariate analysis; Copulas.
Dominique.Katshunga@uct.ac.za

DR SHEETAL SILAL

Lecturer; Mathematical modeling of infectious disease; public health.
Sheetal.Silal@uct.ac.za

DR JONAS STRAY

Lecturer; Optimization; Operations Research; Modeling for Sugar cane industry.
Jonas.Stray@uct.ac.za

MR NEIL WATSON

Lecturer; Operations Research and Decision Modeling for Development.

Neil.Watson@uct.ac.za

MS USHMA GALAL

Statistical Consultant;

Ushma.Galal@uct.ac.za

KATYA MAUFF

Statistical Consultant;

Katya.Mauff@uct.ac.za

Contract Staff

DR IAN DURBACH

Adjunct Senior Lecturer; decision analysis; risk and uncertainty.

Ian.Durbach@uct.ac.za

Emeritus Professors

PROFESSOR TIM DUNNE

Statistics for Measurement; statistical methods in education and psychology.

Tim.Dunne@uct.ac.za

EMERITUS PROFESSOR RENKUAN GUO

Reliability and quality; imprecise spatial analysis.

rguo@woldonline.co.za

EMERITUS PROFESSOR LINDA HAINES

Optimal experimental design; extreme value theory; modelling count data; time series.

Linda.Haines@uct.ac.za

EMERITUS PROFESSOR THEODOR STEWART

Senior Scholar. Multicriteria decision analysis and multiobjective optimization; resource allocation and management.

Theodor.Stewart@uct.ac.za

Emeritus Associate Professors

EMERITUS ASSOCIATE PROFESSOR JUNE JURITZ

Biostatistics, hierarchical generalised mixed models.

junej@mweb.co.za

Postdoctoral Fellows

DR THEONI PHOTOPOULOU

Analysis of animal telemetry data, Bayesian state-space models for animal movement, movement ecology, regression analysis.

theoni.photopoulou@uct.ac.za

DR GUILLAUME PÉRON

Occupancy models, analysis of biodiversity patterns

peron_guillaume@yahoo.fr

DR SANET HUGO

Analysis of biodiversity patterns, multivariate analyses, ecotones

sanethug@gmail.com

DR RAQUEL GARCIA

Modelling of species distributions, climate change

raquel.ag@gmail.com

DR NATASHA KARENYI

Analysis of marine biodiversity patterns, occupancy models, multi-species models

natashakarenyi@gmail.com

Honorary Research Associates

PROFESSOR ANESTIS ANTONIADIS

Inference on Stochastic Processes; Nonlinear Regression; Nonparametric Statistics; Wavelets in Statistics; Functional Data Analysis; Inverse Problems; Survival Analysis; Models in meteorology and climatology (Nuclear Agency, Grenoble); Statistical methods in Crystallography; Quality Control; Mixtures; Environmental Statistics; Statistical Analysis of Microarray Data; Sensitivity Analysis.

anestisa@gmail.com

PROFESSOR DR GÜNTER SCHMIDT

Operations Research, Combinatorial Optimization, Conversion and Scheduling Problems, Financial Decision Support.

gj.schmidt@yahoo.de

DR HENNING WINKER

Fisheries stock assessment models, analysis of biodiversity data.

henning.winker@gmail.com

Contact Details

Postal address: Department of Statistical Sciences, University of Cape Town, Private Bag X3, Rondebosch, 7701

Telephone: +27 21 650 3219

Fax: +27 21 650 4773

Web: www.stats.uct.ac.za

UCT General enquiries: +27 21 650 9111

UCT web: www.uct.ac.za

RESEARCH OUTPUT

Chapters in books

Altwegg, R., West, A., Gillson, L. and Midgley, G.F. 2014. Impacts of climate change in the Greater Cape Floristic Region. In N. Allsopp, J.F. Colville and G.A Verboom (eds), Fynbos Ecology, Evolution, and Conservation of

a Megadiverse Region, 299-320. New York: Oxford University Press. ISBN 9780199679584.

Barr G.D.I. and Scott L.D. 2014 Spreadsheets and simulation for teaching a range of statistical concepts. In H. MacGillivray, B. Phillips and M.A. Martin (eds), Springer Proceedings in Mathematics & Statistics – Topics from Australian Conferences on Teaching Statistics (OZCOTS 2008-2012), pp. 99-117. New York, USA: Springer Heidelberg New York Dordrecht London. ISBN 9781493906031.

Articles in peer-reviewed journals

Abadi, F., Barbraud, c., Besson, D.B., Bried, J.B., Crochet, P.A., Delord, K.D., Forcada, F.J., Grosbois, V., Phillips, R.A., Sagar, P., Thompson, P.T., Waugh, S., Weimerskirch, H., Wood, A.G. and Gimenez, O. 2014. Importance of accounting for phylogenetic dependence in multi-species mark-recapture studies. *Ecological Modelling*, 273: 236-241.

Ahjum, F. and Stewart, T.J. 2014. A systems approach to urban water services in the context of integrated energy and water planning: a City of Cape Town case study. *Journal of Energy in Southern Africa*, 25(4): 59-70.

Altwegg, R., Collingham, Y.C., Erni, B. and Huntley, B. 2013. Jacky density-dependent. *Diversity and Distributions*, 19: 60-68.

Altwegg, R., Doutrelant, C., Anderson, M., Spottiswoode, C.N. and Covas, R. 2014. Climate, social factors and research disturbance influence population dynamics in a declining sociable weaver metapopulation. *Oecologia*, 174: 413-425.

Altwegg, R., Jenkins, A.R. and Abadi, F. 2014. Nestboxes and immigration drive the growth of an urban Peregrine Falcon *Falco peregrinus* population. *Ibis*, 156: 107-115.

Andronikou, S., Ackermann, C., Laughton, B., Cotton, M., Tomazos, N., Spottiswoode, B., Mauuff, K.A.L. and Pettifor, J.M. 2014. Correlating brain volume and callosal thickness with clinical and laboratory indicators of disease severity in children with HIV-related brain disease. *Childs Nervous System*, 30: 1549-1557.

Borchers, D.B., Distiller, G., Foster, R., Harmsen, B.H. and Milazzo, L.M. 2014. Continuous-time spatially explicit capture-recapture models, with an application to a jaguar camera-trap survey. *Methods in Ecology and Evolution*, 5: 656-665.

Botha, U.A.B., Koen, L., Galal, U., Jordaan, E. and Niehaus, D. 2014. The rise of assertive community interventions in South Africa: a randomized control trial assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up. *BMC Psychiatry*, 14: 56(10pp).

Bradfield, D.J. and Hendricks, D.H. 2014. Monitoring market fragility using the absorption ratio. *Journal for Studies in Economics and Econometrics*, 38(2): 33-46.

Broms, K., Johnson, D.S., Altwegg, R. and Conquest, L.L. 2014. Spatial occupancy models applied to atlas data show Southern ground hornbills strongly depend on protected areas. *Ecological Applications*, 24(2): 363-374.

Chinhamu, K., Huang, C., Huang, C.S. and Chikobvu, D.C. 2014. Extreme risk, value-at-risk and expected shortfall in the gold market. *International Business and Economics Research Journal*, 14(1): 108-122.

Clark, A.E. and Durbach, I.N. 2014. Using Bayesian change-point models to assess changes in customer loyalty over time. *Management Dynamics*, 23(2): 14-25.

Collingham, Y.C., Huntley, B., Altwegg, R., Barnard, P., Beveridge, O.S., Gregory, R.D., Mason, L.R., Oschadleus, H.D., Simmons, R.E., Willis, S.G. and Green, R.E. 2014. Prediction of mean adult survival rates of southern African birds from demographic and ecological covariates. *Ibis*, 156: 741-754.

Cox, H., Mbhele, S., Mohess, N., Whitelaw, A.C., Muller, O., Zemanay, W., Little, F., Azevedo, V., Simpson, J., Boehme, C. and Nicol, M.P. 2014. Impact of Xpert MTB/RIF for TB diagnosis in a primary care clinic with high TB and HIV prevalence in South Africa: a pragmatic randomised trial. *Plos Medicine*, 11(11): e1001760(12pp).

Duckworth, G. and Altwegg, R. 2014. Environmental drivers of an urban Hadedda Ibis population. *Ardea*, 102(1): 21-29.

Dunne, T.T. 2014. On taking the transformation discourse for a ride: rejoinder to a response (Govinder et al. 2014). *South African Journal of Science*, 110(5/6): a0068 (4pp). DOI: 10.1590/sajs.2014/a0068.

Durbach, I.N. 2014. Outranking under uncertainty using scenarios. *European Journal of Operational Research*, 232: 98-108.

Durbach, I.N., Lahdelma, R.L. and Salminen, P.S. 2014. The analytic hierarchy process with stochastic judgements. *European Journal of Operational Research*, 238: 552-559.

Emaresi, E., Bize, P., Altwegg, R., Henry, I., Van den Brink, V.V., Gasparini, G.J. and Roulin, A. 2014. Melanin-specific life-history strategies. *American Naturalist*, 183(2): 269-280.

Gower, J., le Roux, N.J. and Gardner-Lubbe, S. 2014. The canonical analysis of distance. *Journal of Classification*, 31: 107-128.

Gower, J., Le Roux, N.J. and Lubbe, S. 2014. Biplots: quantitative data. *Wiley Interdisciplinary Reviews: Computational Statistics*, 7: 42-62.

Gumedze, F.N. and Chatora, T. 2014. Detection of outliers in longitudinal count data via overdispersion. *Computational Statistics & Data Analysis*, 79: 192-202.

Haines, L.M. and Clark, A.E. 2014. The construction of optimal designs for dose-escalation studies. *Statistics and Computing*, 24(1): 101-109.

- Huang, C.S., Huang, C. and Chinhamu, K. 2014. Assessing the relative performance of heavy-tailed distributions: empirical evidence from the Johannesburg Stock Exchange. *Journal of Applied Business Research*, 30(4): 1263-1286.
- Jack, S., Hoffman, M.T., Rohde, R., Durbach, I.N. and Archibald, M.L. 2014. Blow me down: a new perspective on *Aloe dichotoma* mortality from windthrow. *BMC Ecology*, 14: 7(12pp).
- Jansen, D., Abadi, F., Harebottle, D.M. and Altwegg, R. 2014. Does seasonality drive spatial patterns in demography? Variation in survival in African reed warblers *Acrocephalus baeticatus* across southern Africa does not reflect global patterns. *Ecology and Evolution*, 4(7): 889-898.
- Lacerda, M. and Seoighe, C. 2014. Population genetics inference for longitudinally-sampled mutants under strong selection. *Genetics*, 198(3): 1237-1250.
- Lamberth, S.J. and Joubert, A.R. 2014. Prioritising species for research, conservation and management: a case study of exploited fish species. *African Journal of Marine Science*, 36(3): 345-360.
- Le Roux, N.J Gardner-Lubbe, S. and Gower, J. 2014. The analysis of distance of grouped data with categorical variables: categorical canonical variate analysis. *Journal of Multivariate Analysis*, 132: 9-24.
- Leask, K.L. and Haines, L.M. 2014. The beta-Poisson distribution in Wadley's problem. *Communications in Statistics-Theory and Methods*, 43: 4962-4971.
- Lloyd, P., Abadi, F., Altwegg, R. and Martin, T. 2014. South temperate birds have higher apparent adult survival than tropical birds in Africa. *Journal of Avian Biology*, 45: 493-500.
- Long, C., Dunne, T.T. and Hendrik, H.D. 2014. Mathematics, curriculum and assessment: the role of taxonomies in the quest for coherence. *Pythagoras*, 35(2): 240(14pp).
- Long, C., Dunne, T.T. and Mokoena, G.M. 2014. A model for assessment: integrating external monitoring with classroom-based practice. *Perspectives in Education*, 32(1): 158-178.
- Masson, L., Mlisana, K., Little, F., Werner, L., Mkhize, N., Ronacher, K., Gamielien, H., Williamson, C., McKinnon, L.R., Walzl, G., Abdool Karim, Q., Abdool Karim, S.S. and Passmore, J.S. 2014. Defining genital tract cytokine signatures of sexually transmitted infections and bacterial vaginosis in women at high risk of HIV infection: a cross-sectional study. *Sexually Transmitted Infections*, 90: 580-587.
- Mayosi, B.M., Ntsekhe, M., Bosch, J., Pandie, S., Jung, H., Gumedze, F.N., Pogue, J., Thabane, L., Smieja, M., Francis, V., Joldersma, L., Thomas, K., Thomas, B., Awotedu, A., Magula, N., Naidoo, D.P., Damasceno, A., Banda, A.C., Brown, B., Manga, P., Kirenga, B., Mondo, C., Mntla, P., Tsitsi, J., Peters, F., Essop, M.R., Russell, J.B.W., Hakim, J., Matenga, J., Barasa, A.F., Sani, M., Olunuga, T., Ogah, O.S., Ansa, V., Aje, A., Danbauchi, S., Ojji, D. and Yusuf, S. 2014. Prednisolone and *Mycobacterium indicus pranii* in Tuberculous Pericarditis. *New England Journal of Medicine*, 371: 1121-1130.
- Miettinen, K.M., Mustajoki, J.M. and Stewart, T.J. 2014. Interactive multiobjective optimization with NIMBUS for decision making under uncertainty. *Or Spectrum*, 36: 39-56.
- Mkentane, K., Maneli, M.H., Davids, L.M., Gumedze, F.N. and Khumalo, N. 2014. Relaxers damage hair and increase fragility. *International Journal of Dermatology*, 53(3): e200-e202.
- Mohr, E., Iftikhar, I. and Schmidt, G. 2014. Online algorithms for conversion problems: A survey. *Surveys in Operations Research and Management Science*, 19(2): 87-104.
- Murino, M.L., Amato, A.U., Carfora, M.F.C., Antoniadis, A.A., Huang, B.H., Menzel, P.W.M. and Serio, C.S. 2014. Cloud detection of MODIS multispectral images. *Journal of Atmospheric and Oceanic Technology*, 31(2): 347-365.
- Ohajunwa, C., McKenzie, J., Hardy, A. and Lorenzo, T. 2014. Inclusion of disability issues in teaching and research in higher education. *Perspectives in Education*, 32(3): 104-117.
- Photopoulou, T., Fedak, M.A.F., Thomas, L.T. and Matthiopoulos, J.M. 2014. Spatial variation in maximum dive depth in gray seals in relation to foraging. *Marine Mammal Science*, 30(3): 923-938.
- Reisinger, R.R., Oosthuizen, C.W., Peron, G., Toussaint, D.C., Andrews, R.D. and de Bruyn, P.J.N. 2014. Satellite tagging and biopsy sampling of killer whales at Subantarctic Marion Island: effectiveness, immediate reactions and long-term responses. *PLoS One*, 9(11): e111835(14pp) DOI: 10.1371/journal.pone.0111835.
- Ross, I., Dandara, C., Swart, M., Lacerda, M., Schatz, D.A. and Blom, D. 2014. 9B Polymorphism of the glucocorticoid receptor gene appears to have limited impact in patients with Addison's disease. *PLoS One*, 9(1): e86350(6 pp).
- Sherley, R., Abadi, F., Ludynia, K., Barham, B.J., Clark, A.E. and Altwegg, R. 2014. Age-specific survival and movement among major African penguin *spheniscus demersus* colonies. *Ibis*, 156: 716-728.
- Silal, S.P., Little, F., Barnes, K.I. and White, L.J. 2014. Towards malaria elimination in Mpumalanga, South Africa: a population-level mathematical modelling approach. *Malaria Journal*, 13: 297(12pp).
- Silal, S.P., Penn-Kekana, L., Barnighausen, T. and Schneider, H. 2014. Local level inequalities in the use of hospital-based maternal delivery in rural South Africa. *Globalization and Health*, 10: 60(7pp).

Stewart, T.J. and Janssen, R. 2014. A multiobjective GIS-based land use planning algorithm. *Computers Environment and Urban Systems*, 46: 25-34.

Syed, F.F., Ntsekhe, M., Gumedze, F.N., Badri, M. and Mayosi, B.M. 2014. Myopericarditis in tuberculous pericardial effusion: prevalence, predictors and outcome. *Heart*, 100: 135-139.

Thiart, C., Ngwenya, M.Z. and Haines, L.M. 2014. Investigating 'optimal' kriging variance estimation using an analytic and a bootstrap approach. *Journal of the Southern African Institute of Mining and Metallurgy*, 114: 613-618.

Watson, N., Stewart, T.J. and Scott, L.D. 2014. Decision support for Foodbank South Africa. *Orion: Journal of the Operations Research of South Africa*, 30(1): 1-18.

Weller, F., Cecchini, L., Shannon, L., Sherley, R., Crawford, R., Altwegg, R., Scott, L.D., Stewart, T.J. and Jarre, A.C. 2014. A system dynamics approach to modelling multiple drivers of the African penguin population on Robben Island, South Africa. *Ecological Modelling*, 277: 38-56.

Whitehorn, H., Sibanda, M., Lacerda, M., Spracklen, T., Ramma, L., Dalvie, S. and Ramesar, R.S. 2014. High prevalence of cisplatin-induced ototoxicity in Cape Town, South Africa. *SAMJ South African Medical Journal*, 104(4): 288-291.

Zuhlke, L., Engel, M.E., Karthikeyan, G., Rangarajan, S., Mackie, P., Cupido, B.J., Mauff, K., Islam, S., Joachim, A., Daniels, R., Francis, V., Ogendo, S., Gitura, B., Mondo, C., Okello, E., Lwabi, P., Al-Kebisi, M.M., Hugo-Hamman, C. and Mayosi, B.M. 2014. Characteristics, complications, and gaps in evidence-based interventions in rheumatic heart disease: the Global Rheumatic Heart Disease Registry (the Remedy study). *European Heart Journal*, 36(18): 1115-1122.

Peer-reviewed published conference proceedings

Debushe, L.K., Haines, L.M. and Gemechu, D.B. 2014. Optimal factorial designs for two-colour microarray experiments: properties of admissible designs, A-, D- and E-optimality criteria. In L. Santana (ed), *Proceedings of the 56th Annual Conference of the South African Statistical Association for 2014 (SASA 2014)*, 27-30 October 2014, Grahamstown. South Africa: SASA. ISBN 9781868226597.

Gangolf, C., Dochow, R., Schmidt, G. and Tamisier, T. 2014. SVDD: a proposal for automated credit rating prediction. In I. Kacem, P. Laroche and Z. Roka (eds), *Proceedings of the 2014 International Conference on Control, Decision and Information Technologies (CoDIT)*, 3-5 November 2014, Universite de Lorraine, France. USA: IEEE Section France. ISBN 9781479967735.

Gemechu, D.B., Debushe, L.K. and Haines, L.M. 2014. A-optimal designs for two-colour cDNA microarray experiments using the linear mixed effects model. In L. Santana (eds), *Proceedings of the 56th Annual Conference of the South African Statistical Association for 2014 (SASA 2014)*, 27-30 October 2014, Grahamstown. South Africa: SASA. ISBN 9781868226597.

Ramaboa, K. and Underhill, L.G. 2014. A measure to identify regression outliers. In H. Ibrahim, J. Zulkepli, N. Aziz, N. Ahmad and S.A. Rahman (eds), *Proceedings of the 3rd International Conference on Quantitative Sciences and its Applications (ICOQSIA 2014)*, 12-14 August 2014, Langkawi, Kedah, Malaysia. Malaysia: American Institute of Physics. ISBN 9780735412743.