

2018 SANAP SYMPOSIUM PROGRAMME

MONDAY 13 AUGUST 2018

11:00 – 14:00

Arrival & Registration

13:00 – 14:00

Lunch

SESSION 1 - WELCOME & PROGRAMME OVERVIEW – Chairs: Ken Findlay and Michael Kosch

14:00 – 14:30 **Official Welcoming & Symposium Opening**

14:30 – 14:45 **Opening Statements by National Research Foundation**

14:45 – 15:00 **Opening Statements by Department of Science and Technology**

15:00 – 15:30

Tea Break

SESSION 2 - REPORT BACK SESSION – Chair: Ken Findlay

15:30 – 16:00 **Ian Meiklejohn** Report back on the SCAR meeting

16:00 – 17:00 **Pedro Monteiro and Stephen Hosking** Report back on the Polar Observatory Initiative.

SESSION 3 -THEME C2 - HUMAN ENTERPRISE: PALAEOSCIENCES AND HUMAN HISTORY (ORAL PRESENTATIONS) – Chair: Greg Hofmeyr

17:00 -17:15 **Isabelle Ansorge** SEAmester continues to grow!

CO1

17:15 -17:30 **Anché Louw** A new SANAP portal

C2O1

17:30 **Evening Function**

Finger Supper

19:00 **Public Lecture**

“South Africa’s legacy in the Antarctic region”



2018 SANAP SYMPOSIUM PROGRAMME

TUESDAY 14 AUGUST 2018

08:00 – 08:15

Housekeeping

SESSION 1 - THEME B1 - LIVING SYSTEMS: ECOSYSTEM FUNCTIONING AND THE RESPONSE TO GLOBAL CHANGE (ORAL PRESENTATIONS) – *Chair: Kyle LLOYD*

08:15 – 08:30	Fannie W. Shabangu	Songs of humpback whales (<i>Megaptera novaeangliae</i>) off Antarctica and South Africa	B101
08:30 – 08:45	Bradford Ripley	Invasive sub-Antarctic grasses respond to increasing temperatures at the expense of chilling tolerance	B102
08:45 – 09:00	Susanne Fietz	Shifts in phytoplankton and microbial community composition in function of trace metal cycling in the Southern Ocean	B103
09:00 – 09:15	Nico de Bruyn	Marion Island Marine Mammals: individual variation and population processes	B104
09:15 – 09:30	Guy F. Midgley	Novel insights into Marion Island plant function through sensing of the Photochemical Reflectance Index (PRI)	B105
09:30 – 09:45	Greg Hofmeyr	Influence of ontogeny and sex on the trophic ecology of Southern Ocean fur seals: Information from dentine	B107
09:45 – 10:00	Pierre A. Pistorius	Ocean utilization of marine top predators at Marion Island: Recent highlights and future perspectives	B108

10:00 – 10:30

Tea Break



SESSION 2 - THEME B1 - LIVING SYSTEMS: ECOSYSTEM FUNCTIONING AND THE RESPONSE TO GLOBAL CHANGE (ORAL PRESENTATIONS) (CONTINUED) – Chair: Mia Wege

10:30 – 10:45	Surendra Vikram	Metagenomic derived insights of microbial communities in the Southern Indian Ocean	B109
10:45 – 11:00	Max Ortiz	Food is in the air: Alternative pathways of primary production in Antarctic soils	B1010
11:00 – 11:15	Bettine van Vuuren	Genetic information at different spatial scales	B109

SESSION 3 – THEME B2 - BIODISCOVERY AND BIOTECHNOLOGY (ORAL PRESENTATIONS) – Chair: Mia Wege

11:15 – 11:30	James R. Lloyd	Mining the Southern Ocean microbiome	B201
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SESSION 4 - COMBINATION OF THEMES A & B - EARTH SYSTEMS AND/OR LIVING SYSTEMS (ORAL PRESENTATIONS) – Chair: Mia Wege

11:30 – 11:45	Ian Meiklejohn	Active layer and permafrost monitoring in Western Dronning Maud Land, Antarctica	AB101
11:45 – 12:00	Thomas J. Ryan Keogh	Southern Ocean estimates of phytoplankton primary production through coupled observations and experiments	AB102

SESSION 5 - THEME B1 - LIVING SYSTEMS: ECOSYSTEM FUNCTIONING AND THE RESPONSE TO GLOBAL CHANGE (SPEED TALK PRESENTATIONS) – Chair: Thomas Ryan-Keogh

12:00 – 12:05	Sunet van Aswegen	The microbial composition of algal mats in meltwater ponds in nunataks of the Western Dronning Maud Land	B1S1
12:05 – 12:10	Rito L. Mikhari	Characterisation of hypolith communities in Dronning Maud Land, Antarctica	B1S2
12:10 – 12:15	Mthokozisi Twala	An aggressive invasive, <i>Sagina procumbens</i> , causes a partial invasional- meltdown on sub-Antarctic Marion Island	B1S3
12:15 – 12:20	Rabia Mathakutha	Differences in trait variation between native and invasive plant species, an implication for climate change	B1S4
12:20 – 12:25	Christien Steyn	Risk assessment of alien plants in the southern ocean- using distribution modelling approaches to predict potential future invaders	B1S5
12:25 – 12:30	Robert D. Pienaar	Characterising soil microbiomes associated with cushion plant species <i>Azorella selago</i> and <i>Sagina procumbens</i> on Marion Island	B1S6

12:30 – 13:30

Lunch

SESSION 6 - THEME B1 - LIVING SYSTEMS: ECOSYSTEM FUNCTIONING AND THE RESPONSE TO GLOBAL CHANGE (*SPEED TALK PRESENTATIONS*) (*CONTINUED*) – Chair: Anne Treasure

13:30 -13:35	Morgan J. Raath	Do positive interactions expand the upper distributional limits of vascular plant species on Marion Island?	B1S7
13:35 – 13:40	Charné A. Gouws	Do cushion plants act as nurse plants due to wind-driven seed trapping?	B1S8
13:40 – 13:45	Stephni van der Merwe	Do plant-plant interactions affect functional traits?	B1S9
13:45 – 13:50	Nothando Mhlongo	The influence of biotic interactions and abiotic factors on fine-scale variation in plant species richness and performance on sub-Antarctic Marion Island	B1S10
13:50 – 13:55	Florian Orgeret	A winter foraging hotspot for king penguins from the Prince Edward Islands and the Crozet Archipelago	B1S11
13:55 – 14:00	Luca Stirnimann	Plankton production and trophic dynamics in the waters surrounding the Subantarctic Prince Edward Islands archipelago	B1S12
14:00 – 14:05	Ian J. Weir	Southern Ocean phytoplankton silica uptake: implications for leakage and carbon export	B1S13
14:05 – 14:10	Johan J. Viljoen	Southern-Atlantic phytoplankton community composition, distribution and response to relief of light and iron limitation	B1S14
14:10 – 14:15	Marius W. Rossouw	Insights into tundra fern physiology from close - distance remote sensing and leaf level gas exchange	B1S15
14:15 – 14:20	Peter C. le Roux	Variation in the outcome of plant - plant interactions is not related to abiotic gradients across fine scales in four different taxa	B1S16
14:20 – 14:25	Michelle Greve	Invasions in the changing sub-Antarctic: a project overview	B1S17
14:25 – 14:30	Eleonora Puccinelli	Biological characteristics of the drifting bivalve <i>Gaimardia trapesina</i> in the Southern Ocean	B1S18
14:30 – 14:35	Charles von der Meden	Habitat and pressures mapping at the Prince Edward Islands: Towards South Africa's National Biodiversity Assessment 2018	B1S19
14:35 – 14:40	John H. Chau	Spatial population structure of selected species on Southern Ocean Islands	B1S20
14:40 – 14:45	Daniela Monsanto	Genetic patterns at fine spatial scales complex findings in a complex landscape	B1S21
14:45 – 14:50	Harini Jagatap	Comparing genetic patterns in species <i>Tullbergia bisetosa</i> (indigenous) and <i>Isotomurus maculatus</i> (invasive) on sub-Antarctic Marion Island	B1S22
14:50 – 14:55	Mario Mairal	The origin of recent biological invasions in sub-Antarctic islands: the case of <i>Poa annua</i>	B1S23
14:55 – 15:00	Mia Wege	Ontogeny of foraging site fidelity in two sympatric marine predators: a mother and pup perspective	B1S24

SESSION 7 - THEME B1 - LIVING SYSTEMS: ECOSYSTEM FUNCTIONING AND THE RESPONSE TO GLOBAL CHANGE (*SPEED TALK PRESENTATIONS*) (*CONT*) – *Chair: Eleonora Puccinelli*

15:30 – 15:35	Chris Oosthuizen	Making use of multiple surveys: estimating breeding probability using a multievent-robust design capture-recapture model	B1S25
15:35 – 15:40	Kyle J. Lloyd	The life history of male southern elephant seals: trade-offs at the population and individual level	B1S26
15:40 – 15:45	Tshepiso Majelantle	Environmental drivers of at - sea foraging behaviour in southern elephant seals	B1S27
15:45 – 15:50	Itai Mukutyu	Stable isotope ecology of two sympatric fur seal species from Marion Island, Southern Indian Ocean	B1S28
15:50 – 15:55	Kim L. Stevens	The year-round distribution and foraging behaviour of grey-headed albatross at Sub-Antarctic Marion Island	B1S30
15:55 – 16:00	Ben Dilley	The finches of Nightingale Island, Tristan da Cunha archipelago	B1S31
16:00 – 16:05	Marthan Bester	Ross Seals: Pack Ice and Open Ocean Commuters	B1S32
16:05 – 16:10	Matthew Clayton	Using metagenome based genome reconstruction to understand bacterial and archaeal assemblages in the Southern Ocean	B1S33

SESSION 7 - THEME B2 - LIVING SYSTEMS: BIODISCOVERY AND BIOTECHNOLOGY (*SPEED TALK PRESENTATIONS*) – *Chair: Fannie Shabangu*

16:10 – 16:15	Nico Lübcker	Keratinous tissue as matrix for obtaining time-based biochemical data	B2S1
16:15 – 16:20	Ralph E.T. Vanstreels	Molecular characterization of the worm <i>Diomedonema diomedae</i> from the air sacs of grey-headed albatrosses on Marion Island	B2S2
16:20 – 16:25	Sudharshan Sekar	Metagenomic Analysis of the Soil Microbial Community in Marion Island, South Africa	B2S3



SESSION 8 - THEME AB - COMBINATION: EARTH SYSTEMS AND/OR LIVING SYSTEMS (*SPEED TALK PRESENTATIONS*) – *Chair: Nico Lübcker*

16:25 – 16:30	Sibusiso S. Sinuka	Temperature dynamics in mire ecosystems on Marion Island	B1S1
16:30 – 16:35	Christel D. Hansen	Comparing the frost environment of three disparate locations: Western Dronning Maud Land of Antarctica, sub-Antarctic Marion Island and the High Drakensberg of South Africa	AB1S2
16:35 – 16:40	Elizabeth Rudolph	Rock hardness as a relative-age indicator of glacially striated surfaces on Marion Island	AB1S3
16:40 – 16:45	Asmita Singh	Understanding Southern Ocean - specific phytoplankton ecophysiological response to iron availability	AB1S4
16:45 – 16:50	Anne M. Treasure	Marine mammals exploring the oceans pole to pole: a review of the MEOP Consortium	AB1S5
16:50 – 16:55	Peter G. Ryan	Plastics in Antarctica – preliminary findings from the Antarctic Circumnavigation Expedition (ACE)	A2S13
16:55 – 17:25	Theme B1 & B2	Discussion & Conclusions	

EVENING SESSION

WORKSHOPS

Times to be determined by Workshop co-ordinators.

- 1 **APECS-SA (Venue - Hermanus Auditorium)**
- 2 **THE PLANNED SCALE SEASONAL CYCLE EXPERIMENT 2019 (Venue – SANSA)**



2018 SANAP SYMPOSIUM PROGRAMME

WEDNESDAY - 15 AUGUST 2018

08:00 – 08:15

Housekeeping

SESSION 1 - THEME A1 - EARTH SYSTEMS: A WINDOW INTO GEOSPACE - (ORAL PRESENTATIONS) – Chair: Tshimangadzo M. Matamba

08:15 – 08:30	Judy A.E. Stephenson	Investigation of Pc5 pulsations during a TRINNI event	A101
08:30 – 08:45	Michael J. Kosch	Radar observations of the thermosphere	A102
08:45 – 09:00	Reolf D. Strauss	Status and future of the SANA neutron monitor	A103
09:00 – 09:15	Joe Kinrade	Tracking the evolution of rotating plasma features in Saturn's magnetosphere using auroral imagery from Cassini	A104
09:15 – 09:30	Rendani Nndanganeni	Analysis of the space weather events of 6-10 September 2017 and its impact on aviation	A105

SESSION 2 - THEME A1 - EARTH SYSTEMS: A WINDOW INTO GEOSPACE – (SPEED TALK PRESENTATIONS) – Chair: Michael Kosch

09:30 – 09:35	Amoré Nel	Novel radar and optical observations of black auroras in the upper atmosphere	A1S1
09:35 – 09:40	Lerato Shikwambana	Space borne and ground based lidar	A1S2
09:40 – 09:45	Golekamang Thaganyana	Investigate ionizing radiation in the troposphere using ground-based Neutron Monitor, ACE satellite and RBSP satellite data for aviation radiation forecasting	A1S3
09:45 – 09:50	Ntlakanipho Ngwane	Mesoscale neutral wind variability near auroral arcs measured using Fabry-Perot Interferometers	A1S4
09:50 – 09:55	Stanislaus Nnadih	Sprites observations in South Africa, the journey so far	A1S5
09:55 – 10:00	Dakalo C. Mashao	Sprite over South Africa	A1S6

10:00 – 10:30

Tea Break⁺



SESSION 3 - THEME A1 - EARTH SYSTEMS: A WINDOW INTO GEOSPACE – (SPEED TALK PRESENTATIONS) - (CONTINUED) – Chair: Lerato Shikwambana

10:30 – 10:35	Moshe G. Mosotho	Dosimetry at commercial airline altitudes	A1S7
10:35 – 10:40	Tshimangadzo Matamba	The Ionospheric response to CME and CIR - driven storms	A1S8
10:40 – 10:45	Jean C. Uwamahoro	Highlights about the performances of different storm-time TEC modelling techniques	A1S9
10:45 – 10:50	Tsige Atilaw	Investigation of TIDs using SANA Super DARN radar	A1S10
10:50 – 11:05	Geoffrey H. Grantham	Progress in the Gondwana Amalgamation and Correlation Project	A1O6
11:05 – 11:35	Theme A1	Discussion & Conclusions	

SESSION 4 - THEME A4 - EARTH SYSTEMS: CARBON-CLIMATE LINKS AND GEOTRACES (ORAL PRESENTATIONS) – Chair: Susanne Fietz and Ryan Cloete

11:40 – 11:55	Alakendra Roychoudhury	GEOTRACES Program in South Africa, latest developments, achievements and future plans	A4O1
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SESSION 5 - THEME A4 - EARTH SYSTEMS: CARBON-CLIMATE LINKS AND GEOTRACES (SPEED TALK PRESENTATIONS) – Chair: Susanne Fietz

11:55 – 12:00	Ismael Kanguuehi	Southern African aerosol trace metal concentration and dissolution kinetics characteristics	A4S1
12:00 – 12:05	Sandi M. Smart	Ground-truthing the Foraminifera-bound Nitrogen Isotope Paleo-proxy in the Modern Southern Ocean	A4S2
12:05 – 12:10	Ryan Cloete	Seasonal comparisons between dissolved trace metals (Copper, Zinc and Nickel) in the Southern Ocean. Insights into deep winter mixing	A4S3
12:10 – 12:15	Kolisa Y. Sinyanya	Microbe-nutrient interactions in the Agulhas System Climate Array marine system	A4S4
12:15 – 12:20	Mhlangabezi Mdutyana	The kinetics and implications of nitrification in the Southern Ocean mixed layer	A4S5
12:20 – 12:25	Natasha van Horsten	A winter GEOTRACES study characterizing Fe-binding ligands and the physical speciation of Fe in the Southern Indian Ocean	A4S6
12:25 – 13:00	Theme A3 & A4	Discussion & Conclusions	

13:00 – 14:00

Lunch

SESSION 6 - THEME D1 - INNOVATION, TECHNOLOGY AND ENGINEERING (ORAL PRESENTATIONS) – Chair: Stefan Schoombie

14:00 – 14:15	Janine Schoombie	Utilising computational simulations and data measurements to quantify and assess the ecological impacts of wind flow across Marion Island	D101
14:15 – 14:30	Anriëtte Bekker	SAA II – Big brother & her digital twin	D102
14:30 – 14:45	Johnathan Ward	Engineering for Space Science	D104

SESSION 6 - THEME D1 - INNOVATION, TECHNOLOGY AND ENGINEERING (SPEED TALK PRESENTATIONS) – Chair: Anriëtte Bekker

14:45 – 14:50	Christopher P. Gray	HF Antenna Array Characterisation Using a Multi-Copter Platform	D1S1
14:50 – 14:55	Brendon Nickerson	Full scale shaft-line responses in open water and ice	D1S2
14:55 – 15:00	Jandre Mouton	Open water resistance of the <i>S.A. Agulhas II</i>	D1S3
15:00 – 15:05	Christof M. van Zijl	Human responses to vibration on a vessel during a storm in the marginal ice zone	D1S4
15:05 – 15:10	Gerhard Durandt	Towards integrated engineering data platform for vessel monitoring	D1S5
15:10 – 15:15	Martinique Engelbrecht	Measurement and analysis of sleep disturbance aboard the <i>S.A. Agulhas II</i>	D1S6
15:15 – 15:20	Andrei Sandru	Intelligent determination of the ice concentration and floe size	D1S7
15:20 – 15:25	Kyle A. Goddard	Simulating wind patterns across Marion Island using computational fluid dynamics	D1S8
15:25 – 15:30	Stefan Schoombie	Fine-scale flight: Using high frequency data loggers to study the at-sea behaviour of wandering albatrosses	D1S9

15:30 – 16:00

Tea Break

16:00 – 16:30

Theme C & D

Discussion & Conclusions

Parallel optional tour of SANSA facilities in Hermanus

18:00

EVENING BRAAI FUNCTION at SANSA FACILITIES IN HERMANUS



2018 SANAP SYMPOSIUM PROGRAMME

THURSDAY - 16 AUGUST 2018

SESSION 1 – THEME A2 - EARTH SYSTEMS: SOUTHERN OCEAN IN THE COUPLED OCEAN (ORAL PRESENTATIONS) – *Chair: Luke Gregor*

08:00 – 08:15	Thato N. Mtshali	Seasonal depletion of the sub-surface iron reservoir in the A201 sub-Antarctic zone of the Southern Ocean	
08:15 – 08:30	Werner Nel	Landscape and climate interaction on Marion Island	A202
08:30 – 08:45	Marcello Vichi	Surfing white waves: impacts of a severe storm on the winter marginal ice zone in the Southern Ocean	A203
08:45 – 09:00	Sarah E. Fawcett	Using the nitrogen isotopes to understand the past and present polar ocean and atmosphere: a plan for research capacity development and student training	A204
09:00 – 09:15	Sarah E. Fawcett	Storm driven mixing in the Sub-Antarctic Zone and implications for phytoplankton biomass and CO2 fluxes	A205
09:15 – 09:30	Pedro Monteiro	Where is the Southern Ocean Carbon Cycle going in the 21st Century? 7 years of learning from SOCCO and international research	A206
09:30 – 09:45	Sandy J. Thomalla	What We Have Learned From SOSCEX: A High Resolution Glider Experiment in the Sub-Antarctic Southern Ocean	A207
09:45 – 10:00	Keith MacHutchon	The temperature, bulk salinity and brine characteristics of pancake ice at two single locations on the outer and inner edges of the marginal ice zone in the Atlantic-Indian Ocean sector of the Antarctic Ocean	A208

10:00 – 10:30

Tea Break



SESSION 2 - THEME A2 - EARTH SYSTEMS: SOUTHERN OCEAN IN THE COUPLED OCEAN (SPEED TALK PRESENTATIONS) – Chair: *Thato Mtshali*

10:30 – 10:35	Mark C. Hague	Marginal Ice Zone Phytoplankton Phenology in CMIP5 Models A2S1
10:35 – 10:40	Ehlke de Jong	Assessment of the synoptic variability of the Antarctic marginal ice zone with in situ observations A2S2
10:40 – 10:45	Emma L. Bone	A novel approach to investigating fluorescence quantum yield variability in the Southern Ocean A2S3
10:45 – 10:50	Ayanda Mpilweni	Characterising the seasonal response of the mixed-layer and the transitional-layer to the passage of storms in the Sub-Antarctic Zone A2S4
10:50 – 10:55	Shantelle Smith	Steady-state box modelling of ammonia/um across the air-sea interface during winter in the Atlantic sector of the Southern Ocean A2S5
10:55 – 11:00	Mishka Rawatlal	Observing the seasonal cycle of pCO ₂ in the SAZ using pH A2S6
11:00 – 11:05	Luke Gregor	Interannual drivers of the seasonal cycle of CO ₂ in the Southern Ocean A2S7
11:05 – 11:10	Makabongwe Siggala	Decadal shifts in the diet of four penguin species at Marion Island A2S8
11:10 – 11:15	Lillina Ruiters	King penguins at Marion Island: inter-annual spatial variability in foraging and trophic ecology A2S9
11:15 – 11:20	Heather J. Forrer	Phytoplankton group specific contributions to the Subantarctic biological pump A2S10
11:20 – 11:25	Zandria Jordaan	CO ₂ as a driving factor of Carbon isotopic signature in the Southern Ocean A2S11
11:25 – 11:30	David W. Hedding	Aeolian processes and landforms on sub-Antarctic Marion Island A2S12
11:35 – 11:40	Nicolette Chang	Towards an improved Southern Ocean in the Earth System Model, CSIR VR-ESM A2S14
11:40 – 11:45	Andrea Cook	An investigation into the porosity of sea ice from the Atlantic-Indian marginal ice zones and its link to temperature and salinity using imaging analysis A2S15
11:45 – 11:50	Marcel du Plessis	Submesoscale instabilities drive enhanced variability of the Southern Ocean mixed layer: a four-year Seaglider experiment A2S16
11:50 – 11:55	Precious Mongwe	Mechanisms of the Sea-Air CO ₂ Flux Seasonal Cycle biases in CMIP5 Earth Systems Models in the Southern Ocean AS217
11:55 – 12:20	Theme A2	Discussion & Conclusions

12:30 –

Lunch