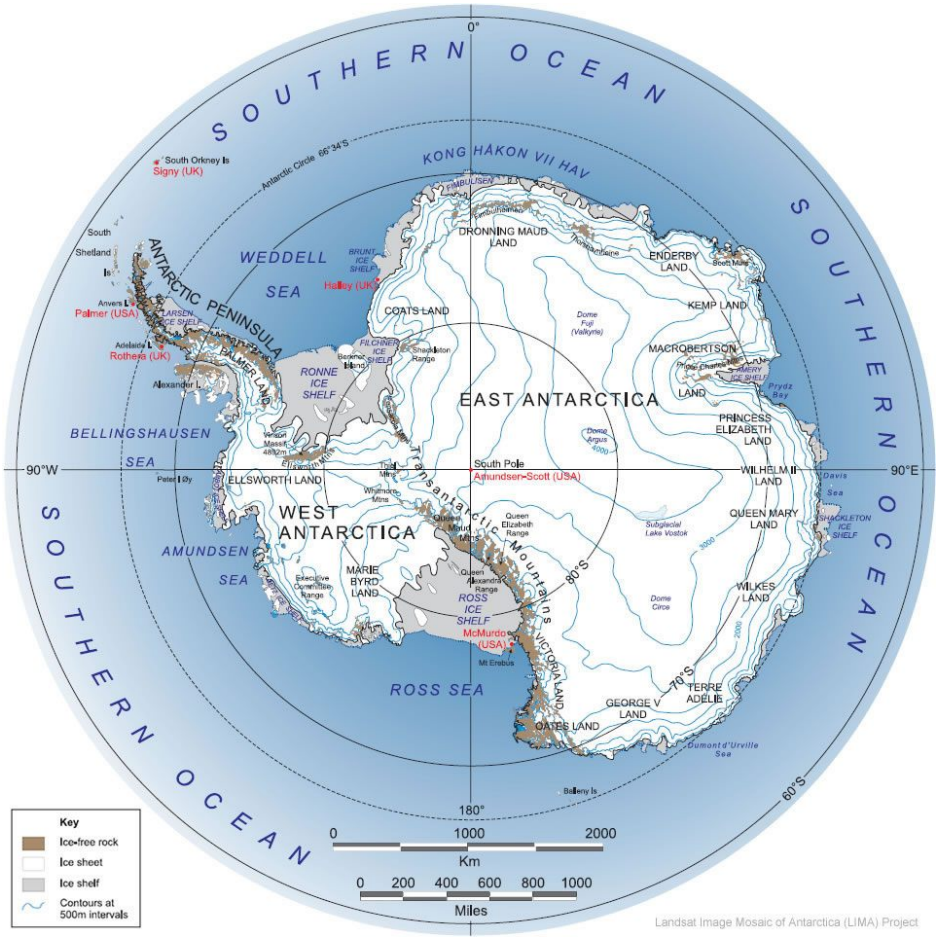


Cape Town GIFT 2024

Exploring

Antarctica

Cape Town, South Africa, 10-11 August 2024

Picture credits: LIMA Project / Courtesy NASA

Welcome!

The European Geosciences Union (EGU) is the leading organisation for Earth, planetary and space science research in Europe. With our partner organisations worldwide, we foster fundamental geoscience research, alongside with applied research that addresses key societal and environmental challenges. Our vision is to realise a sustainable and just future for humanity and for the planet.

In addition to publishing a number of diverse scientific journals, EGU organises topical meetings, and education and outreach activities.

The Education Committee (EC) of the European Geosciences Union (EGU) was created in 2002 with the aim of bringing state-of-the-art science into tomorrow's classrooms via high-school teachers.

The EC has organised Geosciences Information for Teachers (GIFT) yearly workshops since 2003. These are normally two-and-a-half-day teacher enhancement workshops held in conjunction with EGU's annual General Assembly in Vienna, Austria. There, selected top-level scientists working in the Earth sciences offer the invited teachers talks centred on a different theme every year. Teachers are also provided with teaching strategies and activities related to the theme.

Teachers from over 50 countries such as China, Japan, Mexico, Malaysia, and the USA were invited to the GIFT workshops. Very soon teachers began to apply for second participation slots at the workshops and started to form networks beyond their national borders. With so many teachers wanting more access to research experience the European GIFT concept also became international, with the EC helping to organise workshops at different locations worldwide.

In 2010, the first GIFT workshop in connection with an EGU Alexander von Humboldt Conference took place in Merida, Mexico. The EGU Education Committee then teamed up with UNESCO to take the GIFT workshop idea to Africa. The first EGU-UNESCO GIFT workshop on African soil took place at the African Earth Observatory Network at the Nelson Mandela Metropolitan University in Port Elizabeth, South Africa in partnership with the African Applied Centre for Climate and Earth Systems Science. Some 40 teachers from all over South Africa, attended this workshop on climate change and human adaptation.

Out-of-Europe GIFT workshops were then organized in Penang (Malaysia), Merida (Mexico), Addis Ababa (Ethiopia) and Cape Town (South Africa) with great success.

To further increase the impact of our "out-of-Vienna" activities, a new type of EGU GIFT workshop is now offered to teachers on a "capacity-building" basis. Funding will be offered on a sliding scale over a three-year time span, with close to full funding provided in the first year, declining progressively until the third year. The aim of these series of workshop is to transfer as much as possible the achievements we have obtained at EGU to different countries worldwide (South Africa being the spearhead so far), and vice versa also to increase the input of the European workshops using successful educational approaches developed in these countries. This workshop is the third of the new series.

But in the end the success of this new series of workshops depends on you, dear teachers!

We expect you first to provide a report on how you felt the different arguments treated at the workshop, what you would suggest for the coming years, and of course we expect you to diffuse all you have learned and the idea of the GIFT workshop among your fellow teachers.

Therefore, **we ask you**:
1. To fill out the evaluation form as soon as possible and send it back to us.
2. To make presentations of your experiences at GIFT to a group of your teaching colleagues soon after you return.
3. To send us reports and photographs about how you have used the GIFT information in your classrooms.

We also encourage you to write reports on the GIFT workshop in publications specifically intended for geoscience teachers.

Information on past and future GIFT workshops is available on the EGU homepage (http://www.egu.eu/education/gift/workshops/): At this link it is possible to download brochures (.pdf) of the workshops, presentations given at the GIFT workshops for the last 20 years (.pdf). Since 2009, web-TV presentations were also included, which may be freely used in your classrooms.

Like in every great endeavour there are eminent people in the background supporting us and pulling the necessary strings. We are deeply indebted to Hylton Arnolds, the Director of the Education Department at Iziko Museums, Patric Jacobs and Philippe Courtial from EGU and Carlo Laj and Jean-Luc Berenguer from the Education Committee of the EGU.

And now, we are privileged to welcome you to the third Capacity-building GIFT workshop organized by the University of Cape Town, Iziko Museums and EGU!

And we sincerely hope you enjoy the GIFT workshop in Cape Town!

The Organizing Committee
of the Cape Town GIFT Workshop

Acknowledgements

For the GIFT 2024 Workshop in Cape Town the Education Committee of the European Geosciences Union has supported the major share of the expenses, but the workshop has also benefited from the generous help from:

Westermann Publishing House

Geological Society of South Africa

Geological Society of South Africa, Western Cape Branch

But first and foremost from:

Iziko Museums of South Africa

The University of Cape Town

The Two Oceans Aquarium

And we thank all the speakers who have contributed to this educational workshop and their institutions!

Organizing Committee

Friedrich Barnikel

European Geosciences Union, Education Committee; Educational Coordinator for Geography, City of Munich, Germany

Wendy Taylor

Honorary Research Associate, Dept. of Geological Sciences, University of Cape Town, Cape Town, South Africa

Stephen Macko

European Geosciences Union, Education Committee; Professor, Department of Environmental Sciences, University of Virginia, USA

Thandi Nqubelani

Education Manager, Natural History, Iziko South African Museum, Cape Town, South Africa

Anton van Wyk

Assistant Educator, Natural History
Iziko South African Museum,
Cape Town,
South Africa

Programme




GIFT WORKSHOP CAPE TOWN 2024

Antarctica: Geology, ecology, and its climate impact

10-11 August 2024

Iziko South African Museum, Cape Town, South Africa

DAY ONE: Saturday 10 August 2024

THEME: Antarctica introduction and exhibit exploration

Time	Task	Presenter(s)
8:00	Teachers arrive at Iziko; T.H. Barry Auditorium	
8:30	Welcome presentation, objectives & purposes of the capacity building GIFT workshop & introductions (15 min)	Friedrich Barnikel & Stephen Macko, EGU
8:45	*Antarctica and the ice-covered ocean are much more relevant to South Africa than you think!* (45 min)	Marchello Vichi, UCT Oceanography HOD; SAPRI
09:30	Questions and discussion (15 min)	
09:45	SNACK BREAK (30 min)	
10:15	*Ocean Observing and Infrastructure (45 min)*	Tammy Morris, Ocean and Polar Coordinator, SAEON
11:00	Questions and discussion (15 min)	
11:15	*Sentinels of the South* exhibit walk-through (45 min)	Thandi Nqubelani & Iziko staff, Iziko Museum
12:00	*Antarctic treaty and legal issues* (15 min)	Sheveenah Sunnassee Taukoor, UCT Oceanography
12:15	LUNCH (60 min) – Welcome comments Iziko Education Atrium & Classroom	Hylton Arnolds, Director Education and Public Programmes, Iziko Museum
13:15	*Doing Geology in Antarctica* (45 min)	Chris Harris, UCT Geological Sciences
14:00	Questions and discussion (15 min)	
14:15	*Treasures in ice: Hunting for meteorites in Antarctica* (45 min)	Philip Janney, UCT Geological Sciences HOD
15:00	Questions and discussion (15 min)	
15:15	Wrap up for the day & comments (15 min)	Suanne Rampou, WCED
15:30	Give out travel stipends (30 min)	Organizers
16:00	DEPARTURE – Museum closes	

DAY TWO: Sunday 11 August 2024

THEME: Penguin conservation and Two Oceans Aquarium field trip

Time	Task	Presenter(s)
8:30	Teachers arrive at Iziko; T.H. Barry Auditorium	
9:00	Welcome and overview of day; coffee and snacks (15 min)	Friedrich Barnikel, EGU
9:15	*Enhancing Student Engagement through Structured Thinking Practices* (45 min)	Sonja Vandeleur, CEO Thinking Schools South Africa
10:00	Questions and discussion (15 min)	
10:15	Thinking Maps activity (45 min)	Elmarie Petersen, Curriculum Advisor, WCED
11:00	SNACK BREAK (30 min)	
11:30	*Taking action for African Penguins* (45 min)	Lizelle van der Merwe, SANCCOB
12:15	Questions and discussion (15 min)	
12:30	LUNCH (60 min) - Iziko, Certificates Iziko Education Atrium & Classroom	Friedrich Barnikel, EGU
13:30	Bus ride to Two Oceans Aquarium	
14:00	Arrive and welcome at Two Oceans Aquarium	
14:15	Introduction: Tropical East Coast & Kelp Forest exhibits walk through - all teachers (45 min)	Two Oceans Aquarium Education
15:00	Group 1 - Hands-on experience with marine animals & kelp holdfast in touch-tank classroom (45 min)	Bianca Engel, Two Oceans Aquarium & George Branch, UCT
15:00	Group 2 – Meet the Penguins; African Penguin exhibit (45 min)	Two Oceans educator and volunteers
15:45	Pass time – groups exchange places (15 min)	
16:00	Group 2 Hands-on experience with marine animals & kelp holdfast in touch-tank classroom (45 min)	Bianca Engel, Two Oceans Aquarium & George Branch, UCT
16:00	Group 1 - Meet the Penguins; African Penguin African Penguin exhibit (45 min)	Two Oceans educator and volunteers
16:45	All assemble for good-bye & photo (15 min)	Everyone
17:00	BUS LEAVES from Aquarium – END OF PROGRAM	

Speakers

Friedrich Barnikel

Dr.
Director of Studies
Educational Coordinator for Geography
City of Munich, Germany
friedrich.barnikel@awg.musin.de

EDUCATION AND CAREER:
Since 2010: Educational Coordinator for Geography, City of Munich, Germany
2003: PhD in Geography, Natural Hazards Research, University of Goettingen
Since 2002: Member of the Education Committee, European Geosciences Union
2000 – 2008: Lecturer for Geography, University of Munich
Since 2000: High school teacher (tenure) for Geography, History and English in Munich

RESEARCH INTERESTS:
Spatial Orientation, Bilingual Studies, Natural Hazards Research

PUBLICATIONS:

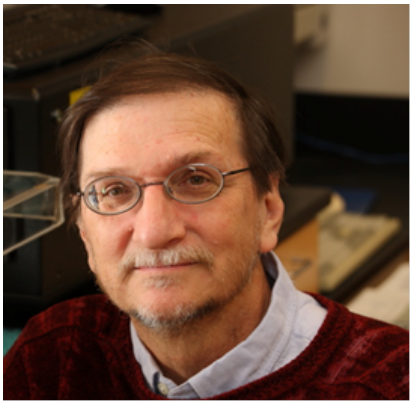
Schoolbooks with teaching units from GIFT Workshops

BARNIKEL, F. & T. HECKMANN (eds., 2018): Diercke Naturgefahren – Methoden und Aufgaben (Braunschweig).
BARNIKEL, F. & H. SUMMESBERGER (eds., 2017): Diercke Natürliche Ressourcen – Methoden und Aufgaben (Braunschweig).
BARNIKEL, F. & M. VETTER (eds., 2015): Diercke Ressource Wasser – Methoden und Aufgaben (Braunschweig).

Scientific papers

BARNIKEL, F., WILLEMS, F. & R. PLÖTZ (2019): Describe! Analyze! Act! Geomedia and Sustainability: Results from a European School Project.-In: A. Car, J. Strobl, T. Jekel & G. Griesebner [eds.]: GI_Forum 2019 – The Spatial View, Issue 2, pp. 144-152.
BARNIKEL, F., S. ANTTILA-MUILU & H. PEREIRA (2017): Urban Studies in Secondary Education – from Description to Participation, Urban Design, 1/1, pp. 12-22.
BARNIKEL, F., H. ELLBRUNNER & M. VETTER (2014): Teaching Spatial Competence Today – From Analogue Maps to Geocaching, Journal of Cartography and Geographic Information, 5/64, pp. 257-262.
BARNIKEL, F. & M. VETTER (2012): Earthquakes in history – Ways to find out about the seismic past of a region.-In: D'Amico, S. [ed.]: Earthquake Research and Analysis – Seimsology, Seismotectonic and Earthquake Geology (Rijeka), pp. 1-20.
BARNIKEL, F., & E. GEISS (2008): The BASE-Project – An open-source catalogue for earthquakes in Bavaria, Germany, Natural Hazards and Earth System Sciences 8/6, pp. 1395-1401.
BARNIKEL, F. & A. v. POSCHINGER (2007): How historical data can improve current geo-risk assessment, Zeitschrift für Geomorphologie N.F. 51/1, pp. 31-43.
BARNIKEL, F. (2004): The value of historical documents for hazard zone mapping, Natural Hazards and Earth System Sciences 4/4, pp. 599-613.
BARNIKEL, F. & M. BECHT (2002): Pluvial phases in the Sahara during the Holocene: A multi-disciplinary comparison, Geophysical Research Abstracts, Volume 4, EGS02-A-02636, 27th General Assembly EGS, Nice.

AWARDS:
Munich Environmental Award (for the Adolf-Weber-Gymnasium), City of Munich (2019)
Best university lecturer award in Geography, University of Munich (2008)



Stephen Macko

Professor
Department of Environmental Sciences
University of Virginia, Charlottesville, VA USA
sam8f@virginia.edu
434-924-6849
https://evsc.as.virginia.edu/people/profile/sam8f

EDUCATION
B.S Chemistry, Carnegie Mellon University
M.S. Oceanography, University of Maine
Ph.D. Chemistry, University of Texas

CAREER
Assistant to Associate Professor Earth Sciences, Memorial Univ. St. John's, NF, Canada
Associate to Professor, Environmental Sciences, Univ. Virginia, Charlottesville, VA, USA

RESEARCH INTERESTS
Origin and history of organic matter in ocean sediments and petroleum
Origins and evolution of Life on the prebiotic Earth
Evaluating impacts of ocean acidification
Identifying sources and fates of ocean pollution

PUBLICATIONS AND SERVICES

Engel, M.H. and S.A. Macko, eds. (1993). Organic Geochemistry, Principles and Applications. Plenum Publ., New York, NY, 861p.
Engel, M.H. and S.A. Macko (1997) Isotopic evidence for extraterrestrial nonracemic amino acids in the Murchison meteorite. Nature 389:265-268.
Engel, M.H., S.A.Macko and J.A.Silfer (1990). Carbon isotope composition of individual amino acids in the Murchison meteorite. Nature 348:47-49.
Engel, M.H. and S.A. Macko (1986). Application of stable isotopes for evaluating the origins of amino acids in fossils. Nature 323:531-533.
Macko, S.A. and A.E. Aksu (1986). Amino acid epimerization in planktonic foraminifera suggests slow sedimentation rates for Alpha Ridge, Arctic Ocean. Nature 322:730-732.

AWARDS AND HONORS
Fellow, Geochemical Society
Fellow, European Association of Geochemistry
Outstanding Teaching Award, University of Virginia
State of Virginia SCHEV,Teacher of the Year
President's Award for Outstanding Research, Memorial University
Program Director, Geobiology, US National Sience Foundation
Visiting Scholar, Smithsonian Institution, Washington D.C.
Committee on Education (and Human Resources) EGU and AGU for over 25 years

TWENTY YEARS OF GEOSCIENCE INFORMATION FOR TEACHERS WORKSHOPS

Friedrich Barnikel, Stephen Macko & the Education Committee

European Geosciences Union
education@egu.eu

The European Geosciences Union (EGU) is the leading organisation for Earth, planetary and space science research in Europe. With our partner organisations worldwide, we foster fundamental geoscience research, alongside applied research that addresses key societal and environmental challenges. Our vision is to realize a sustainable and just future for humanity and for the planet. EGU is a non-profit international union of scientists with about 18,000 members from all over the world.

In the year 2002 the Education Committee (EC) was founded under the leadership of Carlo Laj to support active school teachers in (mostly) secondary education, to provide them with up-to-date scientific findings by hands-on activities on the one and top-notch presentations given by experts in the field on the other hand and to enable networking amongst the teachers themselves.

The EC established Geoscience Information for Teachers (GIFT) workshops, which are being held during large geoscience conferences such as the General Annual Assembly of the EGU in Vienna and numerous scientific meetings all over the World. In its 20 years of its existence, the GIFT workshop initiative has influenced thousands of teachers and tens of thousands of pupils across Europe and worldwide. The EGU web page gives an idea of its major activities: http://www.egu.eu/education/gift/workshops/.

Apart from the two virtual workshops during the Covid pandemic in the years 2021 and 2022 the EC has organized 16 on-site workshops in Vienna/Austria, two workshops in Nice/France, two in Merida/Mexico, and one each in Addis Ababa/Ethiopia, Istanbul/Turkey, Cusco/Peru, Penang/Malaysia and Port Elizabeth/South Africa.

And in the years 2016 and 2017 EGU has already conducted two GIFT workshops in Cape Town, one in cooperation with the 35th International Geological Congress and one in cooperation with the IAPSO-IAMAS-IAGA Joint Conference. In order to follow up on the enormous success of these two workshops EGU decided to establish a series of capacity building workshops in South Africa, which started in 2022.

These workshops have been devised to support the regional teaching community to enable them to independently organize and conduct comparable workshops for teachers in the future.

Wendy L. Taylor

Dr.
Research Associate and Learning Designer
University of Cape Town and
Arizona State University
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EDUCATION

Ph.D., M.S. Geosciences, University of Rochester, Rochester, New York, USA
B.S. Geosciences, State University of New York, Fredonia, New York, USA

CAREER

1995-1999, Collections Manager, Paleontological Research Institution, Ithaca, New York, USA
2000-2002, Collections Manager, Field Museum of Natural History, Chicago, Illinois, USA
2002-2006, Project and Collections Manager, University of Chicago, Chicago, Illinois, USA
2006-present, Researcher and Learning Designer, Arizona State University, Tempe, Arizona, USA
2013-present, Honorary Research Associate, University of Cape Town, Rondebosch, South Africa

RESEARCH INTERESTS

Invertebrate paleontology focusing on the evolution of early life (northern Norway and South Africa), geoscience education and literacy, learning design, and virtual field trips (VFTs)

PUBLICATIONS AND SERVICES

Lead SME (subject matter expert) for the award winning online game, *Surviving Extinction*, Arizona State University; https://vft.asu.edu/survive/ (game link) and https://mediaplus.asu.edu/lti/embedded?id=a1003521-bb1e-4543-81ae-b7b8c4ccc11b&siteId=61e0606e-415d-4001-8206-ffde48430c64 (game trailer)

Mead, C., Buxner, S., Bruce, G., Taylor, W.L., Semken, S. and Anbar, A.D., 2019, Immersive, interactive virtual field trips promote science learning, Journal of Geoscience Education, 67(2), 131-142. Outstanding Paper Award 2020, DOI: 10.1080/10899995.2019.1565285

AWARDS AND HONORS

2022 Geological Society of South Africa, IGC35 Legacy Foundation Grant, *Science storytelling through puppetry: Pterosaurs take to the skies to inspire young learners*, Univ. of Cape Town, RSA
2022 African Scholars Award, *Safeguarding African type collections: The Field Museum as a supporter of museum capacity building in southern Africa,* Field Museum of Natural History, USA
2021 Paleontological Society Education Grant, *Science storytelling through puppetry*, USA

2020 NRF-DST Centre of Excellence in the Palaeosciences Grant, *Stratigraphy, palaeontology and geochemistry of the lower Nama Group near Vioolsdrif, Northern Cape, South Africa,* Univ. of Cape Town, RSA
2020 NRF-DST Centre of Excellence in the Palaeosciences Grant, *Puppet Planet Adventures: Science storytelling theatre & video project,* Univ. of Cape Town, RSA
2020 NRF-DST Centre of Excellence in the Palaeosciences Grant, *Museum Technical Education and Communications Hub (MTECH): An online training academy for South Africa and beyond*, now called *PalaeoLink*, Univ. of Cape Town, RSA

Thandekile Nqubelani

Senior Educator
Iziko Museums of South Africa
tnqubelani@iziko.org.za
Tel 021-440 3840

EDUCATION: National Diploma in Education
National Diploma in Human Resources and Training Management

CAREER: Senior Educator at Iziko Museums of South Africa

RESEARCH INTERESTS:
Participates in an ongoing research on how Education plays a role in development of Exhibitions

Participated in research on bringing innovative and creative ways in how museums improve its outreach programmes

Participated in research on how to decolonise Museums

Participated in research on audience development for the Museums

Participated in research on how to maximise use of collections in Museum Education

I would very much love to learn effective ways to employ when teaching special needs learners in a Museum setting.

AWARDS AND HONORS
In 2019 I was nominated as one of the pre-jury candidates for the Goethe Science Film Festival in Africa.
In 2021 I was one of the Line Managers who coordinated the Presidential Employment Stimulus Programme for Interns, at Iziko Museums, natural history.

Anton van Wyk

Assistant Educator
Iziko Museums of South Africa
avanwyk@iziko.org.za
Tel 021-440 3924

EDUCATION: B: Sc in Zoology and Botany
Volunteered at Two Oceans Aquarium
Volunteered at Iziko South African Museum

CAREER: Assistant Educator

RESEARCH INTERESTS:
Participates in ongoing research on how Museum objects play a role in Education

Participates in ongoing research on bringing innovative ways in teaching special needs students in the Discovery Room

Marcello Vichi

marcello.vichi@uct.ac.za

Marcello Vichi is Full Professor at the Department of Oceanography, University of Cape Town, and director of the Marine and Antarctic Research centre for Innovation and Sustainability (MARIS). His research interests are linked to interdisciplinary earth system processes, embracing coupled physical/biogeochemical modelling of the global ocean; observations, simulation and parameterization of sea-ice dynamics and biogeochemistry; Antarctic policies and infrastructures, climate change impacts on marine/sea ice ecosystems, and numerical process studies of physical/biogeochemical interactions in coastal and shelf seas. He is a member of the Academy of Sciences of South Africa.

RESEARCH APPOINTMENTS

Head of Department (interim), Oceanography, University of Cape Town, South Africa	2023-
Professor at the Department of Oceanography, University of Cape Town, South Africa	2022-
Associate Professor at the Department of Oceanography, University of Cape Town, South Africa	2014-2021
Senior researcher at Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC), Bologna, Italy. Seconded from INGV	2014
Researcher at CMCC, Bologna, Italy. Seconded from INGV.	2006-2013
Researcher at Istituto Nazionale di Geofisica e Vulcanologia (INGV), Bologna, Italy	2000-2014
Visiting fellow at the Royal Netherlands Institute for Sea Research (NIOZ), Texel, The Netherlands	1999-2000
Research fellow at the Ecological Modelling Centre (DHI Water and Environment) Hoersholm, Denmark	1998-2000

EDUCATION

PhD Oldenburg University, Germany.
MSc+BSc (*Italian Laurea*) University of Bologna Alma Mater Studiorum, Italy

PUBLICATIONS

(*student/postdoc author)
Author of more than 80 peer-reviewed publications (https://orcid.org/0000-0002-0686-9634), most of them co-authored with UCT students and post-docs

SUPERVISION

Students: 17 PhD and 32 MSc. Postdoctoral fellows: 4

ANTARCTICA AND THE ICE-COVERED OCEAN ARE MUCH MORE RELEVANT TO SOUTH AFRICA THAN YOU THINK!

Marcello Vichi

Antarctica and the Southern Ocean are remote and detached entities almost for anyone living in Africa. South Africans are not familiar with the polar regions and very few people are aware that South Africa is one of the first signatories of the Antarctic Treaty that regulates the unique governance of the Antarctic region, and that the Mother City is one of the five gateways through which ships have to transit to navigate towards the Antarctic continent.

The Southern Hemisphere polar region is a major player in determining the climate of Southern Africa, and the Southern Ocean as a whole has been playing an essential service in capturing heat and carbon accumulated in the atmosphere since the industrial revolution, hence reducing the adverse effects of climate change.

This presentation will take you through a journey on board the South African icebreaker Agulhas II towards the sea ice of the Southern Ocean and the continental Antarctic ice sheets. Along the way, it will explain why these majestic components of the Earth system matter to our lives, and how important it is that South Africa contribute to building knowledge on the polar regions.

Tamaryn Morris

Dr
South African Environmental Observation Network (SAEON), Egagasini Node
t.morris@saeon.nrf.ac.za

EDUCATION
PhD in Physical Oceanography from UCT (2020)
MTech in Physical Oceanography from CPUT (2009)
BTech in Oceanography from CPUT (2003)
NDip in Oceanography from CPUT (2001)

CAREER
Ocean and Polar Coordinator at SAEON, Egagasini Node, from August 2023: This role looks at enhancing ocean observations around Southern Africa and down to the marginal ice zone of Antarctica. To do this, a number of ocean observing technologies are employed, including buoyancy gliders, Argo floats and drifting buoys.

Senior Scientist at the South African Weather Service (SAWS), Marine Unit (2019-2023): This role included integrating ocean observations from vessels of opportunity and other opportunistic deployments to validate extreme weather models for safety of life at sea.

ASCA Coordinator at SAEON, Egagasini Node (2015-2019): In this role I coordinated the large mooring array system ASCA (Agulhas System Climate Array) along the east coast of South Africa. This was an international collaboration of researchers.

Research scientist at Bayworld Centre for Research and Education (2001-2014): In this role a grew as a ocean observing technician and eventually research scientist, undertaking projects in the Agulhas Current and into the South West Indian Ocean.

RESEARCH INTERESTS
My primary interests are the Agulhas Currents and mesoscale dynamics influencing this powerful western boundary current. I am an ocean observing expert, using numerous infrastructure platforms to measure the ocean dynamics in situ.

PUBLICATIONS AND SERVICES
Agulhas Current enigma: An oceanic gap in our climate understanding - https://news.mongabay.com/2022/09/agulhas-current-enigma-an-oceanic-gap-in-our-climate-understanding/

AWARDS AND HONORS
I received an NRF Y1 rating for young researchers in 2021 after completing my PhD
I sit on a numbe of international panels related to ocean observing infrastructure as the South African representative.
I co-lead the UN Ocean Decade endorsed Boundary Current exemplar as part of the GOOS Co-Design programme.

OCEAN OBSERVING AND INFRASTRUCTURE

Tamaryn Morris
Egagasini Node, South African Environmental Observation Network (SAEON)
Cape Town, South Africa

The oceans play a critical role on our society. The ocean influences weather, by increasing rainfall or intensifying storm systems as water and heat are absorbed from the surface of the ocean, and climate, by transporting increased heat around the global ocean influencing sea level rise and melting of ice sheets at the polar regions. The ocean also provides us with food, transport for over 90% of the goods we use every day, and recreation. Most critically, the ocean provides us with almost 50% of the oxygen we breathe. Thus, it is important that the ocean, both at the surface and subsurface, are monitored in near-real time to understand these dynamics, to validate numerical forecast models used for our weather and ocean forecasts and to provide a better understanding of the state of our ocean and how climate change is impacting this.

Ocean observation scientists make use of both in situ measurements taken at sea on research vessels at discreet locations, but also from autonomous platforms such as Argo floats, buoyancy gliders and drifting buoys. These are deployed from vessels of opportunity and research vessels and can spend up to 7 or 8 years at sea, collecting data which is sent back to users via satellite communication systems. Autonomous platforms inspire young minds in terms of ocean science and dynamics, but also in terms of engineering, coding and robotics – key technologies the next generations will need to master as the world around us evolves.

This talk will focus on these autonomous platforms, will provide some insights into their operations, but also provide information to the educators of resources and how schools and communities can learn more.

Sheveenah Sunnassee Taukoor

Dual doctorate award in Physical Oceanography / marine GIS scientist
Phone: +27633628246
Address: Cape Town, South Africa
Email: tkrshe001@myuct.ac.za

Everyday, I find the applied laws of physics in the ocean even more fascinating, whether it is a cyclonic eddy, a western boundary current, a tsunami wave or maybe those subsurface ocean currents on Saturn's moon, Enceladus. So learning, understanding and talking about oceanography for me is truly a passion. But there is also a purpose added to the passion. I also decided to become an oceanographer so that in the future I can contribute towards protecting marine life from unsustainable fishing, oil spill, plastic pollution and climate change.

The last few years I have been busy with:

✓ Lecturing undergraduate and postgraduate courses in UCT, Rhodes university and Seamester expedition: [5 weeks in 2024, 7 weeks in 2023, 6 weeks in 2022, 5 weeks in 2020, 4 weeks in 2019, 1 week in 2018]

✓ Setting up, designing and lecturing 4 new modules in UCT:

✓ Spending 171 days at sea on MV SA Agulhas2 and RV Algoa

✓ Presenting at different conferences, workshops in SouthAfrica/France/Austria

EDUCATION

Bsc Archaeology and Environmental science [University of Cape Town]
Bsc Hons Geographic Information System [University of Cape Town]
Msc Physical oceanography [University of Cape Town]
PhD Physical oceanography [co-badged Phd at University of Cape Town and Universite de Bretagne Occidentale]

CAREER

Postdoctoral fellow at Nansen-Tutu centre, Dept of Oceanography, University of Cape Town
Part-time lecturer at Dept of Oceanography, University of Cape Town

ANTARCTIC TREATY AND LEGAL ISSUES

Sheveenah Sunnassee Taukoor

The talk "Antarctic Treaty and Legal Issues" focuses on the unique international treaty that preserves Antarctica for peaceful purposes and scientific research, highlighting the legal complexities surrounding commercial and scientific use of the surrounding Southern Ocean. The speaker emphasizes the treaty's role in preventing territorial claims and the challenges in regulating fishing and mineral resource exploitation.

Chris Harris

Emeritus Professor
University of Cape Town
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https://science.uct.ac.za/department-geological-sciences/contacts/chris-harris

EDUCATION

MA DPhil University of Oxford, UK

CAREER

Post-doc CRPG, Nancy, France
Senior Lecturer – Professor University of Cape Town 1993-2023
Philipson Stow Professor of Mineralogy and Geology 2014-2023
Head, Department of Geological Sciences, University of Cape Town 2006-2010 and 2013-2020
Professeur, Université Jean Monet, St-Etienne, France 2000-2003

RESEARCH INTERESTS

The application of stable isotopes to igneous petrology, hydrology, and economic geology. The Bushveld Complex, the Karoo large igneous province, Mesozoic igneous complexes in Antarctica, Namibia and South Africa, low $\delta^{18}O$ magmas, calcrete and lake sediments as palaeoclimate proxies, Koegel Fontein igneous complex, breccia pipes, peralkaline granites, the Phalaborwa Complex, isotope composition of Cape Town precipitation and groundwater,.

PUBLICATIONS AND SERVICES

Harris, C., Dreyer, T. and le Roux, P. (2018) Petrogenesis of peralkaline granite dykes of the Straumsvola complex, western Dronning Maud Land, Antarctica. Contributions to Mineralogy and Petrology 173:8, https://doi.org/10.1007/s00410-017-1433-2

Munro, J., Harris, C. (2023) A high-$\delta^{18}O$ mantle source for the 2.06 Ga Phalaborwa Igneous Complex, South Africa? Journal of Petrology 64, 1-19. doi.org/10.1093/petrology/egad063

AWARDS AND HONORS

Draper Medal, Geological Society of South Africa, 2023

DOING GEOLOGY IN ANTARCTICA

CHRIS HARRIS

Department of Geological Sciences, University of Cape Town, South Africa (chris.harris@uct.ac.za)

South Africa has been active in Antarctic research since the 1960's, with all year occupation of a base on the part of Antarctica south of Cape Town, close to the Greenwich Meridian (now in its 5th iteration). Fieldstrips to map the geology and collect rock samples have taken place in summer from 1969 onwards. The base is situated in Dronning (Queen) Maud Land and, by good fortune, this is one of the most interesting areas of Antarctica. There are no active volcanoes as in West Antarctica; but by contrast the oldest rocks are here. The 3.1 billion year old Annandagstoppane Granite forms the basement of what is known as the Grunehogna Craton. Overlying these rocks is a succession of undeformed sandstones and lavas that have much in common with rocks in South Africa. This is because until about 180 million years ago, this part of Antarctica was attached to southern Africa in the supercontinents Pangea and Gondwana. To the south and east of the Grunehogna Craton are highly deformed metamorphic rocks (mainly gneiss) which have much in comment with the gneiss found in KZN and the Northern Cape. In my talk, I will describe the rocks of this part of Dronning Maud Land that I visited over 4 field seasons from 1985 to 1989. I will concentrate on the scenery and the logistics of doing this work rather than dwelling on too much geological detail.

Mount Alex du Toit (left) named after the famous South African Geologist. The upper part is made of basalt, which is the same age and chemical composition as those of the Karoo. The lower rocks are gneiss and in between these and the basalts are sandstones of the same type as found in the Drakensburg. At 74°S, this is on the edge of the polar plateau at about 2500 m altitude.

Philip E. Janney

Associate Professor and Head of Department
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EDUCATION

Phil obtained his BSc at the University of New Hampshire (USA) in 1988 and his PhD from the University of California, San Diego-Scripps Institution of Oceanography in 1996.

CAREER

Following postdoctoral positions at the University of Cape Town, UCSD and the Carnegie Institution for Science, Phil worked as Manager of the radiogenic isotope cosmochemistry laboratory at the Field Museum in Chicago (USA), then as Associate Research Scientist at the School of Earth and Space Exploration of Arizona State University (Tempe, AZ, USA). Phil joined the Geological Sciences Department of UCT in 2012, initially serving as Senior Lecturer, then as Associate Professor and in 2021 as Head of Department.

RESEARCH INTERESTS

Phil's main interests are in the compositions of rocks and minerals from the Earth's mantle (including kimberlites and diamonds, and particularly the structure and history of the mantle portion of the Earth's continental lithosphere. He also is interested in using the chemical and isotopic composition and of minerals from primitive (chondrite) meteorites to infer their conditions of formation.

PUBLICATIONS AND SERVICES

Aside from many publications on esoteric topics, in 2019 Phil co-authored a popular article on the chemical composition of kimberlites and related rocks in the magazine, *Elements*.

Phil also serves as Associate Editor for the *Journal of Geophysical Research* and as an editorial board member for *Earth and Planetary Science Letters*.

AWARDS AND HONORS

Phil is a member of Phi Beta Kappa and is a Fellow of the Geological Society of South Africa.

Sonja Vandeleur

Dr
CEO Thinking Schools South Africa
sonja@thinkingschools.org.za
+27 635563107

EDUCATION

2017	Harvard University Online Course on Visible Thinking
2010	Doctor of Philosophy in Technology Education: "Indigenous Technology and Culture in the Technology Curriculum: Starting the Conversation. A Case Study" at Rhodes University
1999	Master of Education (cum laude) in Creative Thinking and Technological Development at Rand Afrikaans University
1997	Bachelor of Education (postgraduate) at Rand Afrikaans University
1979	Bachelor of Music at University of Cape Town

CAREER

2022 - present	CEO Thinking Schools South Africa N.P.C.
1996 - 2021	HOD Cognitive Education at Roedean School (SA), HOD Technology Education at Roedean School (SA)
2019	Developed Training Manuals for subject advisors nationally for National Education Coalition Trust - Natural Science
2018	On the Organising and Scientific Committee to host the International Conference on Thinking in South Africa in 2020 Developed Gr 4 and Gr 5 lesson plans for the academic year for the National Education Coalition Trust for teachers nationally - Natural Science
2011	Authored Natural Sciences and Technology Gr 4 – Gr 6 for Heinemann 'Spot On' series
2006	Member of a national team appointed by the DoE to develop the General Education and Training National Assessment (CTA)
2004 – 2008	Developed and moderated assessment tasks for the Independent Examinations Board for Gr 9 Technology Gave workshops for National Union of Educators to Technology teachers

PUBLICATIONS AND SERVICES

Vandeleur, S. M., & Schäfer, M. (2011). Indigenous technology and culture. In C. Benson and J. Lunt (Ed.): *Twenty Years of Primary Design and Technology Education*. Sense Publishers

Vandeleur, S. M., & Schäfer, M. (2010). Indigenous technology and culture: A new addition to the South African curriculum. Proceedings of the Technological Learning and Thinking: Culture, Design, Sustainability and Human Ingenuity. Vancouver: University of British Columbia.

AWARDS AND HONORS

2007 - 2008	Awarded a Carnegie bursary for PhD studies

ENHANCING STUDENT ENGAGEMENT THROUGH STRUCTURED THINKING PRACTICES

Sonja Vandeleur & Elmarie Petersen

TSSA has crafted two distinctive sessions for the GIFT workshop with a clear objective: to equip you with straightforward yet powerful strategies that foster deeper student thinking. In the initial session, Sonja will introduce three Thinking Routines developed by Harvard University's Project Zero. These routines, designed to make thinking visible, seamlessly integrate into existing lesson plans, promoting engaged exploration of content. They encourage active processing, collaboration, and curiosity among learners.

In the subsequent session, Elmarie will present Thinking Maps, eight visual maps aligned with specific cognitive functions such as classifying, describing, and defining. These versatile tools enhance critical thinking, communication, and problem-solving across grade levels and subject areas. During this session, Elmarie will guide participants in applying three of these Maps to the workshop's content.

Through the adoption of Thinking Routines and Thinking Maps, classrooms can establish a shared language of thought. This approach empowers students to take more initiative and ownership of their learning journey. Elmarie and Sonja are enthusiastic about sharing these strategies and look forward to your participation on August 11th. You will leave with a booklet containing the strategies covered in the two sessions.
Sonja Vandeleur and Elmarie Petersen

George Branch

Emeritus Professor
University of Cape Town
mbranch@mweb.co.za
Tel: 0634132733

EDUCATION: University of Cape Town: BSc, BScHons, PhD

CAREER: Lecturer and Professor of Marine Biology, Head of Department, Biological Science, University of Cape Town

RESEARCH INTERESTS: Ecology of rocky shores and estuaries, management of marine invertebrates, marine protected areas

PUBLICATIONS AND SERVICES

George Branch and Margo Branch 2018: Living Shores – Interacting with southern Africa's Marine Ecosystems. Struik Nature, Cape Town, South Africa.

George Branch, Charles Griffiths, Margo Branch, Lynnath Beckley 2022. Two Oceans – a Guide to the marine life of southern Africa. Struik Nature Cape Town, South Africa

AWARDS AND HONORS: Fellow of the Royal Society of South Africa; Fellow of University of Cape Town; Gilchrist Gold Medal for Marine Science; Gold Medal of the Zoological Society of South Africa; Distinguished Teachers' Award; International Temperate Reefs Life-time award.