



SCARnewsletter

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Welcome to the October edition of the SCAR Newsletter.

It seems the last three months have been busier than ever, which is one of the reasons this edition of the SCAR Newsletter is the biggest yet! First of all a piece of great news: SCAR has been awarded the prestigious Prince Albert II of Monaco Foundation's Prix Biodiversité (see below and the article on page 4). This is certainly testament to the fantastic work that SCAR scientists from around the world have been doing over the years and continue to do...

Preparation for the SCAR Open Science Conference is surging

ahead, with abstract submission open and details of keynotes, symposia and sessions already available (see the *SCAR Focus on...* article on page 2). Please spread the word and submit your abstract early!

A full list of invitees to the 1st Antarctic and Southern Ocean Science Horizon Scan has been published (page 3), as have details of the 2013 SCAR/COMNAP Fellowships (page 4).

A SCAR/COMNAP conservation workshop was held in Cambridge in September to discuss how National Antarctic Programmes could best address issues and chal-

lenges raised in the draft Antarctic Conservation Strategy. An open conservation workshop will be held in plenary at the SCAR Open Science Conference. This will likely be a theme of a future "*SCAR Focus on...*" in this newsletter.

This October in Japan, the SCAR President will be attending the International Forum on Polar Data Activities in Global Data Systems, in association with SCAR's Standing Committee on Antarctic Data Management (see the Events section on page 13). The Executive Director is currently in Malaysia for the 6th Malaysian International Seminar on Antarctica (MISA6) and to hold discussions on the 2016 Open Science Conference (of which Malaysia will be the hosts). He will also be in Finland later in October for the Finnish Seminar on Antarctic Research Issues (see page 13).

Finally, a new section has been introduced to the Newsletter, "Antarctic Announcements"; the idea being to allow SCAR National Committees to highlight activities or make announcements that they believe will be of interest to the Antarctic community. **We encourage you to contribute!**

SCAR was awarded the prestigious Prince Albert II of Monaco Foundation's 2013 Prix Biodiversité at a spectacular ceremony on 30 September. (Image: © JC Vinaj)
For more information, see the SCAR News item on page 4.



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SCAR focus on . . . XXXIII SCAR Open Science Conference 2014

Global Messages from Antarctica

In 2014, New Zealand will play host to the XXXIII SCAR Business and Delegates Meetings, the Open Science Conference and the XXVI COMNAP AGM. Antarctica New Zealand and the Royal Society of New Zealand look forward to welcoming COMNAP, SCAR and the Open Science Conference participants to Auckland and Christchurch in August and early September 2014.



The SCAR Open Science Conference in Auckland will focus on *Global Messages from Antarctica* and how the changes that we are currently seeing in Antarctica will affect the rest of the World. In addition to regular oral and poster sessions, morning plenary sessions will address the following themes which are expected to be of wide interest:

- *Antarctic Conservation* (Joint SCAR-COMNAP session; Steven Chown)
- *Innovation in Antarctic Science* (Martin Siegert, Charlie Lee, Maria Velikova)
- *Connections between the southern continents* (Marcelo Leppe)

Keynote lectures on the opening day of the SCAR OSC will include;

- *Global Messages from Antarctica* - Dana Bergstrom
- *Deciphering past climate and ice sheet dynamics from sedimentary records* - Carlota Escutia (Antarctic Science Lecture)
- *Southern Ocean Acidification* - Richard Bellerby (Weyprecht Lecture)
- *Martha T Muse Lecture* - 2014 Winner (to be announced early 2014).

Schedule of Events, August & September 2014

23 August: Subsidiary group meetings & workshops, Auckland
 24 & 29 August: SCAR Business Meetings, Auckland
 24 August: SCAR and COMNAP Icebreaker
 25-28 August: SCAR Open Science Conference, Auckland
 26 August: SCAR / COMNAP Conservation Symposium, Auckland
 27-29 August: COMNAP Annual General Meeting, Chateau on the Park Hotel, Christchurch
 29-31 August: ICEFEST weekend, Christchurch
 1-3 September: SCAR Delegates' Meeting, Auckland

Registration Fees

Early bird: NZ\$ 625 before end May 2014
 Regular: NZ\$825 before end July 2014
 Late: NZ\$900 after end July 2014
 Students: NZ\$350 - **the first 200 international student registrants will receive a NZ\$250 grant.**

Key dates

2 December: Registration opens
 14 February: Abstract submission closes

Abstract Submission for SCAR Open Science Conference

Abstract submission is now open on the conference website www.scar2014.com. A complete list of conference session themes is on the website. If you are submitting an abstract for an oral or poster session, please view the full list, including session descriptions, and select the most suitable theme. Abstract submission closes on **14th February 2014**.

Auckland Convention Centre

The SCAR meetings will be held at SKYCITY Auckland Convention Centre located in the heart of Auckland. The Centre is conveniently situated near Queen Street (the central city's retail strip).

Accommodation in Auckland

Special accommodation rates have been arranged with hotels in close proximity to the Conference venue. Rates start at \$NZ131 per night including tax (GST). A full list of accommodation options and booking details will be available when registration opens in December.

NZ IceFest – Bringing Antarctica to the World

This unique festival aims to bring the world's attention to the importance of Antarctica and the Southern Ocean through fun and interactive experiences. NZ IceFest 2014 will be hosting a taster of activities for the SCAR OSC and COMNAP AGM.

NZ IceFest Auckland, 25 – 28 August

Inspiring evening series during the SCAR OSC, including music, film, photography.

NZ IceFest Christchurch, 29 – 31 August

Travel to Christchurch directly following the OSC and be a VIP at the NZ IceFest launch and exclusive premier of our two major exhibitions. An action-packed weekend of events will be held in the Gateway city, providing a unique opportunity to experience some NZ IceFest magic, directly engaging with students and networking with COMNAP delegates. Make the most of your journey and experience some of the natural wonders NZ's South Island has to offer.

Programming for NZ IceFest is underway and the line-up is looking exciting! Details will be released as they are confirmed. See more information online at www.nzicefest.co.nz

For full details see www.scar2014.com and www.comnap.aq

News of the 1st Antarctic and Southern Ocean Science Horizon Scan

SCAR announces Horizon Scan Retreat attendees

SCAR continues to plan and organize the 1st Antarctic and Southern Ocean Science Horizon Scan. The Horizon Scan process is a community-based effort to identify the most compelling and important scientific questions to be addressed over the next two decades in and from Antarctica and the Southern Ocean. For more details on the SCAR Science Horizon Scan process, objectives and audiences go to: <http://www.scar.org/horizonscanning/>.

A critical element of the SCAR Science Horizon Scan is a Retreat to be held in Queenstown, New Zealand from April 20 to 23, 2014, where the most important scientific questions will be formulated and agreed. The Horizon Scan International Steering Committee (<http://www.scar.org/horizonscanning/steeringcommittee.html>) (ISC) selected Retreat invitees from nearly 500 community-submitted nominations of highly qualified and deserving candidates. Primary considerations in selection were scientific excellence, leadership, and a broad perspective of Antarctic science.

To reach a consensus, ISC members carefully reviewed the credentials of all nominees and selected those they believed should be invited to the Retreat via an online survey. Nominees were classified as experts in the GeoSciences; Life Sciences; Physical Sciences; and Social Sciences, Humanities and Policy as defined by SCAR's portfolio of scientific activities to ensure coverage of the breadth of Antarctic science. ISC members voted on nominees and drew up a shortlist (for full details of the voting process, see <http://www.scar.org/horizonscanning/news/9october2013.html>)



By definition, all of those on the short list were deserving of an invitation and selection of the final list of invitees was based on overall expertise coverage, geographic representativeness, gender, inclusion of partner organizations and programmes, and community representativeness. A final list of 40 "At-Large" invitees was recommended and approved by consensus of the ISC. Those remaining on the shortlist with similar profiles were to be invited if invitations were declined. As the list evolved, the ISC reviewed the composition of the invitees and addressed any gaps based on the criteria above, of particular importance was expertise coverage. Members of the ISC (25) and the Local Organizing Committee (8) were extended invitations to arrive at the final 73 invitees. Acceptances of invitations were greater than 90%.

SCAR Science Horizon Scan Retreat attendees are from 24 countries, 7% are early career scientists or students, 27% are female, and topical expertise ranges from history to astrophysics. Based on

SCAR classifications, attendees are 22% GeoSciences, 32% Life Sciences, 33% Physical Sciences and 14% Social Sciences, Humanities and Policy.

Scan Retreat attendees are representatives of their communities and are tasked with providing a broad perspective on their areas of expertise at the Retreat. Everyone is encouraged to contact attendees and make their opinions known and take advantage of opportunities to participate in the Horizon Scan (e.g. online question solicitations). The Scan ISC thanks the community for their participation and enthusiasm and regrets that many deserving nominees could not be invited to the Retreat due to financial and event management constraints. A lack of an invitation should not be construed as a judgment on any individual's expertise and/or the importance of their contributions to the community. Difficult decisions were made by consensus through a methodical, fair and unbiased process that provided all candidates an equal opportunity for an invitation.

Scan Attendees

(for the latest information, see <http://www.scar.org/horizonscanning/retreatattendees.html> *)

Azizan Abu Samah (MY) – meteorology, atmosphere
Ian Allison (AU) – glaciology, climate, IPCC
Jeff Ayton (AU) – human biology/medicine
Renuka Badhe (UK) – marine ecology, SCAR
Jenny Baeseman (NO) – cryosphere, CliC, APECS
Peter Barrett (NZ) – stratigraphy, sedimentology
Robin Bell (US) – tectonics, ice sheet dynamics
Nancy Bertler (NZ) – paleoclimate, ice cores
Sun Bo (CN) – oceanography, glaciology
Angelika Brandt (DE) – deep-sea marine biology
David Bromwich (US) – atmospheric sciences
Craig Cary (NZ) – terrestrial ecology, climate change
John Cassano (US) – climate, meteorology
Steven Chown (AU) – terrestrial ecology, conservation
Melody Clark (UK) – adaptations, physiology
Pete Convey (UK) – paleoecology, terrestrial ecology
Erlil Costa (BR) – ECS, sea bird ecology
Don Cowan (ZA) – genomics, microbial ecology
Rob DeConto (US) – climate and ice sheet modelling
Robert Dunbar (US) – marine chemistry, climate
Chris Elfring (US) – policy, conservation
Carlotia Escutia (ES) – climate evolution
Jane Francis (UK) – paleobotany, paleoclimate
Helen Fricker (US) – glaciology, remote sensing
Mitsuo Fukuchi (JP) – marine ecology, CCAMLR

Neil Gilbert (NZ) – policy, conservation, ATS-CEP
Julian Gutt (DE) – marine ecology, biocomplexity
Charlotte Havemans (BE) – ECS, Scan planning
David Hik (CA) – Arctic ecology, IASC
Graham Hosie (AU) – marine ecology, CPR
Christopher Jones (US) – fish populations, CCAMLR
Mahlon Kennicutt (US) – chemical oceanography
Yaedong Kim (KR) – geophysics, deep time
Sang Hoon Lee (KR) – microbial ecology, genomics
German Leitchenkov (RU) – marine geology, geophysics
Yvon LeMaho (FR) – ecophysiology
Marcelo Lepepe (CL) – paleobotany, biota evolution
Xichen Li (US) – student, climate & sea ice modelling
Daniela Liggett (NZ) – social sciences, environment
Vladimir Lipenkov (RU) – subglacial environments
Karin Lochte (DE) – marine ecology, NAP
Jeronimo Lopez (ES) – geology, permafrost, SCAR
Cornelia Lueddecke (DE) – history of natural science
Berry Lyons (US) – limnology, biogeochemistry
Sergio Marensi (AR) – geology
Heinz Miller (DE) – geophysics, glaciology, COMNAP
Polina Morozova (RU) – climatology, meteorology
Tim Naish (NZ) – paleoclimate, past ice sheets, IPCC
Shailesh Nayak (IN) – geology
Lloyd Peck (UK) – marine ecology

Rasik Ravindra (IN) – policy, former NAP/ATCM
Jose Retamales (CL) – NAP/ATCM
Carlo Alberto Ricci (IT) – policy, geology, IUGS
Eric Rignot (US) – glaciology, climate
Steve Rintoul (AU) – physical oceanography, climate
Michelle Finnemore (NZ) – COMNAP, policy, law
Yan Ropert-Coudert (FR) – marine birds, physiology
Lou Sanson (NZ) – policy, conservation, former NAP
Irene Schloss (AR) – marine phytoplankton
Kazuyuki Shiraishi (JP) – geology, tectonics, NAP
Martin Siegert (UK) – subglacial environments
Jefferson Simoes (BR) – glaciology, paleoclimate
Mike Sparrow (UK) – oceanography, SCAR
Bryan Storey (NZ) – geology, tectonics
John Storey (AU) – astronomy, astrophysics
Bill Sutherland (UK) – ecology, conservation
David Vaughan (UK) – Quaternary science
Diana Wall (US) – soil biodiversity, ecology
Jessica Walsh (UK) – student, scan planning, ecology
Gary Wilson (NZ) – paleo-oceanography/climate
Terry Wilson (US) – solid earth, SERCE, tectonics
Jan-Gunnar Winther (NO) – glaciology, Arctic
Jose Xavier (PT) – marine ecology, marine mammals
Huigen Yang (CN) – space & atmosphere physics

* list correct at time of going to press

News from SCAR

SCAR wins prestigious 2013 *Prix Biodiversité* of the Prince Albert II of Monaco Foundation



HSH Prince Albert II of Monaco (left) presents the *Prix Biodiversité* to SCAR President, Jerónimo López-Martínez. Image: © FPA2

On Monday 30th September, the SCAR President, Jerónimo López-Martínez, accepted the Prince Albert II of Monaco Foundation's 2013 *Prix Biodiversité* on behalf of SCAR. The Prize was awarded in recognition of SCAR's contribution to science and its work to improve our understanding of the environment.

When awarding the prize, HSH Prince Albert II said "As we have become aware of the importance of climate change and its impact, the evidence of the crucial role of

the polar regions has accumulated. That is why these regions constitute one of the three priorities of the Foundation".

At the spectacular ceremony held in Monaco, in addition to SCAR, awards in different categories were awarded to Dr Jane Lubchenco (*Prix Changement Climatique*) and Dr John Anthony Allan (*Prix Eau*).

For further details, see the report on the *Fondation Prince Albert II de Monaco* website: <http://www.fpa2.com/actualite-425-annee-2013-trimestre-3.html>

SCAR and COMNAP announce 2013 Fellowship Awardees

Two Antarctic organisations, SCAR and the Council of Managers of National Antarctic Programs (COMNAP), joined forces again this year to launch Fellowships for early career researchers.

The Fellowships were worth up to USD 15,000 each and six Fellowships (four SCAR, one COMNAP and one joint SCAR/COMNAP) have been awarded in 2013 (one more than the previous year).

SCAR Fellowships were awarded to: Paula Casanovas, Bella Duncan, Reny Tyson and Luis Huckstadt; the COMNAP Fellowship was awarded to Charlotte

Havermans; and a co-funded SCAR/COMNAP Fellowship was awarded to Luis Rodriguez.

This year, twenty-six applications were received. The winners of the Fellowships will carry out a range of scientific research in areas including marine biology, climatology, remote sensing and understanding terrestrial ecosystem complexity. Candidates come from a wide geographic spread of countries, including Argentina, Belgium, New Zealand, Russia, Spain, Venezuela and USA. In 2013, SCAR had a generous voluntary contribution of USD 15,000 from Germany, and consequently



SCAR was able to offer one extra Fellowship.

For information on Fellowships, go to: <http://www.scar.org/awards/fellowships/>

YD Kim to head KOPRI



Congratulations to Dr Yeadong Kim, Vice President of SCAR, who has been appointed as the new President of the Korea Polar Research Institute (KOPRI).

For more information, visit the KOPRI website: http://eng.kopri.re.kr/index_11.jsp

Sea Ice Modelling and Observing Workshop - report and outcomes

The sea ice covers of the polar oceans are a critical element of the global system.

With support from the Research Council of Norway, CliC (the Climate and Cryosphere project), the International Arctic Science Committee (IASC) and SCAR, 48 researchers from 13 countries, including 10 early-career scientists, met from 5-7 June 2013 in Tromsø, Norway to discuss the next steps in better integrating

sea ice observations and modelling.

The meeting identified key areas where we need to improve our understanding of sea ice properties and processes and enhance our ability to model sea ice on different spatial and temporal scales.

A workshop report, videos and PDFs of presentations are available from the CliC website: <http://www.climate-cryosphere.org/meetings/past-meetings/seaice2013/downloads>

Polar Educators International – a new initiative for schools

A recent guest editorial in the journal *Antarctic Science* highlights the importance of polar education at all levels. The SCAR-endorsed organisation, Polar Educators International (PEI), is working with partners to contribute to this

international polar educational effort.

Read the full editorial in *Antarctic Science*: <http://journals.cambridge.org/action/displayAbstract?fromPage=online&id=8952015>

Antarctic Science

Stronger winds help explain puzzling growth of sea ice in Antarctic

Much attention is paid to melting sea ice in the Arctic, but less clear is the situation on the other side of the planet.

Despite warmer air and oceans, there is more sea ice in Antarctica now than in the 1970s – a fact often pounced on by global warming sceptics. The latest numbers suggest the Antarctic sea ice may be heading towards a record high this year.

While changes in weather may play a big role in short-term changes in sea ice seen in the past couple of months, changes in winds have apparently led to the more general upward sea ice trend during the

past few decades, according to University of Washington research.

A new modelling study to be published in the *Journal of Climate* shows that stronger polar winds lead to an increase in Antarctic sea ice, even in a warming climate. The polar vortex that swirls around the South Pole is not just stronger than it was when satellite records began in the 1970s, it has more convergence, meaning it shoves the sea ice together to cause ridging. Stronger winds also drive ice faster, which leads to still more deformation and ridging. This creates thicker, longer-lasting ice, while exposing surrounding water and thin ice to

the blistering cold winds that cause more ice growth.

The study suggests that stronger westerly winds swirling around the South Pole can explain 80 percent of the increase in Antarctic sea ice volume in the past three decades.

For more details, see the news item on the University of Washington website (<http://www.washington.edu/news/2013/09/17/stronger-winds-explain-puzzling-growth-of-sea-ice-in-antarctica/>), or read the full article in the *Journal of Climate* (<http://journals.ametsoc.org/doi/abs/10.1175/JCLI-D-12-00139.1>).

East Antarctic ice sheet 'vulnerable' to temperature changes

The world's thickest ice sheet may be at greater risk from variations in the climate than previously believed.

Scientists found that glaciers on the East Antarctic Ice Sheet (EAIS) advance and retreat in synch with changes in temperature.

Researchers at Durham University looked at declassified spy satellite imagery dating from 1963 to 2012. They used the pictures to detect changes in 175 glaciers as they flow into the sea along the 5,400km of coastline. They found a strong pattern of ebb and flow. In the 1970s and 80s, when temperatures were rising they found that

63% of glaciers were retreating. During the 1990s, when temperatures decreased, 72% of the glaciers advanced.

For more information, see the original *Nature - Letter* article: <http://www.nature.com/nature/journal/v500/n7464/full/nature12382.html>

Sea level rise: new iceberg theory points to areas at risk of rapid disintegration

In events that could exacerbate sea level rise over the coming decades, stretches of ice on the coasts of Antarctica and Greenland are at risk of rapidly cracking apart and falling into the

ocean, according to new iceberg calving simulations from the University of Michigan.

For more information, see the *Science*

Daily website (<http://www.sciencedaily.com/releases/2013/07/130722141422.htm>) or read the full article in *Nature Geoscience* (<http://www.nature.com/ngo/journal/v6/n10/full/ngo1887.html>).

Achilles' heel of ice shelves is beneath the water, scientists reveal

New research has revealed that more ice leaves Antarctica by melting from the underside of submerged ice shelves than was previously thought, accounting for as much as 90 per cent of ice loss in some areas. Iceberg production and melting causes 2,800 cubic kilometres of ice to leave the Antarctic ice sheet every year. Most of this is replaced by snowfall but any imbalance contributes to a change in global sea level.

For many decades, experts have believed that the most important process responsible for this huge loss was iceberg calving - the breaking off of chunks of ice at the edge of a glacier. New research, led by academics at the University of Bristol, with colleagues at Utrecht University and the University of California, has used satellite and climate model data to prove that

this sub-shelf melting has as large an impact as iceberg calving for Antarctica as a whole and for some areas is far more important. The findings, published in the journal *Nature*, are crucial for understanding how the ice sheet interacts with the rest of the climate system and particularly the ocean.

During the last decade, the Antarctic ice-sheet has been losing an increasing amount of its volume. The annual turnover of ice equates to 700 times the four cubic kilometres per year which makes up the entire domestic water supply for the UK. Ice shelves which are thinning already were identified as losing most of their mass from this melting, a finding which will be a good indicator for which ice shelves may be particularly vulnerable to changes in ocean warming in the future.

For more information, see the news item on the University of Bristol website (<http://www.bristol.ac.uk/news/2013/9743.html>) or read the full paper in *Nature - Letters* (<http://www.nature.com/nature/journal/vaop/ncurrent/full/nature12567.html>).



The calving front of the Filchner Ice Shelf, Antarctica
Image: University of Bristol

Antarctic Science

West Antarctic Ice Sheet 20 million years older than previously thought

The results of research conducted by Wilson et al. in *Geophysical Research Letters* mark the beginning of a new paradigm for our understanding of the history of Earth's great global ice sheets. The research shows that an ice sheet on West Antarctica existed 20 million years earlier than previously thought.

The findings indicate that ice sheets first grew on the West Antarctic subcontinent at the start of a global transition from warm greenhouse conditions to a cool icehouse climate 34 million years ago. Previous computer simulations were unable to produce the amount of ice that geological

records suggest existed at that time because neighbouring East Antarctica alone could not support it.

For more details, see the original paper in *Geophysical Research Letters*: <http://onlinelibrary.wiley.com/doi/10.1002/grl.50797/abstract>

Antarctic flood produces 'ice crater'

Scientists have seen evidence for a colossal flood under Antarctica that drained six billion tonnes of water,

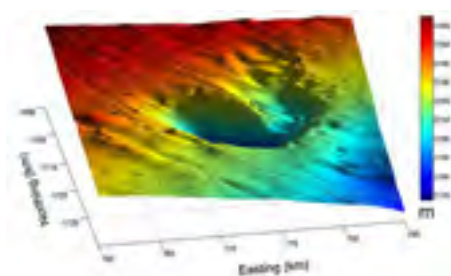
quite possibly straight to the ocean.

The cause is thought to be a deeply buried lake that suddenly over-topped. Satellites were used to map the crater that developed as the 2.7km-thick overlying ice sheet slumped to fill the void left by the escaping water. The location of the flood was Cook Sub-Glacial Lake (SGL) in the east of the continent, and the event itself occurred over a period of about 18 months in 2007-2008. It was detected and described using a combination of data gathered by the now-retired US Icesat mission and Europe's new Cryosat platform.

rate of 50-100 billion tonnes a year, helping to raise global sea level. This study suggests that a not insignificant fraction of this mass loss could be due to flood events like that seen at Cook SGL. "This one lake on its own represents 5-10% of [Antarctica's] annual mass imbalance," said Leeds co-author Prof Andy Shepherd.

For further details, please see the item on the *BBC News - Science and Environment* website (<http://www.bbc.co.uk/news/science-environment-23144184>) or read the original paper in *Geophysical Research Letters* (<http://onlinelibrary.wiley.com/doi/10.1002/grl.50689/abstract>).

Three-dimensional mapping by CryoSat-2 of subglacial lake volume changes acquired between January and November 2011



At present, Antarctica is losing mass at a

Antarctic's Pine Island glacier produces giant iceberg

Pine Island Glacier (PIG), the longest and fastest flowing glacier in the Antarctic, has spawned a huge iceberg. The block measures about 720 sq km in area - roughly eight times the size of Manhattan Island in New York.

Scientists have been waiting for the PIG to calve since October 2011 when they first noticed a spectacular crack spreading across its surface. Confirmation that the

fissure had extended the full width of the glacier was obtained in July when it was seen by the German TerraSAR-X satellite. This carries a radar instrument that can detect the surface of the ice stream even though the Antarctic was then in the grip of winter darkness. The glacier's behaviour means it is now under close scrutiny, not least because it drains something like 10% of all the ice flowing off the west of the continent.

"The PIG is the most rapidly shrinking glacier on the planet," explained Prof David Vaughan from the British Antarctic Survey (BAS). "It's losing more ice . . . and contributing to sea level rise faster than any other glacier on the planet. That makes it worthy of study."

For more information, please see the item on the *BBC News - Science and Environment* website: <http://www.bbc.co.uk/news/science-environment-23249909>

Antarctic crabs: invasion or endurance?

Following the "discovery" of lithodid crabs around Antarctica, recent scientific interest has centred on a hypothesis that these crabs might be poised to invade the Antarctic shelf if the recent warming trend continues, potentially decimating its native fauna. However, a recent study concludes there is no evidence for a modern-day "crab invasion" and recommends a repeated targeted lithodid sampling programme along the West Antarctic shelf to fully test the validity of the hypothesis.

For more details, see the article in *PLOS One*: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0066981>

Antarctic glass sponges live life in the fast lane

An explosion in glass sponge population has forced researchers to rethink how animals live in Antarctica.

Conventional wisdom holds that life in Antarctica moves at a glacial pace. Marine creatures called sponges, which live on the seafloor, have been known to go a decade without any measurable growth in the Antarctic. But that thinking has changed, in part because of a startling discovery off the eastern coast of the Antarctic Peninsula.

Researchers report on the explosion of a community of glass sponges - organisms

with skeletons made of silica, a mineral component of glass - on the seafloor below where an enormous ice shelf used to be. These sponges - filter feeders not known for their rapid development - doubled in biomass and tripled in number over the course of two growing seasons.

For more details, see the item on the National Geographic website (<http://news.nationalgeographic.com/news/2013/07/130711-antarctica-glass-sponge-fast-growth-ocean-science/>) or read the paper in *Current Biology* (<http://www.cell.com/current-biology/abstract/S0960-9822%2813%2900676-3>).

Antarctic Science

Mixing in the deep

A mystery in the ocean near Antarctica has been solved by researchers, who have long puzzled over how deep and mid-depth ocean waters are mixed.

They found that sea water mixes dramatically as it rushes over undersea mountains in Drake Passage - the channel between the southern tip of South America and the Antarctic continent. Mixing of water layers

in the oceans is crucial in regulating the Earth's climate and ocean currents.

The research provides insight for climate models which until now have lacked the detailed information on ocean mixing needed to provide accurate long-term climate projections. The study was carried out by the universities of Exeter, East Anglia and Southampton, the Woods Hole

Oceanographic Institution, the British Antarctic Survey and the Scottish Association for Marine Science (SAMS).

For more details, see the news item on the SAMS website (<http://www.sams.ac.uk/news-room/news-items/mixing-in-the-deep>) or read the original article in *Nature - Letters* (<http://www.nature.com/nature/journal/v501/n7467/full/nature12432.html>)

Life found in the sediments of an Antarctic subglacial lake

Evidence of diverse life forms dating back nearly a hundred thousand years has been found in subglacial lake sediments.

The possibility that extreme life forms might exist in the cold and dark lakes hidden kilometres beneath the Antarctic ice sheet has fascinated scientists for decades. However, direct sampling of these lakes in the interior of Antarctica continues to present major technological challenges. Recognising this, scientists from the British Antarctic Survey (BAS), and the Universities of Northumbria and Edinburgh in the UK, have been searching around the

retreating margins of the ice sheet for subglacial lakes that are becoming exposed for the first time since they were buried more than 100,000 years ago. This is because parts of the ice sheet are melting and retreating at unprecedented rates as the temperature rises at the poles.

The group targeted Lake Hodgson on the Antarctic Peninsula, which was covered by more than 400 metres of ice at the end of the last Ice Age, but is now considered to be an emerging subglacial lake, with a thin covering of just 3–4 metres of ice. Drilling through the ice, they used clean coring techniques to delve into the sediments at the bottom of the lake.

The lake was thought to be a harsh environment for any form of life but the layers of mud at the bottom of the lake represent a time capsule storing the DNA of the microbes which have lived there throughout the millennia. The top few centimetres of the core contained current and recent organisms which inhabit the lake but, once

the core reached 3.2 m deep, the microbes found most likely date back nearly 100,000 years.

Some of the life discovered was in the form of Fossil DNA showing that many different types of bacteria live there, including a range of extremophiles which are species adapted to the most extreme environments. These use a variety of chemical methods to sustain life both with and without oxygen. One DNA sequence was related to the most ancient organisms known on Earth and parts of the DNA in 23% has not been previously described. Many of the species are likely to be new to science, making clean exploration of the remote lakes isolated under the deeper parts of the ice sheet even more pressing. Scientists believe organisms living in subglacial lakes could hold clues for how life might survive on other planets.

For more details, see the BAS website: http://www.antarctica.ac.uk/press/press_releases/press_release.php?id=2308



Lake Hodgson on the Antarctic Peninsula
Image: BAS

Antarctic Lake Vostok buried under two miles of ice found to “teem with life”

A giant lake buried more than two miles beneath the Antarctic ice has been found to contain a “surprising” variety of life.

Analysis of ice cores obtained from the basin of Lake Vostok, the subglacial lake that Russian scientists drilled down to in 2012,

have revealed DNA from an estimated 3,507 organisms. While the majority were found to be bacteria, many of which were new to science, there were also other single celled organisms and multicellular organisms found, including from fungi.

The diversity of life from the lake has sur-

prised scientists as many had thought the lake would be sterile due to the extreme conditions.

For more details, see the article in *PLOS One*: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0067221>

Progress of Chinese research in physical oceanography of the Southern Ocean

A review article on the progress of Chinese research in the physical oceanography of the Southern Ocean over the past 30 years has recently been published in the journal *Advances in Polar Science*.

Oceanographic surveying has been one of the key missions of the Chinese National Antarctic Research Expedition since 1984. Using the field data obtained in

these surveys and the results from remote sensing and numerical models, Chinese physical oceanographers have investigated the water masses, fronts and circulation patterns in the Southern Ocean. Most oceanographic observations have been conducted in Prydz Bay and the adjacent seas. Conductivity, temperature and depth data (CTD) have been applied to study several features of the water masses in this region, including the spatial

variation of warm summer surface water, the northward extension of shelf water, the flow of ice shelf water from the cavity beneath the Amery Ice Shelf, the upwelling of the Circumpolar Deep Water, and the formation of the Antarctic Bottom Water.

For more details, please see the review in *Advances in Polar Science*: <http://journal.polar.gov.cn/EN/10.3724/SP.J.1085.2013.00086>

Antarctic Science

Ozone hole could boost global warming

The thinning of the atmosphere's ozone layer could be contributing to warming the planet, according to a study published in early September in *Geophysical Research Letters*.

Kevin Grise, an atmospheric scientist at Columbia University in New York, and his team modelled the weather dynamics around the ozone hole above the Antarctic. They calculated the knock-on effects

of ozone depletion on cloud cover, and ultimately on radiative forcing — the balance of solar and thermal radiation absorbed, reflected or emitted by the planet and its atmosphere.

The team's models predicted a shift in the southern-hemisphere jet stream — the high-altitude air currents flowing around Antarctica — as a result of ozone depletion. This produced a change in the cloud

distribution, with clouds moving towards the South Pole, where they are less effective at reflecting solar radiation.

For more information, see the item on the *Nature News Blog* (<http://blogs.nature.com/news/2013/08/ozone-hole-could-boost-global-warming.html>) or read the full article in *Geophysical Research Letters* (<http://onlinelibrary.wiley.com/doi/10.1002/grl.50675/abstract>).

Moss growth in Antarctica linked to climate change

Increases in temperature on the Antarctic Peninsula during the latter part of the 20th century were accompanied by an acceleration in moss growth, scientists have learned. Writing in the journal *Current Biology*, they describe the activity as unprecedented in the last 150 years.

The Peninsula sustains moss banks, some of which are more than 5000 years old.



A researcher studying the moss bank at Lazarev Bay (Photo: Pete Convey)

A team from the British Antarctic Survey (BAS) and the Universities of Cambridge and Exeter sampled the most southerly known moss bank, at Lazarev Bay on Alexander Island, in 2008. The researchers extracted a short peat core from the bank and, using radiocarbon dating techniques, ascertained the start of peat accumulation to have been around the year 1860. Microscopic tests established it was formed from a single species (*Polytrichum strictum*).

The Antarctic Peninsula is known to have witnessed significant warming since the 1950s, when official records started. Records from the BAS Rothera research station show the Peninsula warmed by between 1 and 1.4°C per decade during the 1980s and '90s. The Peninsula has also seen significant increases in precipitation and, with the length of the melt season steadily increasing since 1948, an extended growing season.

Lead author, Jessica Royles, from BAS and the University of Cambridge, said: "This moss bank provided a unique archive of growing conditions on the Antarctic Peninsula over the past one hundred and fifty years. By combining multiple analyses we have clearly demonstrated a substantial increase in plant growth since the 1960s, coincident with changes to the local climate."

The biological records in this region stretch back further than the meteorological records do, so this latest research will help scientists improve their understanding of the interaction between diversity and climate.

For more information, see the BAS news item (http://www.antarctica.ac.uk/about_bas/news/news_story.php?id=2295) or read the original article in *Current Biology* (<http://www.sciencedirect.com/science/article/pii/S0960982213008348>).

Bone-Eating Worms Found in Antarctic Waters

When you drop a whale backbone into Antarctic waters and retrieve it a year later, you'll find it covered with a pelt of wriggling, rosy-hued worms.

Drop a chunk of wood in the same spot, and you'll discover that it's hardly changed. That's the result of a simple experiment

to find out if some of the world's weirdest worms also live in Antarctic waters. The discovery extends the range of bone-eating worms to the Southern Ocean and suggests that Antarctic shipwrecks may be remarkably intact.

For more details, see the article on the

Science Now website (<http://news.sciencemag.org/biology/2013/08/bone-eating-worms-found-antarctic-waters>) or read the original paper in the *Proceedings of the Royal Society B* (<http://rspb.royalsocietypublishing.org/content/280/1768/20131390.abstract>).

Bringing up baby - in Antarctica

Life with a young child can sometimes be challenging - but how would you feel if you were bringing up your son in Antarctica?

Fernando Font, an officer in the Chilean Air Force, made the tough decision to move his wife Carolina and young son, also called Fernando, to Antarctica for two years while he serves as head of air operations on King George Island. For Car-

olina, the move involved a huge amount of organisation - including buying nearly 2,500 nappies in advance and shipping them over. But both insist that living in Antarctica has only improved their family life.

BBC News travelled to King George Island to meet them. Watch the video on the *BBC News Magazine* website: <http://www.bbc.co.uk/news/magazine-23496556>



King George Island residents Carolina Font and her young son Fernando (Image: BBC)

Meetings and Workshops

SCAR Astronomy and Astrophysics from Antarctica - 2013 meeting



From July 24th through 26th, an exciting and fruitful meeting focused on the latest results and future perspectives of Astronomy and Astrophysics from Antarctica, and more generally from the polar regions, in almost all the spectral range of wavelengths and energies. Talks were given on neutrino astronomy, cosmic rays, cosmic microwave background (CMB), solar physics, atmospheric physics related to submillimetre, millimetre and optical measurements.

Exciting results from the South Pole Telescope project were reported, including

a large sample of galaxy clusters detected via the Sunyaev-Zeldovich effect, the measurement of the spectrum of the CMB anisotropy at high multipoles, and the first detection of B-mode polarization of the CMB, generated by gravitational lensing of the E-modes.

Also very interest-

ing and exciting was the presentation of the results from the BLAST (Balloon-borne Large Aperture Submillimeter Telescope), BLAST-pol and EBEX long-duration balloon experiments, and the presentation of the forthcoming Spider, OLIMPO and LSPE (Large-Scale Polarization Explorer) missions to be flown in the near future from Antarctica and from the Svalbard islands.

Also presented were site testing and measurements, following the path started long ago with AASTO (Automated Astrophysical Site-Testing Observatory) and

AASTINO, from Dome-C and Dome A, with C-STAR, and accurate measurements from Canada and current and future ground based experiments from Dome-C, dedicated to research on CMB polarization (QUBIC) and to solar physics (ESCAPE).

There was also a report on the Dome Fuji 2.5 metre Antarctic Infrared Telescope status, as well as new ICECUBE results and the perspective for continuation of the measurements. These triggered very interesting discussions among the meeting participants.

The carefully selected location of the ancient Certosa di Pontignano, situated in the Tuscan hills near Siena, gave the meeting a special feel, bringing the participants together for a fruitful few days, with many opportunities to exchange ideas and additional information. The success of the meeting was also helped by the very efficient work of Jacqueline Muller, without whom things would not have run so smoothly. We all look forward to participating in the next AAA SCAR meeting, to be held in 2014 in New Zealand.

The event was supported by SCAR, the University of Siena, the University of Rome La Sapienza, and the Italian Programma Nazionale di Ricerche in Antartide.

Antarctic Ice Rises discussed

An International Workshop on Antarctic Ice Rises was held at the Norwegian Polar Institute on 26-29 August 2013. There were 38 participants from 10 countries, with an excellent balance between early career scientists (19 people) and more senior scientists. Delegates included atmospheric and ocean scientists, remote sensing specialists, field-oriented glaciologists and geologists, and modellers. The meeting comprised 16 talks with extended discussion, presentation of 'FrostByte' video clips made by early-career scientists, and APECS early career panels on outreach for education and for policy makers.

There are over 500 ice rises and rumples with an area greater than 1km². Ice rises are both recorders of and agents in the evolution of the Antarctic Ice Sheet. Subsequent to their formation, their flow is simple enough to retain a memory of this, while their embedding within ice shelves means that they have a tele-me-



chanical crucial to restraining flow across the grounding line of the main ice sheet. Ice rises affect atmospheric and sub-ice-shelf ocean flows, significant to their dual roles of recorders and agents. Ice rises are also simple natural examples of ice sheets with divides, grounding lines and, for the bigger ones, ice streams.

The study of ice-rises is truly interdisciplinary, and as a consequence there were active discussions during the sessions and in front of the posters. A decision was made to write a review article, with contributions mostly from workshop speakers, and to use the workshop website as a resource centre of the ice-rise research

community in the future. Workshop outcomes such as talk slides, posters and frostbyte video clips are already available on the website, thanks to website hosting by CliC (<http://www.climate-cryosphere.org/news/clic-news/631-ice-rises-frostbytes>). A second workshop is planned in two years time.

The organisers acknowledge funding from SCAR's SSG-Physical Sciences, CliC, APECS, the Research Council of Norway, British Antarctic Survey and the Center for Ice, Climate, and Ecosystems (ICE) of the Norwegian Polar Institute.

Kenichi Matsuoka (Norwegian Polar Institute)
Richard Hindmarsh (British Antarctic Survey)

Antarctic Announcements

Antarctica Day - 1st December 2013

After almost fifty-four years, the Antarctic Treaty continues to shine as a rare beacon of international cooperation. To celebrate this milestone of peace in our civilization with hope and inspiration for future generations, **Antarctica Day** is recognized to be December 1st - the day when the Antarctic Treaty was signed in 1959.

As an annual event, Antarctica Day encourages participation from around the world. Our aim is to continue expanding Antarctica Day on December 1st as a globally-accessible platform to share, interpret and cherish the values associated with Antarctica for the benefit of present and future generations. This is being accomplished in many ways.

Learn more about this initiative by visiting www.internationalspaces.org (then follow the link to Antarctica Day), APECS Outreach, or the Antarctica Day (December 1) facebook group sharing some of the 600 Antarctica Day student flags from 2012 in the hundred day countdown to 1st December.

For all reading this who will be travelling south of 60 degrees and are willing to take a printout of student 'flags', please email director@ourspace.org.uk, indicating the date when you will need to print the 'flags' and an e-mail address where the selected flags can be sent, or an invitation to Drop-box so you can make your own selection.

Simply print flag, photograph south of 60 degrees, record position if possible, and send photo and location back to director@ourspace.org.uk. Certificates will be sent to the schools around the world who participate. Thank you!

Flags flying as banner at Windless Bight near McMurdo, where the University of Canterbury Gateway Antarctica course had their Christmas dinner. Image: Nicky McArthur

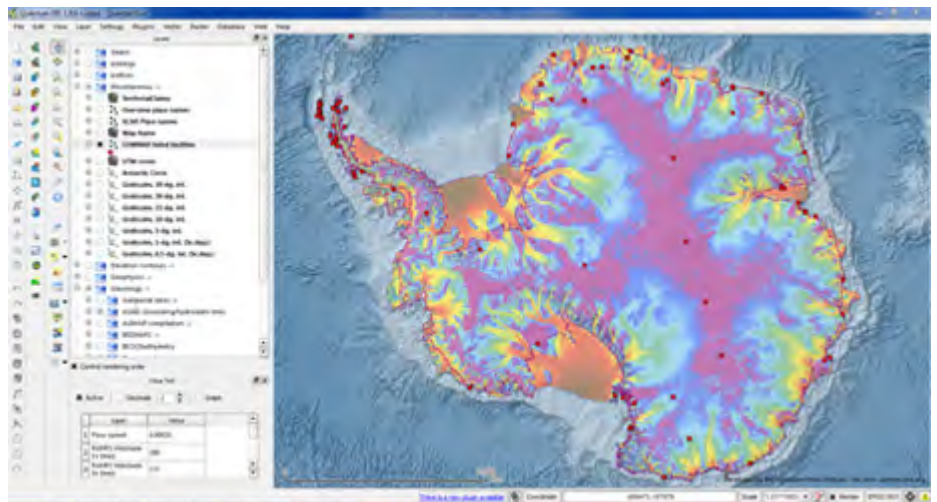


Free GIS package 'Quantarctica' released

The Norwegian Polar Institute (NPI) has released a new GIS package for research, education and operation in Antarctica.

This is a ready-to-go package. Synthesizing the datasets available at data centres is time consuming and not always straightforward. NPI has done this for you. End users can freely add their own datasets to the package and modify the system. The package works stand-alone (without internet access) on free, open-source "Quantum GIS" (QGIS) software and uses universal colour sets to be colour-blind friendly.

Early versions were tested for two years and the first public version was released in July this year. It is playfully named *Quantarctica* (i.e. Quantum GIS + Antarctica) and includes a range of satellite images (continent-wide mosaic and 100-m resolution images) and geographical, glaciological and geophysical data (e.g. ADD, SCAR place names, COMNAP-listed facilities, ice elevation, geoid height). Datasets in other disciplines are not yet included since the core development team is unable to assess their accuracy and usefulness. They would like to hear which "peer-review" datasets (already available at a data centre) are suitable for expanding *Quantarctica* in the future, and are particularly keen to hear from oceanogra-



Quantarctica screenshot: The background image shows ocean-bed topography. Over the Antarctic ice sheet and ice shelves, ice-flow speeds are shown. Red squares show COMNAP-listed facilities. Users can select layers from the left column and overlay many (half-transparent) data layers together.

phers, atmospheric scientists, geologists and biologists.

Recently, it has become nearly mandatory to make collected datasets publicly available. However, different formats and projections make these released datasets difficult to use for a wide range of the community. *Quantarctica* is a great platform for releasing your data as other relevant data are already synthesized. The *Quantarctica* team are happy to help you to include your peer-reviewed field data,

model outputs, and remote-sensing data. Please contact quantarctica@npolar.no

Further information and downloadable package are available from the *Quantarctica* website (www.quantarctica.org). Search *Quantarctica* on Youtube to see a promotion video.

Article submitted by Kenichi Matsuoka and Anders Skoglund (NPI)



Antarctic Announcements

New role for Antarctic New Zealand's Lou Sanson



After 11 years as CEO of Antarctica New Zealand, Lou Sanson is leaving in September to take up the role of Director General of the Department of Conservation (DOC). Lou's first Antarctic experience was in 1982 where he was a field assistant with a scientific drilling programme at Lake Vanda. In the following 20 years, he frequently acted as a DOC guide on Antarctic cruise ships, sharing his passion and enthusiasm for the white continent.

Lou's commitment to raise the profile of Antarctica and the Southern Ocean and support the great science that is being conducted there is no more evident than in the active role he has played in supporting and promoting the use of Antarctica for peaceful, scientific purposes.

He has played a key role on many steering groups, most notably for the SCAR/

COMNAP Conservation Strategy and the SCAR Horizon Scan, the latter which sees him continuing his participation towards the delivery of the 2014 meeting in Queenstown.

Lou's talent at building partnerships and collaborations also saw him make a significant contribution in raising funds for both IPY and CCAMLR science events. With his vision and foresight, NZARI, the New Zealand Antarctic Research Institute, has also been established under his watch, opening access to new funding streams for Antarctic science both on and off the continent.

Directors and staff at Antarctica New Zealand wish Lou well in his new challenge with DOC and are in the midst of recruitment for a new CEO. The board hope to be in a position to announce Lou's successor in October/November.

Ukraine celebrates 20 years of Antarctic science

On 17 September, the team of the National Antarctic Scientific Center of Ukraine (NASC) celebrated the 20th anniversary of its activity.

Greetings were sent to NASC personnel and to other Institutes of the Ukrainian National Academy of Sciences on the occasion. The First Deputy Head of the State Agency on Science, Innovations and Informatization, Dr Borys Gryniiov, gave a congratulatory speech.

"Antarctic research is of strategic importance for Ukraine – from mineral exploration to forecasting and prevention of radical changes of the Earth's climate", said Dr Gryniiov.

"There can be no doubt that for the past two decades, our polar explorers have gained considerable experience of work-

ing in Antarctic extreme conditions, run the first adaptive State programme of Antarctic research and now are working within the scope of the new State Special-Purpose Research Programme in Antarctica for 2011-2020. A lot of really impressive results are achieved in geophysical, hydrometeorological, oceanographic, geospace, biological and medical-physiological studies".

Dr Valery Lytvynov, Director of NASC, detailed the main achievements and prospects for further study in the unique environment of Antarctica, including a long-term forecasting model of the state of the ozone hole and a new model of the formation of Antarctic sea ice cover. The data produced will lay the foundations of a climate forecasting system and migration of bioresources in the Southern hemisphere. Ukrainian biologists were the first to cre-



ate an atlas of underwater landscapes and marine organisms for Antarctica.

Last year, NASC continued with the development of the National Antarctic Data Center for the collection, storage, processing and transmission of Antarctic research results to the broad mass of scientists and research institutions in real-time. This project was awarded a Google Certificate.

Obituary: Andrey Shmakin

In early July, it was with deep sadness that SCAR learned of the death of our Delegate from Russia, Andrey Shmakin, on June 28th 2013.

Andrey was a talented scientist, Head of the Climate Laboratory of the Institute of Geography RAS, who carried out fundamental studies in the field of climatology. He was a member of the Russian Scientific Council on Arctic and Antarctic Research,

an IPCC expert and the focal point in the EU in the field of environmental problems, and a member of many National and International scientific organizations. He was an author and editor of many scientific publications and initiated many Russian and International projects. He was an excellent scientific adviser for post-graduate students.

Our thoughts are with his family and friends.



APECS News and Updates

Dr Gerlis Fugmann is the new Director of APECS

Dr. Gerlis Fugmann will be starting as the new APECS Director on 1 October 2013.

As the sole full-time employee of APECS, Gerlis will be in charge of guiding the development and administration of the organization, along with overseeing and managing all APECS activities, finances and events, recruiting volunteers and members, and interacting with APECS members, mentors, advisors and support-

ers. Last year, SCAR and IASC renewed their Memorandum of Understanding to support APECS in their work.

For further details on Gerlis's appointment, please see the news item on the APECS website: http://www.apecs.is/index.php?option=com_content&view=article&id=6224%3Aannouncing-the-new-apecs-director-dr-gerlis-fugmann&catid=22&Itemid=120



APECS has had another busy season with events spanning the globe. The APECS leadership and community continue to be dedicated to promoting and fostering the skills of polar early career researchers (ECRs). To do this APECS works with a number of partners to ensure the legacy of polar researchers, including SCAR.

This year APECS and SCAR have continued to work together to promote ECRs in the Antarctic region. In April 2013, APECS and SCAR joined with the International Arctic Science Committee (IASC) at the Arctic Science Summit Week (ASSW) meeting in Krakow, Poland to renew our joint memorandum of understanding (MoU). The MoU sets the stage for APECS, SCAR and IASC to continue to work cooperatively to foster ECRs in polar research.

Over the summer, several APECS events took place. In June, APECS worked with CliC (Climate and Cryosphere project) to hold a workshop focusing on sea ice modelling and observing that brought together scientists working in the Arctic and Antarctic to discuss the gaps in knowledge found with sea ice data. Workshop participants developed targeted activities that will help in resolving challenges and ensuring continued efforts in remote sea ice research. Also in June, APECS held its first workshop at the Davos Atmosphere and Cryosphere Assembly (DACA 13) meeting in Davos, Switzerland. The APECS workshop was supported by the International Association of Cryospheric Sciences (IACS), CliC and APECS and focused on introducing APECS to alpine early career researchers and discussing cross-collaboration ideas with cryospheric and alpine sciences.

In August, APECS hosted two discussion panels during the International Workshop on Antarctic Ice Rises (<http://www.climate-cryosphere.org/meetings/ice-rises-2013>) in Tromsø, Norway. The two sessions covered topics of education and outreach at schools, as well as science communication and interaction with media and policy makers. Six panellists, with a broad range of expertise, represented different career stages (from postdocs to senior researchers), which stimulated a great discussion. APECS also organized a BBQ at the workshop (with a contribution from SCAR).

With the start of September, APECS has a number of upcoming events and activities. This year, the International Polar Week September 2013 is being highlighted in several countries. Among others, APECS Brazil, APECS France and APECS Portugal are organizing presentations and events that invite the community to participate in polar related activities. For more information on the polar week activities, visit the Outreach section of the APECS website.



APECS will continue to add to its online resources and is planning several webinar series for the fall. We are now entering our fourth year of career development webinars and we are excited to again bring this popular series to our membership. In addition, a webinar series funded by the Nordic Council of Ministers on "Bridging Polar Early Career Researchers and Indigenous Peoples in Nordic Countries" will be held. Information on both series will be available on the APECS website shortly.

Looking forward to the coming year, APECS is helping SCAR plan for the 6th Open Science Conference in August 2014, with APECS representatives involved in several conference committees. APECS is planning a series of activities for early career researchers during the conference. More information will be available on the APECS website soon.

Lastly, once again September brings about a change in the APECS leadership. A new APECS Council and Executive Committee will start on 1st October. APECS is also happy that our new director will be starting her position on October 1st, 2013. Dr. Gerlis Fugmann, an active APECS member for several years, is joining us after working as a postdoctoral fellow at the International Centre for Northern Governance and Development (ICNGD) at the University of Saskatchewan in Canada. We welcome Gerlis to her new role, and look forward to helping to continue the future of polar research under her leadership and guidance.

For more information on all APECS activities, please visit www.apecs.is.

Forthcoming Events

International Forum on “Polar Data Activities in Global Data Systems”

15 - 16 October 2013, National Museum of Nature and Science, Tokyo, Japan

SCAR's Standing Committee on Antarctic Data Management (SCADM), the World Data System (WDS) Scientific Committee, and the International Arctic Science Committee (IASC) are planning a Joint International Forum. It will address effective polar data management, including submission of metadata and data,

sharing of data to facilitate new interdisciplinary science, and long-term preservation and stewardship of data at the international level.

For more information, go to: <http://www.polar-data-forum.org/>



XXXIII SCAR BIENNIAL MEETINGS

22 August-3 September 2014

including the

2014 OPEN SCIENCE CONFERENCE

25-29 August 2014

Abstract submission is open until 14 February 2014:

www.scar2014.com/call-for-abstracts/

Second Circular will be issued soon

Registration opens on 2 December 2013

For more information, visit the website:

www.scar2014.com/

Finnish Seminar on Antarctic Research

23 October 2013, Helsinki, Finland

The seminar will provide input to the renewal of Finland's Antarctic Research Strategy (2008), aiming to shed light on the future development of international Antarctic research, as well as Polar research more generally, with a strong focus on international research cooperation.

AGU Fall Meeting

9 - 13 December 2013, San Francisco, USA

A session entitled “*Geospace Research from Antarctica*” (SA007) will provide an Antarctic focus for research into the atmosphere-ionosphere-magnetosphere system.

The uniqueness of Antarctica for conducting geospace research has been acknowledged for decades. Over the last decade, new instrumentation and new automated monitoring stations in Antarctica have enabled exploration of new and diverse scientific ideas. This session solicits contributions describing studies in space physics and aeronomy from Antarctica. Inter-hemispheric and conjugacy studies, as well as studies incorporating Antarctic observations in the global context, are also welcomed.

Registration is open and early bird rates apply until 8 November.

For further information, go to <http://fallmeeting.agu.org/2013/>

International Symposium on Sea Ice in a Changing Climate

10 – 14 March 2014, Hobart, Australia

Although sea ice – which covers a vast though seasonally-variable area of the global ocean – is one of the fastest-moving responders to climate change (and variability) on Earth, understanding the response is far from simple. Sea ice is a sensitive indicator of climate change (and variability) and plays a key though poorly-understood role in modulating such change through, for example, complex feedback mechanisms.

This symposium represents a timely opportunity to showcase recent advances in our knowledge of the global sea-ice environment, and to encourage holistic discussion of recent change and long-term trends and their effects (physical, ecological and biogeochemical).

For details, go to <http://seice.acecrc.org.au/igs2014/>

For details of further events, please visit: <http://www.scar.org/events/>

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Scientific Committee on Antarctic Research

Scott Polar Research Institute, Lensfield Road, Cambridge, CB2 1ER, UK

Tel: +44 1223 336550

Email: info@scar.org

Fax: +44 1223 336549

Web: www.scar.org



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