



SCARnewsletter

issue 37

issn 2307-275X

april 2015



Welcome to the Spring edition of the SCAR Newsletter!

We have had many exciting developments since the last edition, including publication of the Biogeographic Atlas of the Southern Ocean (see the "Focus on..." article on page 2) and continuation of the Horizon Scan initiative (see the report on the COMNAP ARC project on page 4). SCAR is currently undergoing a review of its own structure and will also be reviewed by our parent organization, ICSU, both of which I would hope will ensure SCAR continues to be a vibrant and relevant organization in the future.

Looking forward, I would encourage you all to attend the 12th International Symposium on Antarctic Earth Sciences (XII ISAES) in Goa, India this July (see page 4

and the Events section on page 10 for more details). I would also urge you to keep up-to-speed with the next SCAR Biennial Meetings and Open Science Conference to be held in August 2016 in Kuala Lumpur, Malaysia. See the XXXIV SCAR website for updates on progress (<http://scar2016.com>).

Finally, this will be my last editorial as Executive Director. Although I have found the last eight years with SCAR to have been immensely rewarding, both from a professional and friendship perspective, I have decided to accept a UN position in Geneva with the World Climate Research Programme. For those with an interest in taking a leading role in shaping the future of Antarctic and Southern

Ocean research, I would encourage you to apply to be the next Executive Director of SCAR – see the advert on page 3!

So I would like to finish by thanking you all for your guidance, friendship and hard work during my term as director of this excellent organization and I look forward to continuing to cooperate with SCAR and the new Executive Director in the future!



Highlights in this issue

- SCAR focus on ... The Biogeographic Atlas of the Southern Ocean - page 2
- News from SCAR - page 3
- Antarctic News & Announcements - page 4
- Antarctic Science - pages 5 - 7
- Obituary - page 8
- Publications - page 8
- Polar & APECS News - page 9
- Forthcoming Events - page 10

SCAR focus on . . . The Biogeographic Atlas of the Southern Ocean

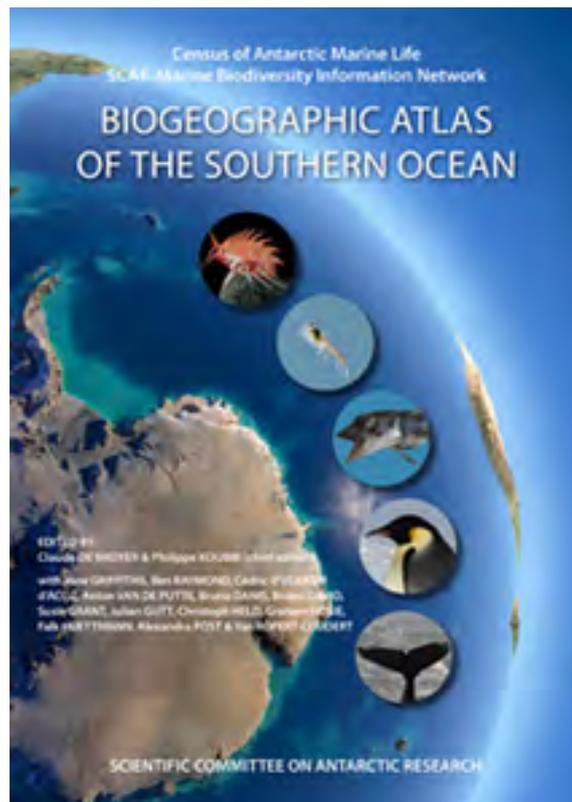
Biogeographic information is of fundamental importance in providing the geospatial framework to the marine biodiversity knowledge, and in assessing its gaps. It is essential for discovering biodiversity hotspots, detecting impacts of environmental changes, monitoring biodiversity, or modelling future distributions. In the context of increasing human pressure and environmental change, it constitutes a key resource for supporting conservation and sustainable management strategies and designing marine protected areas.

The recent extensive exploration and assessment of the Southern Ocean biodiversity by the successful Census of Antarctic Marine Life (CAML), and the intense compilation and validation efforts of biogeographic data by the SCAR Marine Biodiversity Information Network (SCAR-MarBIN / ANTABIF data portal: www.biodiversity.aq) provided a unique opportunity and a strong collaborative context to analyse and synthesise the patterns and processes of the biodiversity distribution in the Southern Ocean and to explore future changes. Taking advantage of an unprecedented amount, diversity, and quality of biogeographic data, and relying on new conceptual and methodological developments in biogeography, the contributors of the SCAR "*Biogeographic Atlas of the Southern Ocean*" have analysed, synthesised and mapped the distribution of a large number of species and assemblages from the phyto- and zooplankton, phyto- and zoo-benthos, nekton, and birds and mammals top predators. No less than 147 scientists from 91 institutions across 22 countries combined their expertise and knowledge to produce this comprehensive Biogeographic Atlas. It's the first time that such an effort has been undertaken since the late sixties when the American Geographical Society published its Antarctic Map Folio Series.

The Atlas presents a collection of 66 syntheses describing the distribution patterns and processes of a significant representation of Southern Ocean organisms, illustrated by more than 800 distribution maps and 200 pictures and graphs. The Atlas covers the Southern Ocean at large, south of the Sub-Tropical Front, but focuses in particular on the Antarctic region, south of the Antarctic Polar Front.



A group of cushion stars (*Odontaster validus*) feeding on seal faeces in the shallows of Antarctica. Photograph: Jeremy Colman, Image © BAS



records from the continent to latitude 40°S, represents 1.07 million occurrence records for 9,064 validated species from about 434,000 distinct sampling locations. The database is publicly available on the SCAR-MarBIN / ANTABIF portal (www.biodiversity.aq). The vast majority of samples from all taxa come from the top 500 metres of the water column. Benthic taxa are known mostly from shelf / coastal areas, whereas pelagic taxa have a more widespread distribution record. The level of information decreases as we move from the surface layers to the deeper layers. To analyse this enormous amount of data, the Atlas provided new ideas for exploring marine biogeography: a taxonomic approach based on mapping species presence, a fine description of the seafloor and of the water masses including the sea ice and, new statistical methods to estimate species presence in unsampled areas.

This Atlas is released at a time when signs of important changes are being observed, and when concerns about conservation of the Southern Ocean are increasing (for example, proposals for Marine Protected Areas). The information provided in this Atlas will be useful as a baseline against which to assess future change, and also as a first step for developing a dynamic online version. The online dynamic Biogeographic Atlas (to be developed on www.biodiversity.aq) will be a living resource that will increase in functionality and data over time and will allow continued effort and collaboration of the network of SCAR scientists who contributed to the printed version.

The Atlas, published by SCAR, is a legacy of the IPY and EBA and contributes to the SCAR AntEco and Ant-ERA programmes. It is available to purchase through Amazon.co.uk: <http://www.amazon.co.uk/gp/product/0948277289>



Sea anemone (*Urticinopsis antarctica*). This is the feeding state - it is ready to pounce on animals that get too close. Photograph: Jenny Beaumont, Image © BAS

De Broyer, C., Koubbi, P., Griffiths, H.J., Raymond, B., Udekem d'Acoz, C. d', Van de Putte, A.P., Danis, B., David, B., Grant, S., Gutt, J., Held, C., Hosie, G., Huettmann, F., Post, A., Ropert-Coudert, Y. (eds.), 2014. *Biogeographic Atlas of the Southern Ocean*. Scientific Committee on Antarctic Research, Cambridge, 510 pp. ISBN 978-0-948277-28-3

For more information, see <http://atlas.biodiversity.aq>

News from SCAR

Vacancy: SCAR Executive Director

SCAR seeks an Executive Director. The successful candidate will play a leading role in the development of SCAR by:

- Implementing the vision for SCAR and Antarctic science;
- Guiding the development and implementation of the SCAR programme of activities;
- Assisting in raising additional funding

- for SCAR's activities;
- Improving SCAR's communications;
- Representing SCAR at international meetings;
- Managing the SCAR Secretariat efficiently and effectively.

The SCAR Executive Director reports to the biennial meetings of the national Delegates to SCAR and on a day-to-day basis

to the Board of Directors operating as the Executive Committee of the Delegates.

Applications detailing experience, including a full CV and providing the names of three referees, should be sent by e-mail (info@scar.org) by **15th May 2015**.

For full details, please go to <http://www.scar.org/secretariat/vacancy>

2015 Fellowship Scheme launched

SCAR and COMNAP Antarctic Research Fellowships 2015 and CCAMLR Scientific Scholarships 2015

Three leading Antarctic organisations have announced opportunities for early career researchers.

SCAR, the Council of Managers of National Antarctic Programmes (COMNAP) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) are again working together to attract talented early career researchers, scientists, engineers and other professionals to strengthen international capacity and cooperation in fields such as climate, biodiversity, conservation, humanities and astrophysics research.

SCAR and COMNAP have jointly launched their fellowships for early career researchers, which are worth up to USD \$15,000 each and up to six fellowships in

total are on offer for 2015. Fellowships enable early career researchers to join a project team from another country, opening up new opportunities and often creating research partnerships that last many years and over many Antarctic research seasons. The deadline for SCAR and COMNAP applications is **3 June 2015**.

The SCAR and COMNAP schemes are launched in conjunction with CCAMLR's Scientific Scholarship Scheme. The CCAMLR Scholarship provides funding of up to AUD \$30,000 to assist early career scientists to participate in the work of the CCAMLR Scientific Committee and its working groups over a period of two years. The scheme was established in 2010 and a maximum of three awards will be made in 2015. The objective of the scheme is to



build capacity within the CCAMLR scientific community to help generate and sustain the scientific expertise needed to support the work of CCAMLR in the long-term. The deadline for CCAMLR applications is **1 October 2015**.

For more information, see the Fellowships section of the SCAR website: <http://www.scar.org/fellowship/information>

SCAR Awards in 2014

Fellowships

Recipients of the 2014 SCAR and COMNAP Fellowship Awards were announced in October. 25 applications were received with six Fellowships (four SCAR and two COMNAP) being awarded.

The SCAR Fellowships were awarded to: Jaimie Cleland (Australia), Camila Negro Signori (Brazil), Fiona Shanahun (New Zealand) and Manoj M.C. (India), with research areas including long-term mark-recapture data on albatrosses, microbial diversity in the Southern Ocean, CO₂ flux in Antarctic Dry Valley soils, and biomarker-based reconstruction of late Quaternary palaeoceanographic conditions.

The COMNAP Fellowships were awarded to: Sandra Potter (Australia) and Keith Soal (South Africa), for a research project on topics of environmental policy and a technical project to understand ice loading on polar research vessels.

Visiting Professors

SCAR Visiting Professor Awards for 2014 were announced in December.

The scheme was initiated in 2013 and is directed at mid- to late-career scientists and academics whose work contributes to the scientific objectives of SCAR, offering the opportunity for them to undertake a short-term visit to another SCAR member country to provide training and mentoring.

Visiting Professorships were awarded to: Mario De Stefano (from Italy, visiting Chile), Carme Huguet (from Spain, visiting South Africa) and Kevin Hall (from Canada, visiting South Africa).



Communication Award

SCAR is always seeking new and innovative ways to communicate Antarctic science to everyone (scientists, managers, the public) with greater impact.

At the SCAR Open Science Conference in Auckland, New Zealand (August 2014), an Antarctic Science Communication Award was given for the most innovative presentation of Antarctic research results in any discipline. This was the first such award given at a SCAR OSC, and was a follow-on to the linkage of science and creative arts activities at the 2012 OSC meeting in Portland, Oregon.

The winner of the award was Molly Jia from the University of Tasmania explaining "Why a marine biologist cares about sea ice". A video of Molly's presentation is available to view by following the link on the Videos page of the Communications section: <http://www.scar.org/communicating/videos>

Antarctic News and Announcements

International Symposium on Antarctic Earth Sciences 2015 - XII ISAES

The 12th International Symposium on Antarctic Earth Sciences (ISAES) will take place from 13-17 July 2015 in Goa, India, hosted by the Earth System Science Organization (ESSO) of the Ministry of Earth Sciences, and its R&D Wing, the National Centre for Antarctic and Ocean Research (NCAOR).

ISAES is a SCAR-initiative aimed at show-



casing Antarctic geoscience research, taking stock of the accomplishments of the International community and providing guidance for future studies. India is only the second Asian country to host ISAES in its 50-year history.

For more information, see the Events page at the end of this issue, or visit the Symposium website: <http://isaes2015goa.in/>

Martha T. Muse Prize for Science and Policy in Antarctica

open for nominations until 13 May
at www.museprize.org

The “*Martha T. Muse Prize for Science and Policy in Antarctica*” is a USD \$100,000 unrestricted award presented to an individual in the fields of Antarctic science or policy who has demonstrated potential for sustained and significant contributions that will enhance the understanding and/or preservation of Antarctica.

The Prize is inspired by Martha T. Muse’s passion for Antarctica and is intended to

be a legacy of the International Polar Year 2007-2008.

The prize-winner can be from any country and work in any field of Antarctic science or policy. The goal is to provide recognition of the important work being done by the individual and to call attention to the significance of understanding Antarctica in a time of change.

A website with further details, including

the process of nomination, closing date and criteria for selecting the Prize recipients is available at www.museprize.org. Nominations close on **13 May 2015**.

The Prize is awarded by the Tinker Foundation and administered by SCAR.

Visit the Nominations page on the Muse Prize website (<http://www.museprize.org/nominations.html>) for full details.

The COMNAP “Antarctic Roadmap Challenges” (ARC) Project - we need your input . . . please!

In 2014, the first SCAR Antarctic and Southern Ocean Science Horizon Scan assembled Antarctic scientists, policy makers, leaders, and visionaries to identify the most important research questions that will likely be addressed by research in and from the Antarctic over the next two decades. The result was the publication of a list of 80 of the most important Antarctic research questions identified by the community. The list was published in *Antarctic Science* (Kennicutt et al, 2014) as “*A roadmap for Antarctic and Southern Ocean science for the next two decades and beyond*”.

Many of the national Antarctic programmes are now developing their own strategies on how they will deliver their science programmes in the future. Delivery of such a “roadmap” is not without its challenges. Therefore COMNAP is leading the second stage in the process within



the ARC Project in order to assist national Antarctic programmes to understand the challenges, to develop ways to address them, and share any innovation or access to such technology. The ARC project focuses on answering the question: “*How will national Antarctic programmes meet the challenges of delivery of their Antarctic science in the next 20 to 30 years?*”

Using the SCAR Horizon Scan roadmap as an indication of future Antarctic science, a review of the 80 questions proposed reveals a number of challenges for national Antarctic programmes of a practical and technical nature. The COMNAP ARC Project will focus on three of the challenges identified: technology, access and extraordinary logistics requirements.

How you can provide your input . . . is by way of two community surveys.

The first survey is ready for your input. It is focused on understanding critical technology challenges. We invite wide input from a range of disciplines (science and non-science) and backgrounds. To take the survey, go to: <https://www.comnap.aq/Projects/SitePages/ARC.aspx>. Enter your responses by the deadline of **15 April 2015**.

A second survey will be launched in May 2015 which will focus on the remaining challenges. You can participate in both surveys, or only one, but please participate.

Any questions? Please email one of the COMNAP ARC Project co-conveners, Chuck Kennicutt <mckennicutt@gmail.com> or Yeadong Kim <ydkim@kopri.re.kr>.

Antarctic Science

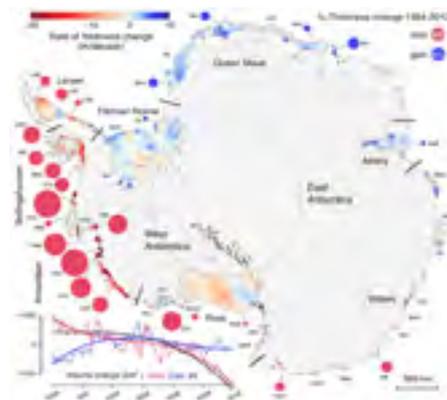
Big shelves of Antarctic ice melting faster than predicted

Many of the ice sheets that blanket Antarctica run right down to the land's edge and then out into the ocean, where they form floating ice "shelves." Some of those shelves have been shrinking lately. Now, a team of scientists has discovered that shelves in the West Antarctic are shrinking a lot faster than they realised.

"We are starting to lose more ice at a faster rate; we're accelerating," says Helen Fricker, a climate scientist at University of California, San Diego's Scripps Institution of Oceanography, and a past Martha T. Muse Prizewinner. In fact, she says the rate of shrinking has increased by 70 per cent over the past decade.

That estimate is based on satellite measurements of the ice taken over an 18-year period. Briefer snapshots of the ice had missed the overall trend, says Fricker's co-investigator, Fernando Paolo, partly because the same sheet may shift and grow, back and forth, from year to year. "We were able to look at a much larger time span ... [and] were able to track the evolution of those changes".

For more information, see the news item on the *NPR website* (<http://www.npr.org/2015/03/26/395379216/big-shelves-of-antarctic-ice-melting-faster-than-scientists-thought>), or read the original article in *Science* (<http://www.sciencemag.org/content/early/2015/03/31/science.aaa0940.abstract>).



Eighteen years of change in thickness and volume of Antarctic ice shelves. Circles represent percentage of thickness lost (red) or gained (blue). For more details, see Figure 1 in the study.

Bringing up the problem of ice shelf melting

Warm water intruding from below is heating up the ocean that covers the continental shelf of Antarctica.

In a paper in the journal *Science*, Schmidt et al report that Circumpolar Deep Water has been warming and moving further

up onto the shelf around Antarctica for the past 40 years, causing higher rates of ice sheet melting. These observations need to be taken into account when considering the potential for irreversible retreat of parts of the West Antarctic Ice Sheet.

For more information, see "Multidecadal warming of Antarctic waters" by Schmidt et al (<http://www.sciencemag.org/content/346/6214/1227>) and "How ice shelves melt" by Gille (<http://www.sciencemag.org/content/346/6214/1180>), both published in *Science*.

Underwater 'storms' may hold the key to melting Antarctic ice



Scientists used underwater gliding robots to study the complex underwater currents that could be contributing to ice sheet melting in Antarctica. Image: Andrew Thompson / Caltech

Scientists, using robotic ocean gliders to wander frigid Antarctic waters, say they may have discovered a mechanism behind the melting of polar ice shelves – miniature submarine "storms" that are lobbing packets of warmer water toward the continent.

The findings shed light on the complicated currents that could potentially be contributing to the loss of West Antarctic ice. The scientists discovered that warm water was reaching the ice shelf because of eddies – swirling vortices of water with heat trapped in their centres. These eddies, which can

range in size from around one to ten kilometres, look like miniature, liquid versions of the storm systems in our atmosphere. But, just like the weather, they're the result of complicated processes and thus far, hard to predict.

For more details, see the *LA Times* website (<http://www.latimes.com/science/sciencenow/la-sci-sn-underwater-rovers-robots-antarctica-eddies-ice-sheet-melting-climate-change-20141110-story.html>), or read the original paper in *Nature Geoscience* (<http://www.nature.com/ng/journal/v7/n12/full/ngeo2289.html>).

Earth's orbit affects the stability of Antarctica's Eastern ice cap

An international research team has found that there is a direct relationship between the changes in the earth's orbit and the stability of the Eastern ice cap of Antarctica - more specifically, on the continental fringe of Wilkes Land (East Antarctica).

The study is based on the analysis of seabed sediments which were transported by icebergs around 2.2 to 4.3 million years ago, and which have been collected during an expedition by the Integrated Ocean

Drilling Program (IODP). The data obtained reveal that natural climatic processes can increase the response of polar ice caps to minor changes in energy caused by modifications in earth's orbit. The sea level can either decrease or increase by as much as dozens of metres. The study shows that 2.5 million years ago, when the concentration of carbon dioxide in the atmosphere was similar to the current one, the thawing of the eastern Antarctic ice cap was a generalised process.

"This study helps solve the mystery of how the Earth's orbit around the Sun contributes to the stability of ice caps," according to Carlota Escutia, a researcher at the Andalusian Institute of Earth Sciences, which led the expedition.

For more details, see the *Science Daily* website (<http://www.sciencedaily.com/releases/2015/02/150203094326.htm>) or read the original paper in *Nature Geoscience* (<http://www.nature.com/ng/journal/v7/n11/full/ngeo2273.html>).

Antarctic Science

Robot reveals surprisingly thick Antarctic sea ice

Risky robotic exploration of the vast expanse of sea ice around Antarctica has revealed it to be far thicker in many places than previously measured.

Previous observations of the thickness of Antarctic sea ice produced a mean draught (the depth between the waterline and the bottom of the ice sheet) of around 1 metre; the new work gives a mean draught of over 3 metres. And a previous maximum recorded ice-sheet thickness of 10 metres has now been increased to 16 metres.

The earlier measurements were limited by their reliance on ships smashing their way into the region and deploying teams to drill a hole down which a tape measure can be

inserted. This technique produced only a limited number of direct observations.

The researchers used a robot known as an autonomous underwater vehicle (AUV) to cruise under ice in three regions near the coast and measure the thickness directly over a much larger area. Running AUVs under ice is a risky business as they are liable to get lost or stuck but the results were worth the trouble: the team found ice that was significantly thicker than that previously recorded by drilling. The thickness stems from the sheets of sea ice crashing into each other and piling up into highly deformed and rather thicker sections.

The more data that scientists can gather about Antarctic sea ice, the more they can

unpick why climate models struggle to accurately predict its extent. Although researchers have been generally successful at modelling the huge declines in Arctic sea ice, the extent of Antarctic sea ice has actually increased in recent years, contrary to the predictions of models. More under-ice AUV surveys could calibrate satellite measurements of ice thickness, allowing researchers a better understanding of what is really going on around the frozen continent.

For more information, see *Nature News* (<http://www.nature.com/news/robot-reveals-surprisingly-thick-antarctic-sea-ice-1.16397>) or read the paper in *Nature Geoscience* (<http://www.nature.com/ngeo/journal/v8/n1/abs/ngeo2299.html>).

Sea ice maximum in Antarctica

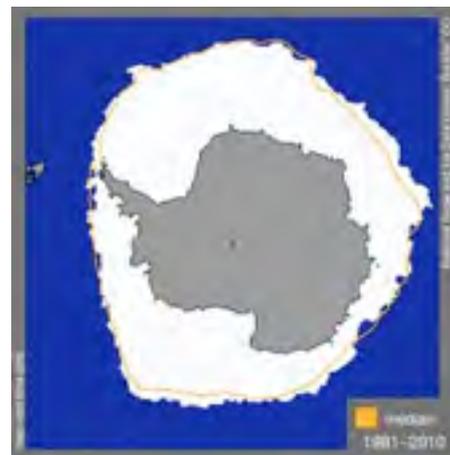
Sea ice extent in Antarctica appears to have passed its seasonal maximum. The peak Antarctic value recorded so far of over 20 million square kilometres (7.7 million square miles) sets a new record over the period of satellite observations.

The period between 10th and 22nd September 2014 saw very rapid late-season ice growth in Antarctica, pushing the total sea ice extent upward by nearly 60,000 square kilometres per day (23,000 square miles). An animation of Antarctic sea ice concentrations from AMSR2 (Advanced Microwave Scanning Radiometer 2) satellite data shows that a pulse of increased sea ice growth in several areas, but especially in the northern Weddell Sea, was

the cause of the rapid rise in extent. A look at the weather for mid-September in the south indicates that a band of southerly winds swept from west to east across the northern Weddell Sea, favouring both ice growth and ice advection to the north.

Monthly averaged ice extent for September is well above average in the western Pacific (northern Ross Sea) and Indian Ocean (Enderby Land) sectors.

For more information, read the full report on Arctic and Antarctic sea ice extent on the NSIDC (National Snow and Ice Data Center) website: <http://nsidc.org/arcticseaicenews/2014/10/2014-melt-sea-son-in-review/>



Antarctic sea ice extent for September 22, 2014 was 20.11 million square kilometres (7.76 million square miles). The orange line shows the 1981 to 2010 median extent for that day. Image: NSIDC

Global sea ice diminishing, despite Antarctic gains

Sea ice increases in Antarctica do not make up for the accelerated Arctic sea ice loss of the last decades, a new NASA study finds. As a whole, the planet has been shedding sea ice at an average annual rate of 13,500 square miles (35,000 square km) since 1979.

“Even though Antarctic sea ice reached a new record maximum this past September, global sea ice is still decreasing,” said Claire Parkinson, author of the study and climate scientist with NASA. “That’s because the decreases in Arctic sea ice far exceed the increases in Antarctic sea ice.”

Using microwave data collected by NASA and US Department of Defense satellites, Parkinson added Arctic and Antarctic sea

ice extents month by month from November 1978 to December 2013 to determine the global ice extent for each month. Her analysis shows that over the 35-year period, the trend in ice extents was downward in all months of the year, even those corresponding to the Arctic and Antarctic sea ice maximum extents.

“One of the reasons people care about sea ice decreases is that sea ice is highly reflective whereas the liquid ocean is very absorptive,” Parkinson said. “When the area of sea ice coverage is reduced, there is a smaller sea ice area reflecting the sun’s radiation back to space. This means more retention of the sun’s radiation within the Earth system and further heating.”

Parkinson calculated and published the global results after witnessing the public’s confusion about whether Antarctic sea ice gain might be cancelling out Arctic sea ice loss.

It is unlikely that Antarctic sea ice expansion will accelerate and overturn the global sea ice negative trend in the future. “If anything, in the long-term the Antarctic sea ice growth is more likely to slow down or even reverse,” Parkinson said.

For more information, see the *Science Daily* website (<http://www.sciencedaily.com/releases/2015/02/150210160103.htm>) or read the original article in the *Journal of Climate* (<http://journals.ametsoc.org/doi/abs/10.1175/JCLI-D-14-00605.1>).

Antarctic Science

Fish live beneath Antarctic ice

Scientists in Antarctica have found translucent fish in a wedge of water hidden under 740 metres of ice, 850 kilometres from sunlight.

Stunned researchers discovered fish and other aquatic animals living in perpetual darkness and cold, beneath a roof of ice 740 metres thick. The animals inhabit a wedge of seawater only 10 metres deep, sealed between the ice above and a barren, rocky seafloor below — a location so

remote and hostile that many scientists expected to find nothing but scant microbial life.

A team of ice drillers and scientists made the discovery after lowering a small, custom-built robot down a narrow hole they bored through the Ross Ice Shelf, a slab of glacial ice the size of France that hangs off the coastline of Antarctica and floats on the ocean. The remote water they tapped sits beneath the back corner of the floating

shelf, where the shelf meets what would be the shore of Antarctica if all that ice were removed. The spot sits 850 kilometres from the outer edge of the ice shelf, the nearest place where the ocean is in contact with sunlight that allows tiny plankton to grow and sustain a food chain.

For more details, see the news item on the *Scientific American* website: <http://www.scientificamerican.com/article/discovery-fish-live-beneath-antarctica/>

Rover disguised as penguin chick does research better than scientists

For decades, humans have built rovers to visit places we can't easily reach, including the moon and Mars. Now scientists have built a rover to explore another challenging target: colonies of adorable penguins.

A team led by scientists from the University of Strasbourg in France has built a rover that looks like a fluffy penguin chick, allowing it to sneak around Antarctic colonies and get close to individual birds without ruffling too many feathers along the way. Their findings show that when studying animals in the wild, it's often better for humans to stay out of the way and let robots do the work.

When humans try to collect the data carried by their animal subjects, their very presence can alter it. Animals' heart rates

go up, their stress level rises and they react in alarm. Those reactions can have negative consequences for the animals, as well as the scientists who study them.

Unfortunately, human researchers usually have to get very close to pick up the radio signal from data-collecting devices placed beneath the animals' skin. If they want the data, they have to disturb the creatures wearing the devices. A possible solution: send in a wheeled robot to do the work!

"When the rover was camouflaged with a penguin model, all adult and chick emperor penguins allowed it to approach close enough for an electronic identification," the study authors wrote. "Chicks and adults were even heard vocalizing at the camouflaged rover, and it was able to infiltrate a creche without disturbance."

For more details, see the item on the *Los Angeles Times* website (<http://www.latimes.com/science/sciencenow/la-sci-sn-penguin-robot-chick-study-20141103-story.html>) or read the original paper in *Nature Methods* (<http://www.nature.com/nmeth/journal/v11/n12/full/nmeth.3173.html>).

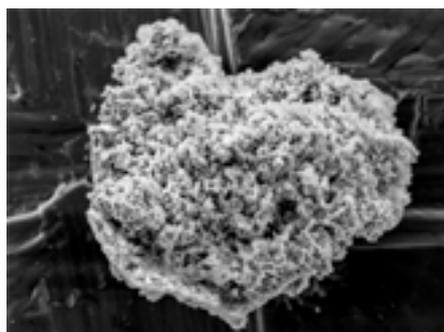


Brooding emperor penguin with its chick approached by a rover camouflaged with a fake chick (Image taken from the study).

Comet dust found in Antarctica

Researchers have discovered comet dust preserved in the ice and snow of Antarctica, the first time such particles have been found on Earth's surface.

The discovery unlocks a promising new source of this material. The oldest astronomical particles available for study, com-



A single particle of comet dust collected from Antarctic ice, as seen through an electron microscope. Image: Takaaki Noguchi

et dust can offer clues about how our solar system formed.

Until recently, the only way scientists could collect "chondritic porous interplanetary dust particles," or comet dust, without going to space has been by flying research planes high in the stratosphere. It's painstaking work: several hours of flying time typically yield one particle of dust. Working with such small samples significantly limits the kinds of tests and analysis scientists can perform on the material, says study co-author John Bradley, an astromaterials scientist at the Hawaii Institute of Geophysics and Planetology of the University of Hawaii, Manoa.

The researchers found a bigger haul of the particles in Antarctica, he notes. "Two to four more orders of magnitude mass of material is potentially collectible this way," he says. "I think it could precipitate a paradigm shift in the way these kinds of

materials are collected."

The dust gathered in Antarctica is also cleaner. Right now, scientists gathering comet dust by plane use plates coated with silicon oil to trap the particles like flies in flypaper. That leaves them contaminated with both the oil and the organic compounds later used to clean them, making it especially difficult for scientists who want to study what organic material they might contain.

Comparing the particles found in Antarctica with the ones collected in the stratosphere will help scientists figure out which components of the dust are part of their natural chemical makeup and which come from contaminants, Nittler says.

For more information, see the news item on the *Science* website (<http://news.sciencemag.org/space/2014/12/comet-dust-found-antarctica>).

Obituary

Dick Laws

It was with sadness that SCAR learnt of the death of Dr Richard (Dick) Laws on 6 October 2014 aged 88. He was President of SCAR from 1990 to 1994.

Dick was a zoologist, gaining both his bachelor's degree and his doctorate from the University of Cambridge. He spent the late 1940s studying the ecology of elephant seals in South Georgia and the South Orkney Islands, where he had to construct his own laboratory with timbers from a derelict Norwegian whaling station.

During a two-year stint on Signy Island, he also fulfilled the roles of Base Leader, magistrate and postmaster! After spending a season as a whaling inspector, he joined the UK's National Institute of Oceanography in 1954 where he studied whales. His work on marine mammals proved to be very important, allowing individuals to be aged for the first time, lead-



ing to the development of species-specific population models.

After a spell in Africa in the early 1960s, Dick joined the British Antarctic Survey in

1969 as head of the Life Sciences Division. He was appointed Director of BAS in 1973 and held that post until his retirement in 1987. Subsequently, he was Master of St Edmund's College, Cambridge for many years.

His work for SCAR began in 1972 as a member of the Biology Working Group, becoming the group's Chairman in 1980. As the UK Delegate to SCAR from 1984 to 1993, he became President in 1990.

For his many achievements, Dick was awarded the Polar Medal and clasp and the Bruce Medal of the Royal Society of Edinburgh. He was elected a Fellow of the Royal Society in 1980 and was made a Commander of the Order of the British Empire (CBE) in 1983. His name is also commemorated in Laws Glacier on Coronation Island in the South Orkney Islands.

Publications

Papers invited on Atmospheric Aerosols and Trace Gases over the Polar Regions



Papers are invited for a forthcoming special issue of the journal *Advances in Polar Science (APS)*, entitled "*Current Research on Atmospheric Aerosols and Trace Gases over the Polar Regions (AATGPR)*".

The issue will provide a forum summarising the recent advances on this important topic. Scientific articles stressing the following research themes may fit well within the scope of this special issue:

- Greenhouse gases and their air-sea fluxes;
- Trace gasses and Persistent Organic Pollutants (POPs);
- Sources, transformation and sinks of aerosols;
- Black carbon, ozone and their climate

effects;

- Remote sensing and modelling of aerosols and gases.

This special issue is scheduled to be published in September 2015, and the deadline for paper submission is **31 May 2015**.

APS is an international, peer-reviewed, quarterly journal jointly sponsored by the Polar Research Institute of China (PRIC) and the Chinese Arctic and Antarctic Administration. Articles are published in APS free of charge, thanks to generous funding from PRIC.

For more information on the special issue, visit the APS website: <http://journal.polar.org.cn/EN/column/item201.shtml>

Proceedings from the International Forum on Polar Data Activities

The proceedings from the International Forum on "Polar Data Activities in Global Data Systems", held in October 2013 in Tokyo, has been published as a special issue of the *CODATA Data Science Journal*: <https://www.jstage.jst.go.jp/browse/dsj>

Antarctic Palaeontology Symposium

Abstracts from a Symposium on 'Cretaceous-Tertiary Palaeobiogeographic Connections with Antarctica' have been published.

The Symposium was part of the 4th International Palaeontological Congress held 28 September to 3 October 2014 in Mendoza, Argentina. The title of the

Congress was 'The history of life: a view from the Southern Hemisphere' and also included symposia on the dinosaurs and biotas of Gondwana.

The complete volume of abstracts from the Congress is available to download from <http://www.ipc4mendoza2014.org.ar/abstracts/>

Polar News and Announcements

WCRP Polar Challenge

The World Climate Research Program (WCRP) is organizing a Polar Challenge competition, which would reward the first team able to send an autonomous underwater vehicle (AUV) for a 2000km continuous mission under-ice in the Arctic or Antarctic.

This challenge will be at least three-fold, in terms of under-ice navigation, endurance and environmental monitoring.

A Prize money award would cover at least partially the recipient's investment and operating cost related to the challenge. The

amount of the Prize will be announced towards the end of 2015.

For more information, visit the WCRP website: <http://www.wcrp-climate.org/index.php/polarchallenge>

APECS News and Updates

APECS Organisational Review 2015

APECS started as part of the International Polar Year 2007-08 (IPY) efforts to involve early career researchers in international polar science. As we continue to grow, we want to make sure that we are meeting the needs of our members. So it is time for APECS to do some self reflection. We want to find out what the polar community values and how APECS can continue to be a positive and productive force. An Organisational Review Committee (ORC) was set up to do a critical review of the organisation in order to develop a strategy for the development of the organisation in the coming years. For more information about the review, please visit <http://www.apecs.is/who-we-are/organisational-review-2015.html>

APECS Online Conference 2015 - New Perspectives in the Polar Sciences

On 16 March 2015, APECS held its first online international conference: *New Perspectives in the Polar Sciences*. The conference was attended by nearly 200 early career researchers from every continent. Excellent presentations were given by 18 researchers, ranging in topics from marine biology and environmental pollution, to the education, culture and history of the polar latitudes. Guest speakers included Prof Pete Convey from the British Antarctic Survey, UK, who discussed new research, evolution and adaptation of Antarctic terrestrial biota and the implications of this for future management and conservation; and Prof John Smellie from the University of Leicester, UK, who discussed new methodological applications of glacio-volcanism to reconstruct Antarctic Ice Sheet evolution.

Prizes were awarded for the three best presentations:
 First Prize: Hanne Nielsen, University of Tasmania for *Antarctica in Advertising: Media Representations of the South*.
 Second Prize: Jesica Goldsmit, Université du Québec à Rimouski for *Forecasting the habitat suitability of high risk invasive species in the Canadian Arctic*.
 Third Prize: Francois Massonnet, Université Catholique du Louvain, Belgium and Catalan Institute for Climate Sciences, Spain for *The Polar Regions: Ideal Test Beds for Data Assimilation*.

In the coming weeks, recordings of all the presentations will be available on the APECS website for those who were unable to listen to the conference live. The Book of Abstracts can be downloaded from the website. Special thanks to the conference organizers Louise Chavarie, Rachel Downey and Scott Zolkos, and amazing APECS members for judging, chairing and co-ordinating presenters on the day.

International Polar Week March 2015

In March 2015, APECS celebrated the International Polar Week (<http://www.apecs.is/outreach/international-polar-week/>



<http://www.apecs.is/outreach/upcoming-polar-week.html>). Initially an outreach event during the last IPY, APECS and its partners have continued this event that celebrates all things polar. This year, national APECS committees in Canada, Brazil, France, Portugal and the USA, as well as other members around the world, organized numerous events that promoted polar research. Several members also contributed to the APECS Polar Outreach Blog (<http://www.apecs.is/outreach/blogs/polar-outreach-blog.html>), and the first entries in the "Where does your goose take you" blog (<http://www.apecs.is/outreach/blogs/where-your-geese-takes-you.html>) were also published. Polar Week also featured a Tweet Storm on Twitter where APECS members and partners shared Arctic and Antarctic stories and photos. Messages included everything from stunning photos of wildlife to icy images of frozen research stations, from tips on polar safety to updates on recent research efforts. You can still view the Tweet Storm by searching #Polarweek. The next Polar Week will be in September 2015.

APECS World Summit 2015

APECS is planning for the APECS World Summit 2015 that will take place in Sofia, Bulgaria from 6 - 8 June 2015. Since its beginning during the IPY, APECS has been growing significantly. Today, APECS membership counts more than 5000 early career scientists, professionals and educators in over 80 countries with interests in the Polar Regions. But APECS has also evolved institutionally, with currently 26 National Committees across the world. The APECS World Summit 2015, "The Future of Polar Research", is an initiative to bring representatives from the APECS National Committees and the APECS leadership together to discuss the future of polar research, our experience in communicating science and new challenges we want to tackle in the near future. Integrated in the summit are workshops on three key topics:

- polar data sharing and open science;
- science communication, education and outreach initiatives;
- the APECS network and its future directions.

APECS is grateful for the support of several sponsors for the summit, among them SCAR and in particular the Standing Committee on Antarctic Data Management (SCADM), State of the Antarctic Ecosystem (AntEco) and Antarctic Thresholds - Ecosystem Resilience and Adaptation (Ant-ERA) for sponsoring travel support for some of the mentors and participants of the summit. More information on the Summit can be found at: <http://www.apecs.is/events/upcoming-event-highlights/apecs-world-summit-2015.html>

Forthcoming Events

ISAES XII - 12th International Symposium on Antarctic Earth Sciences 13 - 17 July 2015, Goa, India



The International Symposium on Antarctic Earth Sciences (ISAES) is a SCAR-initiative aimed at showcasing Antarctic Geoscience research, taking stock of the accomplishments of the international fraternity and providing guidance for future studies.

Symposium themes include:

- Antarctica and supercontinent evolution;
- Antarctic Surface Processes, Landscapes, and Links with Cryosphere and Climate;

- Antarctic Solid Earth Structure and Interactions with the Cryosphere;
- Antarctica, the Southern Ocean, and Evolution of Climate and the Global Cryosphere;
- Biodiversity and the Evolution of Life;
- Frontiers in Antarctic Earth Sciences;
- General Antarctic Earth Science.

View the full symposium programme at <http://isaes2015goa.in/program.php>

Visit the website for more information:

<http://isaes2015goa.in/>

21st International Symposium on Polar Sciences

19-20 May 2015, KOPRI, Incheon, Korea

The Symposium theme is "Polar Regions as a Key Observatory for the Changing Globe and Beyond" and you are invited to share your knowledge regarding changes in the polar regions.

Visit the Symposium website for more information:

<https://symposium.kopri.re.kr/>

Geological Mapping Workshop

(ISAES XII Pre-Symposium Workshop)

12 July 2015, Goa, India

The workshop is intended as a scoping meeting for the newly established SCAR Action Group, Geological Mapping Update of Antarctica. The group aims to update geologic geospatial information of Antarctica by gathering both rock and surficial deposit information and compiling it into a modern digital framework. Anyone interested in attending the workshop should contact Simon Cox <s.cox@gns.cri.nz> by **1 June 2015**.

For more information, see:

<http://www.scar.org/geomap/geomap-news>

SCAR History, Humanities and Social Science Meeting 2015

20-23 May 2015, Fort Collins, Colorado, USA

The title of the workshop is "Antarctic Wilderness: Perspectives from History, the Humanities and the Social Sciences". Alongside this wilderness theme, there will be a wide range of papers that examine Antarctica from historical, humanities, and social science perspectives. Email the workshop organizers with any questions: scarhistorysocialscience2015@hotmail.com

Visit the workshop website for more information:

<http://scarhistorysocialscience2015.wordpress.com/>

SOOS International Workshops

10-12 June 2015, IMAS, Hobart, Tasmania, Australia

Workshop 1 - 10 June 2015, 13:00-17:00

Assessing the State of the Climate of the Southern Ocean

Workshop 2 - 11-12 June 2015

SOOS Planning Workshop:

Implementing a Southern Ocean Observing System

For details of both workshops, see

<http://soos.aq/calendar/meetings-workshops>

Note spaces are limited!

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

Follow us on



Linked in



Google+



Scientific Committee on Antarctic Research

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

Tel: +44 1223 336550

Fax: +44 1223 336549

Email: info@scar.org

Web: www.scar.org



International Council for Science

Format and design by Rosemary Nash