

ICESHEET

The British Antarctic Survey Internal Newsletter



May-Jun 19
#102

Gliders, Glaciers And Gondolas

The Royal Society recently held a workshop in Venice to bring together UK and Italian scientists in several research disciplines, including polar science. We already have excellent collaborations with our European colleagues, which will hopefully continue even if the UK leaves the EU,



but workshops like this will encourage even more.

We discussed atmospheric science, microbiology, marine ecosystems, ocean gliders, and glacial history – especially important because the UK and Italy lead the new ‘Oldest Ice’ drilling project.

We also met neuroscientists and engineers from other sessions, and discovered

the potential for new cold technologies to help with ice-core transport and polar station energy efficiency.

We celebrated the launch of the new CNR Institute of Polar Sciences, which incorporates scientists from Venice, Bologna, Rome and Messina. They will be using their new icebreaker, named the *Laura Bassi* (once known as *RRS Ernest Shackleton*!)

Director's Office

to expand their Antarctic operations (see page 5). We will soon be signing a new BAS/CNR MoU to support future work together, so it's time to brush up on your Italian and propose new projects together.



Professor Dame Jane Francis

Thwaites Glacier Talk In Palace Of Westminster

BAS science

Sea-level rise from Thwaites Glacier in West Antarctica was the subject of a special briefing to the All-Party Parliamentary Group for the Polar Regions in the Palace of Westminster – hosted by MP James Gray – on Wednesday 12th June.

Around 50 parliamentarians and policy makers involved in polar affairs attended the afternoon briefing by Principal Investigators of the International Thwaites

Glacier Collaboration (ITGC), which is funded by NERC and the US National Science Foundation. BAS is managing the UK-side of the operations which are extremely complex and challenging as the glacier is 1,500km from Rothera Research Station.

Dr Phil Heads from NERC explained why the UK felt it is important to reduce the uncertainty on how Thwaites Glacier will contribute to future sea-level rise. The UK and US PI's – BAS Director of Science Prof David Vaughan and Prof Ted Scambos from University of Colorado – explained how governments will need to adapt to sea-level rise and how ITGC will better understand the contribution from West Antarctica.

Prof Karen Heywood from the University of East Anglia

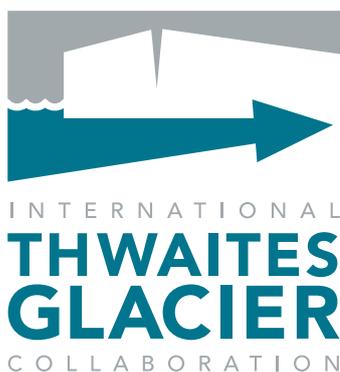


▲ Prof David Vaughan addresses the briefing in Westminster

showed some of the robotics the teams will use to get to previously unexplored parts of the glacier. Prof Doug Benn from University of St Andrews also explained how the modellers will try to predict what will happen

in the future, especially if the glacier collapses. You can find out more about the International Thwaites Glacier Collaboration at www.thwaitesglacier.org.

– Athena Dinar



British
Antarctic Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

Medals, Midwinter And A Marvellous Micro-Turbine

BAS celebrations



▲ Steve Bremner (left)

After a period of rather dull weather, Midwinter arrived in Cambridge with beautiful sunshine. The scrumptious BBQ in the quad (with meat, vegetarian and vegan options) was topped off with refreshing choices from an ice-cream van.

Following BAS tradition, we were then able to enjoy a review of the media success stories from the last year, where our science (if not the names of our scientists) was



▲ Pete Marquis (left)

portrayed beautifully, reaching millions of viewers worldwide.

As part of the Midwinter awards ceremony, we delved into the rich history of anecdotes accumulated during long and dedicated service to BAS by Kevin Newsham and Tim Moffatt (who received the Long Service Award), as well as by Fuchs-Medal-winners Steve Bremner and Pete Marquis. The willingness of 25 colleagues to 'Go the Extra



▲ Mike Dinn (centre)

Mile' was also recognized with the GEM awards (see page 9); seven of the 25 were present to receive the award in person. Finally, the AIMP 'Elephant Seal of Excellence' was awarded to Mike Dinn and BASMU for a successful MedEvac.

Midwinter was also a substantial milestone for the Halley automation project; the micro-turbine is still running, and a news story that publicised this success has



▲ Tim Moffatt/Kevin Newsham

elicited international interest in collaborating with us. Lots to celebrate indeed!

– Bea Schlarb-Ridley



▲ The Halley micro-turbine

Laws Prize Winner 2019

The Laws Prize committee are pleased to announce that the winner of the 2019 prize is Anna Belcher from the Ecosystems Team. The Laws Prize (instituted by former BAS Director Dick Laws in 1987) is awarded to outstanding early-career BAS researchers in recognition of their achievements.

The medal will be formally awarded alongside a lecture from the winner in a ceremony at BAS on 28th October. Congratulations Anna!
– Kate Smithson



▲ Anna Belcher – prize winner

AIMP Digital Construction Trophy



▲ The BAM team at the Institution of Civil Engineers in Westminster

The Antarctica Infrastructure Modernisation Programme (AIMP) was presented with the trophy for best use of digital construction techniques at the BAM digital construction awards, which were held at the Institution of Civil Engineers in London on 27th June.

This is an event which drew entries from BAM right across the globe and was attended by hundreds of BAM employees

and representatives from their clients and supply chain. Chris McGinness, Lead Planning Engineer for BAM, pulled together the submission and he and David Seaton of BAS gave a very well-received presentation to the attendees.

This presentation will be repeated at BAS on 10th July, 10.00am in the Conference Theatre, so the BAS team can have an opportunity to see

BAS projects

how BAM 'build it before they build it' and see the advanced modelling and virtual reality tools now being used in 21st Century construction project delivery.

It is encouraging to know that BAS have created a partnership which is a leader in the field of digital construction. This has made us much better placed to deliver the projects that will satisfy BAS future requirements and meet the agreed time, cost and quality targets.

– David Seaton



▲ The Rothera wharf project

New Greenland MAGIC Map



▲ This is the most detailed and up-to-date printed Greenland map

MAGIC has produced a new map of Greenland and the European Arctic, with an Arctic informational panel on the reverse by the NERC Arctic Office. The map covers a region not previously shown on one map sheet and as far as we are aware, provides the most detailed, up-to-date printed map of Greenland.

Research stations and settlements are shown on the map, alongside topographic data including contours over

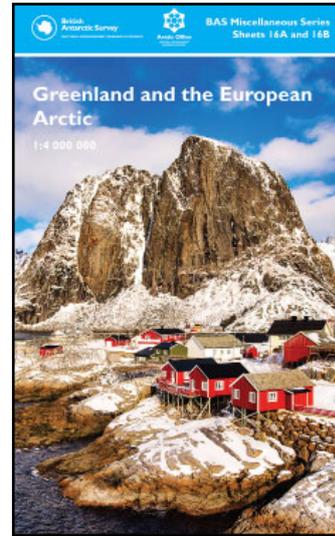
ice, permanent ice extent, rivers, lakes and spot heights.

The reverse features a vibrant information panel covering many aspects of Arctic life. Topics such as polar bear conservation, indigenous people and Arctic warming are covered, with contributions from organisations including the UK Met Office and The World Wide Fund for Nature (WWF). We hope that the map and information sheet are an excellent resource for

BAS mapping

scientists, tour visitors and all with an interest in the Arctic.

If you would like a copy or any further information, email me or pop into the Map Room (room 363). Further copies can be purchased from BAS reception, SPRI or Stanfords. – Laura Gerrish



▲ Cover of the new map

BAS Twin Otter At Duxford

BAS Twin Otter aircraft VP-FAZ recently spent some time down the road from BAS Cambridge at its UK summer base at Duxford Imperial War Museum, where it completed some equipment testing and air survey work.

The photo below shows VP-FAZ at rest between surveys, while a Mustang prepares for its next mission alongside.

– Rod Arnold



▲ Ready for action at Duxford

New Flexible Meeting Space

Come and try out our 'Nook' here at BAS Cambridge! To further investigate new ways of working, the Estates Team have a Nook for us all to test drive. The self-contained, flexible meeting space is on a free trial so please come over and give us your feedback.

The cleverly-engineered and powered space is currently on the landing by meeting room 187 and available for all to use as an alternative to booking out a meeting room.

– Ollie Darke



▲ A cool spot for a chat

BAS Rises To A New Standard!



BAS successfully transitioned to the revised international environmental management standard ISO 14001:2015 last year, as required by NERC and UKRI, with 100% compliance. As part of this, the scope of the Environmental Management System (EMS) was broadened to include our station operations in Antarctica and South Georgia. Previously, the scope included only Cambridge and the ships.

As a result, we are now required to carry out internal environmental audits at the stations and the first season of this is now complete.

These audits have proved to be extremely valuable and have helped to highlight where we are legally compliant, where there is good environmental practice and where we can improve environmental performance at the stations.

We would like to say a big thank you to all those who took part in the station audits – whether auditor or auditee! We have received a lot of feedback from the auditors on their experience of the audit process and have already started to make improvements for next season.

If you have any questions about the EMS scope expansion or about the audits at the stations, please pop into the Environment Office (room 331) or send an email to Kate Morley (katmor@bas.ac.uk) or Clare Fothergill (clathe@bas.ac.uk).

– Kate Morley

LGBT STEM Day On July 5th

July 5th was LGBT STEM day, a celebration of LGBTQ+ people working in science, technology, engineering and mathematics. The date (5/07) was chosen to match the specific shade of green used in the Pride rainbow flag, which has a wavelength of 507nm.

Organised by charitable trust Pride in STEM and supported by 42 STEM organisations including the RSC, IOP, CERN and ESA, it is an opportunity to recognise and celebrate our LGBTQ+ colleagues, and to focus on what we can do to support them. The day involved over 30 events taking place across three continents and a big online push for individuals to share stories, photos, and videos about being LGBTQ+ in STEM. For more information or to share your experience, please contact us.

– BAS LGBT+ Forum

Race Antarctica Returns

The latest season of BAS's Race Antarctic started on Midsummer/Midwinter's Day on 21st June. The annual event involves BAS staff working in teams of up to six to complete a virtual race across the frozen continent. The main race is 4,860km and the Elite Race doubles that to 9,600km. For the extremely hardy, the Solo Race requires a massive 2,600km on your own.

'Race kilometres' are achieved by logging physical activity over a period of eight weeks. How many race kilometres you get depends on your activity. For example, if you like to cycle you'll get 1km for every 1km cycled but if walking/running is your thing then you get 2.5km for every 'real life' kilometre.

Fastest off the starting blocks was Clare Fothergill who managed to clock up an

impressive 32km of cycling before lunchtime on Day 1!

At the time of writing, 21 teams are actively logging kilometres. Ignoring some seriously suspicious numbers coming out of the Rothera (unless The Flash is currently wintering?!), the current leaders are Racey-Mc-Race-Face at 3,447km, closely followed by Student Tea(m) on 3,289km and Under Review on 2,670km. Top of the individual distance list is Matthew Chadwick with an impressive 1,300km, followed by Alex Tate and Anna Belcher.

We are only on Day 18 and already some serious distances have been covered. But who will be first? You can find more information and the latest leaderboard on the website here <https://www.bas.ac.uk/race>.
– Jamie Oliver

Dash 7 Aircraft In Ontario

The BAS Dash 7 aircraft is undergoing its annual scheduled maintenance at our contracted maintenance providers (Voyageur Aerotech) in North Bay, Ontario.

During the annual visit the aircraft undergoes all necessary maintenance inspections to prepare for the coming season, including thorough inspections of the airframe, systems and propellers/engines. BAS has regular direct oversight and responsibility for this process.
– Mark Thomas



▲ The Dash is in for a service

Over-Water Fuelling Success



▲ The intrepid Rothera team who made it all happen

With the construction of the new wharf at Rothera (built to accommodate RRS *Sir David Attenborough*) well underway, the fixed pipework previously used for refuelling has been decommissioned and an innovative method for delivering fuel to Rothera was required. The over-water refuelling method uses purpose-built hoses, designed to float on the surface of the water to the ship, in this case

Waste Management Event At BAS



BAS AURORA co-hosted an event with Cambridge Cleantech on 24th June focused on 'Waste Management and Recovery in the context of the Circular Economy'. The content ranged from sustainability challenges at BAS and Addenbrooke's Hospital to examples of the psychology of behaviour change in waste management from around the world, and ended in a lively panel debate.

The speakers provided powerful examples of the challenges in implementing circular economy business methodology but showed it can be done, and provide benefit to society, the environment and the bank balance.

As part of a best-practice showcase, we also had a stall from the The Full Circle Shop on site. I am very pleased to report that they greatly enjoyed interacting with the 'highly-informed customers' from BAS!

If you have any suggestions for other best-practice businesses that we could invite for future showcases, please contact maine@bas.ac.uk.

– Bea Schlarb-Ridley



▲ Presentation in AURORA

BAS stations

associated with the traditional refuelling method. Resupplying Rothera at this late point in the season has been critical to ensure our position for the next year. The success of this operation was due to good planning and a well organised and committed team on the ground (and the water).

Over-water refuelling was first carried out in January with RRS *Ernest Shackleton* and again with the JCR at final call of the season. Congratulations to all of involved and for those who are staying on at Rothera – enjoy your winter!
– Ben Clarke



▲ Over-water fuelling in action!

Sundown At Rothera Station



▲ The Rothera winterers gather for the formal flag lowering

Just a few short days after the wintering team waved goodbye to the last ship of the summer season the sun also made its final appearance in the skies over Rothera.

As the sun sank below Stokes Peaks on 25th May, the winterers of Rothera gathered around the flag to celebrate

the summer season and toast the start of the Antarctic night. As tradition dictates, the flag was lowered by the most senior on station, this year Daze Routledge took the honour once again. 2019 is Daze's 11th Antarctic winter.

Throughout the entirety of May and June only nine hours

BAS stations

of sunshine were recorded at Rothera. While the sun is set to remain hidden beneath the horizon and the mountains that surround the station until later in July the skies continue to glow with pastel pinks and blues illuminating the spectacular vistas across Adelaide Island and the Peninsula to the east.

From us at Rothera, we happy few, enjoy the sunshine, we're looking forward to its return.
– John Law



▲ Wintery darkness

Shackleton Now The Laura Bassi

RRS Ernest Shackleton now has a new coat of paint for her new life as polar icebreaker for the Italian National Institute of Oceanography and Experimental Geophysics in Trieste, Italy. She also has a new name – Laura Bassi, the world's first female professor (in 1732!).

It's nice to see that the BAS legacy remains in the name!
– Jane Francis



▲ The Shack has been renamed

Invasive Species In The OTs

More than 90% of British biodiversity is found in the UK's 14 Overseas Territories, but invasive species present a major threat to this biodiversity. In June, Kevin Hughes (BAS) and Mark Belchier (GSGSSI) were invited to submit oral evidence to the House of Commons Environmental Audit Committee inquiry on invasive species in the UK and Overseas Territories.

This was a great opportunity to showcase BAS science, policy achievements and biosecurity expertise directly to Government.
– Kevin Hughes



▲ Kevin (left) and Mark

MAGIC Image Of The Month

This is the very first engineering image from the brand new RADARSAT Constellation Mission (RCM) showing sea ice in the Strait of Davis and the coast of Baffin Island, Nunavut. For many years Radarsat satellites have provided some of the limited Synthetic Aperture Radar imagery of the polar regions. More recently we

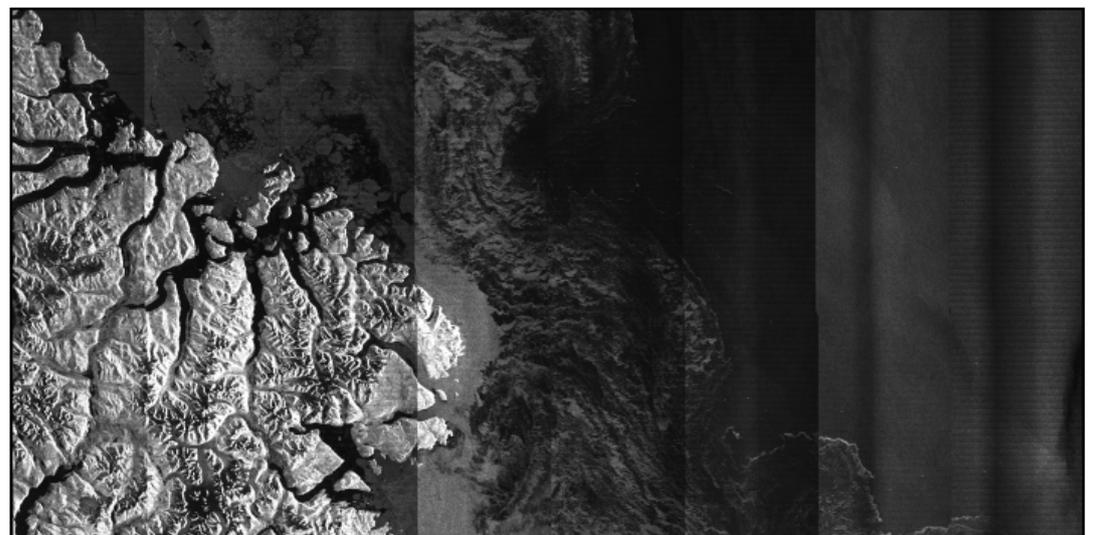
have regular imagery thanks to the European ENVISAT and Sentinel-1 satellites, and now Canada has added the latest Radarsat satellites.

Launched on 12th June 2019, the RCM consists of three small SAR satellites, allowing imaging of most of the Earth's surface up to four times per day regardless of cloud or

MAGIC Image #83

time. Most images will be acquired over Canada and the Arctic and will start to be available after a six-month commissioning phase. For more info see <http://www.asc-csa.gc.ca/eng/satellites/radarsat/default.asp> (Credit: RADARSAT Constellation Mission product © Government of Canada, 2019).

– Andrew Fleming



▲ The first image from the new RADARSAT Constellation Mission shows sea ice off Baffin Island

BAS Solar Car Park Completed



▲ Construction of the new solar car park is now finished

The BAS solar car park has been nominated for an award! 'Solar & Storage Live' is the UK's largest renewable energy event and is held from 17th-19th September 2019 at The NEC, Birmingham. You can vote for the car park in the 'Best in Show' category here: <https://www.terrapinn.com/exhibition/solar-storage-live/best-in-show-solar-design-award.stm>

The twin Pod Point EV charger is also fully functional and

ready to use. Emma Woodfield volunteered to be the first to try it – see photo below. The new secure bike shed is also proving very popular.

– Nopi Exizidou



▲ Charge! The new Pod Point

BBC 'Looking Up' Podcast



BAS space weather scientist Nigel Meredith spoke to BBC Earth's Emily Knight about the 'sounds of space' in 'Looking up', the final episode of the BBC Earth podcast series 2. The podcast is described as a journey in sound, containing a blend of nature, science and human experience, with world-class storytelling and immersive soundscapes.

Listen to Earth's natural radio as recorded by the VLF receiver at Halley and near-Earth satellites. We even have some eerie recordings of radio waves from Saturn! It begins at 08:25mins at <https://www.bbcearth.com/podcast>.
– Nigel Meredith

BAS Cambridge Midsummer 10K



▲ A record number entered

On Thursday 20th June, a record 38 intrepid runners took part in the traditional BAS Midsummer 10km handicap race, now in its tenth year. Runners submit a predicted time before the race and start times are staggered so the slowest runners or walkers set off first. If all the predictions are good, everyone should reach the finish line at the same time.

This year participants were remarkably accurate with their estimates and most of the field arrived back within a two minute window at around

1.00pm. First over the line and winner of the handicap race was Danny Buss in a time of 1hr 4m 51s, beating her estimate by over six minutes.

The fastest male runner was Ed Fleming (works for CASP, home to several ex-BAS geologists) in 38m 51s; the fastest female runner was Ella Gilbert in 46m 08s and Andrew Meijers crossed the line three seconds after 1.00pm, winning the most accurate estimate prize.

Thanks to Huw Griffiths, Hilary Blagbrough and Rod Arnold for helping at the end of the race and also to our BAM colleagues for photography on the course and at the finish line. Well done to all the runners and see you at the Midwinter edition in December.

– Alex Tate

Biodiversity@BAS – Nestboxes

BAS Cambridge

We've all enjoyed watching blue tits and kestrels in the BAS Cambridge nestboxes hatching and growing into fledged birds, but did you know that our information can be used in a national monitoring project? The British Trust for Ornithology runs the Nest Recording Scheme, which holds information on clutch sizes and nesting dates for UK birds over many decades. In Cambridgeshire in 2017 there were 23 monitored kestrel nests out of 546 across the UK, and 64 blue tit nests out

of 6,693 (the most frequently monitored bird in the UK).

This year's blue tits were about average with nine eggs and eight fledging, but it's a good kestrel year (which means a good vole year!) with five young hatching and surviving a week of poor weather. This information can be used to see what influences the success or decline of a species, or if trends are weather related. Some birds are now laying fewer eggs, and blue tits come into this

category where a decade ago clutches of 12 eggs would have been more commonplace.

Kestrels are more weather and food dependent and being larger birds they do not breed every year. Our pair are probably newly formed, there are three local territories, and will likely keep using the BAS box for years. Apologies for recent image quality – the kestrel chicks damaged the camera lens in fights over food, and then covered it in poo!
– Louise Bacon



▲ Blue tit chicks in the nest before they fledged and a female kestrel tending to her brood!

Constraining recent ice-flow history at Korff Ice Rise, West Antarctica, using radar and seismic measurements of ice fabric

Antarctic krill is a key species in the Southern Ocean ecosystem – a major food source for many higher predators including fish, penguins and other seabirds, seals and whales; it is also an important contributor to the carbon cycle and the target of a commercial fishery. Understanding what drives the distribution of krill is essential for investigating potential future change in the krill-based ecosystem and for developing sustainable management of the krill fisheries.

The early part of its life-cycle is one of the critical periods for krill. To test the current assumptions of what makes



▲ Antarctic krill under sea ice

an area viable habitat for young krill, we developed a model of the early life stages of krill. We show that the extent and seasonal cycle of sea ice present the main limitations for successful larval recruitment, with interannual variability in these significantly affecting the regional survival of young krill.

Field observations and lab experiments will allow us to constrain model uncertainties, and enable us to better understand the distribution of this important species.
– Sally Thorpe

Cambridge At Hay Festival

A panel discussion entitled 'Female Voices in Climate Change' was organised by Cambridge University as part of their Cambridge Series. The panel comprised: Morgan Seag, Co-chair of the international council of the Association of Polar Early Career Scientists, anthropologist Ragnhild Freng Dale from SPRI, Chandrika Nath, Exec Director of SCAR, and BAS's Prof Melody Clark.

Chaired by Rosie Boycott, discussions centred on gender issues in Polar Science, but also on how to communicate science and engage people in this very important issue.
– Melody Clark



▲ Part of the Cambridge Series

THE ROYAL SOCIETY

Following the success of their 2018 photography competition, The Royal Society are doing it all over again this year – except bigger and better as they have doubled the prize money!

As always, the competition is run in collaboration with RS journals and celebrates the power of photography to communicate science and the role images play in making science accessible to a wide audience. The competition is free to enter but only open to scientists.

Entries must be submitted before 30th August 2019 and the winners will be announced in December 2019. To celebrate the fifth anniversary of the competition, the overall winner will receive £1,000

and the category winners will each win £500. Scientists can enter an image in any of our five categories: astronomy, behaviour, Earth science and climatology, ecology and environmental science, and micro-imaging.

BAS has some history of success in the competition as Terrestrial Ecologist Pete Convey won the top prize in 2017 with his amazing photo of a Twin Otter over the dramatic ice of the English Coast.
– Jane Francis



▲ Pete's 2017 winning photo

IODP Expedition 382



▲ The impressive, purpose-built drill ship RV JOIDES Resolution

Between 20th March and 20th May 2019, Lara Perez (marine geophysicist) and Vicky Peck (paleoceanographer) sailed on International Ocean Discovery Program (IODP) expedition 382. IODP operate the RV JOIDES Resolution, a purpose-built drill ship with the ability to drill thousands of meters below the sea floor. Expedition 382, otherwise known as 'Iceberg Alley', was focused on understanding how the

Antarctic Ice Sheet varied during past climate states.

Sea-floor sediments were collected from three sites in the southern Scotia Sea where icebergs from around the entire continent converge and enter the Antarctic Circumpolar Current. The flux of iceberg-rafted debris falling to the sea floor will be reconstructed to give an insight to the rate of iceberg

BAS science

calving from the Antarctic Ice Sheet during different climate states over millions of years.

Two further sites just south of the Falkland Islands, proposed by Vicky, will give insights into the varying impact of cold-water flow through Drake Passage on the overturning circulation of the Atlantic Ocean. The deepest site drilled was 3,712m below the surface, and the deepest sediments drilled were 676m below the sea floor and were 15 million years old.

Iceberg Alley lived up to its name and a total of 159 hours were spent 'waiting on ice'. Despite these setbacks, 2.8km of sediment was collected. The shipboard party of 30 international scientists are now building new collaborations and working out the details of future research projects that will keep them busy for years!
– Lara Perez & Vicky Peck

Rothera Midwinter Celebrations 2019

BAS stations



▲ The Rothera winterers gather to celebrate Midwinter

Whilst you might have been basking in the Cambridge sun on 21st June, the Rothera winterers were celebrating Midwinter at BAS's most southerly occupied station. With freezing temperatures and only a few hours of twilight it would be easy to feel sorry for us...The day started (for most) with tea or

coffee delivered to people's pit-rooms by the Winter Station Leader, who also had a fine selection of biscuits.

That was followed up by a posh late-breakfast with bubbly stuff to wash it down, top marks to Nadescha who stepped up to get it done! Then people had a few hours

to smarten up and bring their secret-Santa-style presents for the big exchange in New Bransfield House. There was a wide range of Midwinter gifts and the overall standard was exceptionally high.

Danny the chef then kicked off a sublime nine-course feast that was only interrupted to listen to the BBC World Service broadcast over HF radio, in the operations tower. Some very high-profile celebrities sent their best wishes and we enjoyed surprise messages from loved

ones back home – no tears from this group of Antarctic heroes though! The feast continued for some hours after as the team slowly succumbed to the weight of all the marvellous food!

Other activities during the week included a Winter Olympics run by the field guides and a movie marathon day that included watching *The Thing* (it's a brave person who does night watch after that!), which left us wondering where our base flamethrower is?!
– *Matthew Phillips*



▲ High-quality merchandise



▲ Gifts were lovingly crafted

Information Services Showcase

The Information Services team held a lunchtime showcase on 12th June for everyone at BAS Cambridge to find out about the activities of the UK Polar Data Centre, Archives, Library and Web and Applications teams. These four teams (collectively known as Information Services) put together a range of posters, displays, videos and demos.

The exhibit of BAS Herbarium specimens proved very popular, and visitors also

flocked to demos displaying the UK Polar Data Centre's data visualisation applications and the newly-created South Georgia MPA Data Portal.

We hope colleagues found it enjoyable and now know much more about how Information Services supports BAS and the wider polar community. Please get in touch if you would like to suggest a future workshop on a particular Information Services topic.
– *Katy Buckland*



▲ The Information Services showcase event was well attended

Rothera Modernisation Update



▲ Cross section through the new building at Rothera

The detailed design for Rothera Modernisation Phase I has been completed by BAM and a review is underway to identify further optimisations with the scientific operations building and site-wide services. The project is progressing onto the technical design with which we can start purchasing the materials for the build.

In August, BAS will have the opportunity to use and experience the Virtual Reality simulations of the building so that we can define the individual room layouts.

The detailed plans for Rothera Modernisation works next season (2019/20) are progressing at pace and include the replacement of the Miracle Span with an interim waste-management facility, relocation of MF radar towers and BAM groundworks.
– *David Brand*



▲ The latest visualisation

BAS GEM Awards 2019

Each year British Antarctic Survey staff are able to nominate their colleagues for a Going the Extra Mile (GEM) award. The award acknowledges the service and dedication of those who go that extra mile above and beyond their normal job to help others and the organisation voluntarily.

Congratulations to the following staff on receiving the award this year. Your commitment and dedication is very much appreciated by both your colleagues and the wider organisation:

Jason Wood, Julius Rix, Aurelia Reichardt, Bob Pratt, Tim Page, Pilvi Muschitiello, Madeleine Millar, Luke McDonald, Adam Lowndes, Sadia Karim, Cary Jackson, Scott Hosking, Joe Hooper, Naomi Griffiths, Paddy Griffin,

Julien Flynn, Elaine Fitzcharles, John Eager, Roy Dodson, Yvette Clarke, Ben Clarke, Christina Chatzela, Katy Bates, and Catherine Amey.

Thank you also to those that took the time to nominate their colleagues allowing BAS the opportunity to recognise GEM achievement.

– *Geraldine Hough*



Dave Munday WP2 Leader

Congratulations to Dave Munday, new leader for Work Package 2 of the ORCHESTRA project, having taken over from Andrew Meijers. Dave's experience is well-placed for his new role, being the lead model developer for the z-level high-resolution regional model of the Southern Ocean.

Dave has been working closely with all work packages and RoSES, ORCHESTRA's sister project, to ensure that model output is as widely used as possible. He also leads planning of perturbation experiments for this valuable tool.

– *Nina Fox*



▲ *Dave Munday*

KEP Midwinter Olympics Report



▲ *Tough snow conditions made the events more of a challenge*

Heavy snowfall meant tough conditions for the Midwinter Olympics at KEP with the first event, a simple race to the wharf, slowed by having to plough through a waist-deep drift. Participants were not ready for the cardio workout and by the return leg, the potato and spoon race, the station smoker was walking to

South Georgia Association Event

The South Georgia Association's Autumn event 2019 will be in association with the Devon and Cornwall Polar Society and will be held at the Duke of Cornwall Hotel, Plymouth, on 19th October. Special rates will be available for those attending the event. The hotel is well known for its connections with Sir Ernest Shackleton.

The morning of the 19th will be free with opportunities to visit the Scott Memorial, Scott's birthplace and other attractions such as the Plymouth Marine Aquarium. The programme will include presentations on:

- The work of the Sir Alister Hardy Foundation of Ocean Science (SAHFOS) since Hardy's work at South Georgia in the 1920s to the present, by David Johns
- The roles played by Scott's

men in World War I, by Anne Strathie

- Remote medicine at South Georgia and the Antarctic, by Drs Daranee Boon and Ian Grant (both formerly of the BAS Medical Unit)

There will be an exhibition of paintings of South Georgia by Theo Crutchley-Mack who was recently 'Artist in Residence' at South Georgia, funded by the South Georgia Heritage Trust. There will also be an exhibition of photographs by Oli Prince, who has spent several seasons on the island. In the evening there will be a reception sponsored by Arcturus Expeditions followed by dinner at the Duke of Cornwall Hotel.

Bookings by 27th September.
<http://southgeorgiaassociation.org/sga-legacy/events.php>
– *Paul Rodhouse*

BAS stations

touching distance of the throwing area.

As darkness crept in we moved to the final event, the pulking. With the pairs selected randomly there were some obvious favourites as a big tugger got a lightweight sledger, so the fans got the final they expected and hoped for. As the doc and the scientist grappled on the sledges, the latter sacrificing footwear to lighten the load, the sheer determination of the mechanic dragged him to victory and recognition if not any actual material reward.

– *Jerry Gillham*



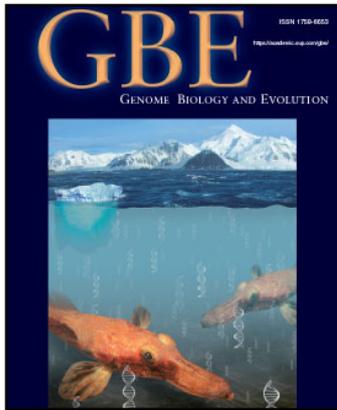
▲ *A picturesque and snowy KEP*

prevent his lungs from bursting through his chest.

The throwing events were complicated by the likelihood of losing a tossed caber or wanged welly in the snow. While others went for distance, the sparky and doc cleverly made sure their projectiles landed within

Antarctic Fish Journal Cover

When our paper analysing how proteins in Antarctic fish differ from those of temperate and tropical species was accepted by *Genome Biology and Evolution*, we were asked for a potential cover image. Taking a fish photograph by Thomas Desvignes, Jamie Oliver worked his magic. The rest is history!
– Melody Clark



▲ The cover looks a bit fishy

Spotlight On Science: April 2019

Thicker shells compensate extensive dissolution in brachiopods under future ocean acidification

Long-term culturing of brachiopods under future ocean acidification conditions revealed substantial shell dissolution occurs, however, brachiopods unexpectedly thicken their shell from the inner shell surface in response to extensive dissolution at the outer shell surface.

Marine organisms bearing a shell or skeleton are particularly vulnerable to ocean acidification due to dissolution and the reduction in their shell-building blocks. Current understanding of the biological impacts of ocean acidification and warming is largely based on short-to-medium-term laboratory and field experiments that have

indicated mixed responses in a wide range of taxa. Long-term experiments are essential to allow organisms' abilities to acclimate or even adapt to environmental change.

This study separately cultured a polar (*Liothyrella uva*) and a temperate (*Calloria inconspicua*) brachiopod under ocean acidification and warming conditions for seven months and three months, respectively.

Substantial shell dissolution posed a threat to both, with more extensive dissolution in the polar brachiopod. A compensatory response of shell thickening was exhibited by the polar species. This is an important finding to further understand how predicted vulnerable marine calcifiers might cope under future environmental change.
– Emma Cross

Wolfson Award Success

The Wolfson Foundation funds laboratory infrastructure projects. BAS submitted a proposal for funding (£450k) to develop a Polar Sediment Core Facility by redeveloping some labs in SB2. This will be a key facility for scientists working on rock and lake cores etc. to understand history of past climate and environment. It will form part of a suite of Controlled Environmental Facilities for Polar Research.

Bea and Nopi led the proposal with a successful team of scientists and estates staff. Congratulations to all!
– Jane Francis

The Wolfson*
Foundation

Crossing The Line On The JCR



▲ Crossing the Equator is a major event onboard ship

On 5th June, some of the crew of RRS *James Clark Ross* endured the 'Crossing the Line' ceremony as the ship

crossed the Equator from the southern hemisphere to the northern version.



▲ Beware King Neptune!

Ten would-be sailors were duly indoctrinated into the ranks of the World's Mariners courtesy of King Neptune himself (Chris the Chef). Individuals included the Chief of Officers down to the lowly Cadets, to the Fish Nurse. No-one can elude Neptune for long!
– Steve Stiglic-Buxton

New BAS Science Funding

BAS has been very successful in recent months, securing over £1.5m via grants that demonstrate the diverse opportunities that help fund our science. Congratulations to the successful applicants.

Antarctic Science Bursary

- *C Bull* – BAS led (Small Grant). A Jenkins. Revealing the role of tides, eddies and buoyancy fluxes in projected regime shifts in the ocean circulation under the Filchner-Ronne Ice Shelf
- *A Belcher* – BAS led (Small Grant). G Tarling and P Fretwell. Determining the Antarctic krill biomass: Can we distinguish krill swarms from space?

European Funding

- *M Clilverd* – DUTH, Greece led (ESA). Earth Explorer 10 Mission – Daedalus
- *S Morley* – AWI led (MSCA RISE). CoastCarb: Coastal ecosystem carbon balance in

- times of rapid glacier melt
- *H Griffiths and S Roberts* – Hull Uni. led (INTERACT). BEACH2: Biodiversity and Ecology of the Arctic Intertidal: Changes and Human Impacts

The Wolfson Foundation

- *B Schlarb-Ridley* – BAS led (Science and Medicine grant). E Fitzcharles, E Parthena, R Larter, S Roberts. Controlled Environment Facilities (CEFs) for Polar Research

Other

- *G Marshall* – SPRI led (British Council). Expanding Moscow-Cambridge links in Arctic ecological science and outreach
- *R Whittle* – BAS led (SCAR Ant-ECO grant). Seymour Island Synthesis Workshop

Next workshop: Grant Writing Skills – 1st-2nd August at BAS. Contact anaper@bas.ac.uk.
– Ana Pereira-O'Callaghan



▲ Place-names in Greenland are in Kalaallisut (West Greenlandic)

MAGIC have recently released a brand-new map, 'Greenland and the European Arctic' in conjunction with the Arctic Office (see article on page 3).

An important part of map creation is determining the appropriate naming to use for each region. This involved significant research into the Greenlandic language and work with the Language Secretariat of Greenland.

Kalaallisut, West Greenlandic, has been the official language of Greenland since 2009. Place-names for the area are often descriptive and can be whole sentences when translated to English. An example of this is Qeqertarsuaq, which is the name of the island itself and of the largest town in the area – the literal translation is 'Big Island'.

In the same vein, Nanortalik, is the southernmost town in Greenland, and its name means 'the place with polar bears'.

Arguably the most well-known glacier in Greenland is Jakobshavn Glacier. This fast-moving glacier is known in Greenlandic as Sermeq Kujalleq, where 'sermaq' means 'glacier', and 'kujalleq' means 'southern' – it lies south of the town of Ilulissat, also known as Jakobshavn.

For more information about the Greenlandic language, please go to the Language Secretariat of Greenland here: <https://oqaasileriffik.gl/en>.

If you would like to know more about place names in British Antarctic Territory or submit one for review, please see www.apc.antarctica.ac.uk.
– Elena Field

BAS/Ramboll At Govt Conf

Project Managers Joe Corner (BAS) and Kate Bunting (Ramboll) were recently invited to present at the Department for Work and Pensions and Government Major Projects Department Annual Conference in Manchester.

The presentation was about 'working across boundaries', with Joe speaking about the BAS modernisation projects in general and Kate on project management with BAS and how the partnership with Ramboll works.

– Jamie Oliver



▲ Joe and Kate presenting

Sustainable Business Travel

Departing from Kings Cross St Pancras, Ella Gilbert and I recently took the train to Vienna to attend this year's EGU general assembly. Ella took the night train from Frankfurt, arriving little more than 12 hours after setting off, while I stopped off in Cologne before taking the train to Vienna the next day. Four Ecosystems scientists also recently got the train to meetings in Brittany, France. From the Eurostar, a quick hop on the metro across Paris connected them with the TGV for onward travel, arriving in time for crêpes for tea.

Business travel in Europe can be booked through our BAS travel provider, with support available from the ReDS team, contact Amanda Wynne (amwynne@bas.ac.uk) or Penny Goodearl (peod@bas.ac.uk) for assistance. To organise your own itinerary, you could try the bible for

train travel – 'The man in seat 61' website (<https://www.seat61.com>), which provides clear and detailed guidance for train travel, or contact Ella (ellgil82@bas.ac.uk), who has years of experience with trains in Europe, for advice.

The BAS sustainable business travel group is working on analysing business travel and identifying the barriers to using more sustainable modes of transport amongst BAS staff with the help of Madeleine Burch, a summer placement student at BAS. Keep an eye out for a staff travel survey coming your way.

– Jacob Opher



▲ On the train to Vienna

Cheltenham Science Festival

BAS Interim Head of Estates Ollie Darke recently attended the Cheltenham Science Festival (4th-9th June) to share his expertise on a panel discussion event about 'How humans are engineered for extreme environments', with a focus on the Polar Regions, building and functioning in places where resources and access are limited. The event had over 160 attendees.

The Cheltenham Science Festival takes place every year and welcomes over 20,000 visitors. From stargazing, fun activity trails and hands-on experiments, to a large animal dissection live on site, it offers science galore for all ages.

– Kim Quince



BAS Hits The Festival Circuit

BAS will be showcasing its science at this year's Bluedot Festival near Macclesfield from 19th-21st July under the famous Jodrell Bank telescope, which has just been awarded UNESCO status. Following on from our debut in 2017, a team of volunteers will exhibit a range of BAS science including the Slocum Glider and marine specimens in the festival's main exhibition area: Mission Control.

In addition, space weather scientist Nigel Meredith will talk about the sounds of space on the main talks stage. Find out more at www.discoverthebluedot.com.

– Athena Dinar



King Edward Point Wharf Update



▲ The current wharf will be redeveloped and extended next season

There has been lots going on with the KEP wharf project since the last edition of the ICESHEET. On 23rd May, the construction contract was signed by BAS, NERC and BAM meaning the project has now moved from the outline design into the detailed design stages. Procurement of materials and plant has started. Logistics, site layouts, site management plans and other non-design deliverables are also in the process of being developed into detailed execution plans. The

draft Environmental Impact Assessment is due to be issued to the GSGSSI over the coming weeks which will form the backbone of the Regulated Activity Permit. Planning workshops have taken place with various stakeholders and a design meeting was held at Cammell Laird on 3rd July with representatives of all stakeholders in attendance.

Over the coming weeks and months leading up to mobilisation, recruitment of BAS support staff will be

BAS stations

undertaken and BAM will finalise their construction team. Station impact is a major consideration and we aim to learn lessons from the Rothera Wharf season and implement the positive outcomes.

All in all, the project is moving along well and we aim to mobilise to KEP in mid-January, and complete works by the start of June 2020, just in time to let the winter team enjoy Midwinter's Day in peace!

– Joe Corner



▲ Part of the planned extension

Pictures From The BAS Archives

Emmy Award-winning filmmaker Aleksandr Rikhterman recently visited BAS Archives to research an upcoming documentary – the first film in a new series portraying 'the ground-breaking scientific developments that take place in the world's most remote research stations, and the researchers than dedicate their lives to the pursuit of the unknown'. This episode, entitled 'The Bar at the End

of the World', focuses on Ukraine's sole Antarctic research station, Vernadsky (where researchers distil their own vodka!).

So why come to BAS? Well, Vernadsky Research Base was purchased by Ukraine for a symbolic one pound in 1996 after 49 years and 31 days of British ownership – the longest continuous occupation of any British station to date.

Archive Image #76

Established by the Falkland Islands Dependencies Survey in 1947, when it was known as 'Argentine Islands', it was renamed Faraday Station (Station F) in 1977. Research focused mainly on geophysics, meteorology and ionospherics. Nowadays, personnel from Vernadsky keep a watching brief on the original hut, Wordie House, which was designated as a Historic Site under the Antarctic Treaty in 1995, and is now managed by UK Antarctic Heritage Trust.

Aleksandr not only explored the Faraday material we hold in the Archives, but also filmed an interview with retired Deputy Director John Dudeney, recording his account of life at Faraday and the hand-over negotiations. Can you spot the BAS library in the newly-released trailer for the film? <https://rikhterman.com/2019/06/12/vernadsky> – Alysa Hulbert



▲ 'The Bar at the End of the World', Base F, 1964-65

And Finally...



▲ Boaty on a mission

The debut mission of the autonomous submarine Autosub Long Range – a.k.a. Boaty McBoatface – has for the first time shed light on a key process linking increasing Antarctic winds to rising sea temperatures. Data collected from 2017 and recently published in scientific journal PNAS, will help climate scientists build more accurate predictions of the effects of climate change on sea level. The study was a joint project between BAS, NOC and the University of Southampton. – Layla Batchellier

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