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## PUBLISHABLE SUMMARY

The European polar research arena is composed by a diverse number of organisations and individuals, that work for consolidating the knowledge on the complex dynamics of the polar regions and their role in the Earth System. This 1st yearly report of the European Polar Research Highlights aims at providing an encompassing, but not exhaustive, insight on the rich contributions of Europe to polar research during the first year of EU-PolarNet 2. The selection of highlights is organised in 5 encompassing topics: Highlights of European research in the Arctic, Highlights of European research in the Antarctic, Fostering polar research, Insights into the EU Polar Cluster and Conference highlights.

## Introduction

The European polar research arena is composed by a diverse number of organisations and individuals, that work for consolidating the knowledge on the complex dynamics of the polar regions and their role in the Earth System. This 1st yearly report of the European Polar Research Highlights aims at providing an encompassing, but not exhaustive, insight on the rich contributions of Europe to polar research during the first year of EU-PolarNet 2. Naturally, it is challenging and almost impossible to provide a balanced overview of the diversity of activities that have taken place. The approach taken here was to compile the news provided for the quarterly EU-PolarNet newsletters by the consortium members, the national polar organisations and the EU Polar Cluster. Additionally, we have called for extra science highlights, which would allow to cover the main developments and news of the 2020-21. This has been an extremely difficult year for people. Well beyond health and socioeconomic issues, COVID-19 is having important and long-lasting impacts on the Polar and the Earth-System sciences, such as those resulting from limited field activities and critically hampered data time-series. Even in this difficult framework, the international research community has continued its work, fighting to maintain the quality of the research and support infrastructure.

This 1st yearly report shows a glimpse on how lively the European polar research community and consists on a selection of highlights organised in 5 encompassing topics: Highlights of European research in the Arctic, Highlights of European research in the Antarctic, Fostering polar research, Insights into the EU Polar Cluster and Conference highlights.

We thank all partners and collaborators that have contributed to this report by submitting the highlights of their activities.

## Highlights in European polar research in the Arctic

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## New report on the status of global Arctic research: Knowledge for a Sustainable Arctic

The 3rd Arctic Science Ministerial (ASM3) was co-hosted by Iceland and Japan in Tokyo and online in May 2021 with Knowledge for a Sustainable Arctic as the overarching theme. Delegates from 27 different countries and the European

### KNOWLEDGE FOR A SUSTAINABLE ARCTIC 3<sup>RD</sup> ARCTIC SCIENCE MINISTERIAL REPORT



Commission, Arctic Indigenous Peoples' Organisations, and the ASM3 Science Advisory Board gathered to discuss developments in research and strengthen international cooperation.

The ASM3 published a detailed report that includes:

- Arctic Research Overviews from all 27 countries and the European Commission, 3 Arctic Indigenous Peoples' Organisations, and 16 international science/education organisations
- Science summary from all theme-based project updates and a new project database
- The Joint Statement of Ministers
- The results of the ASM3 webinar series and workshops, designed to increase transparency and engagement in the science process with the wider Arctic research community
- A Moving Forward section with recommendations from the ASM3 Science Advisory Board

Further information:

- 3rd Arctic Science Ministerial: <https://asm3.org/>
- ASM3 Database: <https://ads.nipr.ac.jp/ASM3DB/>
- Joint Statement of Ministers: [https://asm3.org/library/Files/ASM3\\_Joint\\_Statement.pdf](https://asm3.org/library/Files/ASM3_Joint_Statement.pdf)
- ASM3 Science Report: [https://asm3.org/library/Files/ASM3\\_Final\\_Report.pdf](https://asm3.org/library/Files/ASM3_Final_Report.pdf)

RANNIS – Icelandic Centre for Research

## Human health risks in the Arctic

The University of Oulu is developing many studies focusing on improving human health in the Arctic. One research deals with health risks associated with contaminants, in particular with mercury, whilst the study group NUNATARYUK explores the risk framework for Arctic coastal communities which are affected by



*1Reindeer husbandry in Northern Finland (credits: visitfinland.com)*

permafrost thawing, a consequence of climate change. In addition, the project “Biosecurity of the Arctic” supports public health systems in reacting to future biological threats, resulting from permafrost thawing.

Attention is also directed to specific groups; indeed, researchers at the University of Oulu are working on Sami reindeer herders’ mental health, but also on youth and elderly health issues, respectively in the projects “Arctic Youth and Sustainable Futures” and NORRUS\_AGE.

Finally, the University of Oulu is involved in Arctic cooperation on health through the projects “One Arctic, One Health”, the “Lancet Commission on Arctic Health” and the “NDI Think Tank Action”.

Further information:

Current Projects: [www oulu fi/medicine/node/193043](http://www oulu fi/medicine/node/193043)

Recent Publications: [www oulu fi/medicine/node/193050](http://www oulu fi/medicine/node/193050)

University of OULU

## Climate Change makes Arctic Ozone Loss Worse

In spring 2020, the MOSAiC expedition documented an unparalleled loss of ozone in the Arctic stratosphere. As an evaluation of meteorological data and model-based simulations by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) now indicates, ozone depletion in the



*Launching an ozone sonde during MOSAiC. (credits: Alfred-Wegener-Institut)*

Arctic polar vortex could intensify by the end of the century unless global greenhouse gases are rapidly and systematically reduced. In the future, this could also mean more UV radiation exposure in Europe, North America and Asia when parts of the polar vortex drift south. With their new findings, the experts call into question the commonly held assumption that, thanks to the ban on the production of chlorofluorocarbons (-CFCs), ozone loss would grind to a halt in just a few decades. The AWI study was jointly conducted with the University of Maryland and the Finnish Meteorological Institute, and has now been published online in the science magazine Nature Communications.

Further information:

<https://www.awi.de/en/about-us/service/press/single-view/klimawandel-fuehrt-zu-grossen-ozonverlusten-ueber-der-arktis.html>

Alfred Wegener Institut

## Arctic sea-ice loss impacts on European heavy snowfall

Researchers at the University of Oulu, Finland have discovered that the long-term decline of Arctic sea-ice since the late 1970s is fuelling extreme heavy snowfall across Northern Europe. The research is the first of its kind to directly link sea ice loss with extreme snowfall.



*The Finnish Meteorological Institute's Sammaltunturi Meteorological Observation Station, Pallas-Yllästunturi National Park (credits: Kaisa-Riikka Mustonen)*

Sea ice loss is one of the most visible indicators of Arctic

change. Yet as the Arctic has warmed over the past several decades, a paradox has emerged: vast areas adjacent to the Arctic Ocean show increasing snow mass trends. A new study led by Dr Hannah Bailey at the University of Oulu sheds light on this phenomenon. The research, published in *Nature Geoscience*, shows how the gradual 50% reduction in Arctic sea-ice cover since 1979 has provided a new source of atmospheric moisture that directly fuels extreme snowfall across Europe. Dr Bailey and team tracked the event in Pallas-Yllästunturi National Park, discovering that water vapour and snowfall travelling south from the Arctic into Europe carried a unique geochemical fingerprint. "Using water isotope forensics, we were able to directly observe and trace that moisture back to its oceanic source. In this case the warm open waters of the Barents Sea", says Dr Bailey. "This means that even though winter temperatures are warming, and average winter snowfall has decreased since the 1970's... When Arctic outbreaks do occur, like in 2018, they are super-charged with moisture and can bring more snowfall compared to 40 or 50 years ago", says Dr Bailey. The study concludes that a forecast ice-free Barents Sea in the coming decades will be a major source of winter precipitation for Europe.

University of Oulu

## How climate change affects the Arctic: ocean, land and biodiversity

The University of Oulu is engaged in different studies related to the impact of climate change on the Arctic region. Prof. Jeff Welker is leading an Arctic expedition aimed at investigating the phenomena of Freshening and Fertilization that are hitting the Arctic ocean.

The new source of atmospheric moisture derived from sea-ice loss is also the cause of extreme heavy snowfall across Northern Europe, as discovered by Dr Bailey and team in Pallas-Yllästunturi National Park. The research is the first of its kind to directly link sea ice loss with extreme snowfall; more details can be found in the articles published by Nature Geoscience and National Geographic.

Climate change also affects the biodiversity and ecosystem; researchers are examining the reduction of animal abundance in the Arctic by using moths and birds as study systems. Moreover, another research group is developing new solutions for reindeer herders, since climate change is obstructing their traditional practices.

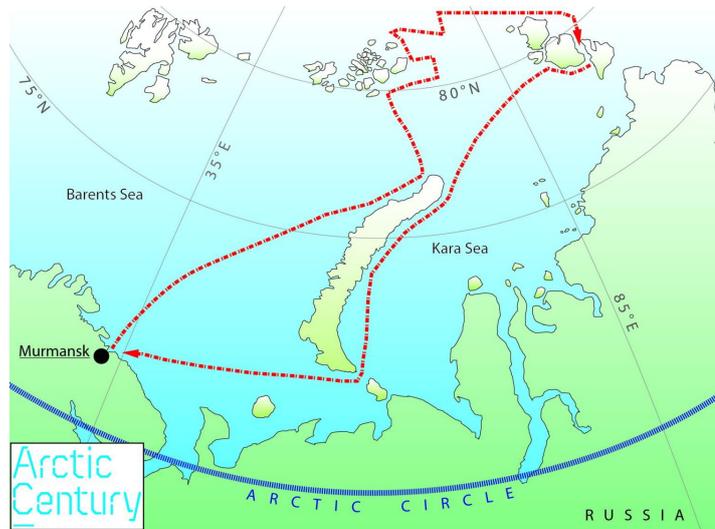
Further information:

“Arctic Interactions | University of Oulu.” <http://www.oulu.fi/en/arctic-interactions>

University of Oulu

## The Arctic Century expedition 2021

Organised by SPI (Switzerland), AARI (Russia) and GEOMAR (Germany), the Arctic Century Expedition is a multidisciplinary expedition dedicated to the study of rarely accessible and remote areas in the Kara and Laptev Sea, as well as on Franz Josef Land and Severnaya Zemlya in the western Arctic. The scientific programme focuses on the atmosphere, cryosphere, marine and terrestrial environment in a rapidly changing Arctic climate. Scientific



*Cruise path of the Arctic Century Expedition (credits: © 2021 Swiss Polar Institute, CC BY 4.0)*

projects on board were carried out by an international team of 59 researchers.

The expedition left Murmansk on 5 August 2021, onboard the research icebreaker Akademik Tryoshnikov. After a transit of three days work started in the Kara Sea. Thereafter a comprehensive terrestrial and glaciological working program took place in Franz Josef Land and Severnaya Zemlya. The marine working programme focused on key areas of the Saint Anna Trough, the Kara Sea continental margin and the central Kara Sea. The expedition returned to Murmansk on 6 September 2021.

Further information:

Arctic Century expedition: <https://swisspolar.ch/expeditions/arctic-century-expedition/>

Swiss Polar Institute

## Arctic Ocean Palaeoceanography Research (ArcOP) expedition

The European Consortium for Ocean Research Drilling (ECORD), the Swedish Polar Research Secretariat (SPRS) and Arctic Marine Solutions (AMS) will jointly conduct an expedition for the International Ocean Discovery Program (IODP) in 2022. The Arctic Ocean Palaeoceanography Research (ArcOP) expedition will



*IB Oden on expedition to north-western Greenland in 2019 (credits: Lars Lehnert)*

represent a step-change in reconstructing the detailed history of climate change in the central Arctic Ocean over the last 50 million years through the collection of about 900 m of sediment cores at two sites along the Lomonosov Ridge.

Further information:

Press release by ECORD: <https://www.ecord.org/arcop-a-novel-scientific-ocean-drilling-expedition-to-be-conducted-in-2020/>

Swedish Polar Research Secretariat

## Estonians to sail to Arctic to draw attention to climate change

In the summer of 2021 from July to October a group of Estonian sailors and scientists are on a sailing trip to the Arctic. The purpose of the trip is to draw attention to climate change in the region.



*Sailboat Admiral Bellingshausen in Tallinn, Estonia (credits: Estonian Maritime Museum)*

During the Arctic expedition, a popular science film will be shot, as well as the collection of water

and soil samples for Estonian

researchers. The Admiral Bellingshausen expedition offers a unique opportunity to gather additional data on Arctic climate change. During the expedition, the vessel will cross very different areas, which gives the study a broad spatial scope and allows the comparison of data. Due to the smaller draft, it is also possible to collect data from shallow waters close to the shore, and the lower speed of the sailing ship also ensures better data quality.

At the Bellingshausen, water samples will be collected from the near-surface layer to determine dissolved gases (mainly methane). A common challenge in Arctic research is the scarcity of data and the difficulty of obtaining it. The scientific research carried out during Admiral Bellingshausen's Arctic expedition also makes it possible to gather data from places that scientists do not reach, thus making an invaluable contribution to the development of Arctic citizen science.

The Dutch-built ketch Admiral Bellingshausen will visit Iceland, Greenland, the Faroe Islands, Spitsbergen mountains and the Norwegian fjords.

TalTech

## 30<sup>th</sup> anniversary of the icebreaker Oden at the North Pole

On 16 August 2021 at 20:46 UTC, the Swedish icebreaker Oden arrived at the North Pole for the tenth time. The first visit was made in 1991 when Oden was the first non-nuclear-powered ship to reach the North Pole together with the German research icebreaker Polarstern. Since then, Oden has been to the North Pole in 1996, 2001, 2004, 2005, 2009, 2012, 2016 and 2018.



*Participants in Synoptic Arctic Survey 2021 at the North Pole (credits: Hans-Jørgen Hansen)*

The visit to the North Pole took place within the research expedition Synoptic Arctic Survey, which started on 25 July. During the expedition, researchers from seven countries investigated the marine ecosystem between Greenland and the North Pole with an ambitious sampling program for hydrographic, chemical, and biological parameters.

The area has previously been unexplored due to the difficult ice conditions, but with the help of Oden, the researchers can for the first time collect data here. This will be important for understanding how the ecosystem in the central Arctic works and is affected by a warmer climate.

Further information:

Article: <https://www.polar.se/en/news/2021/press-release-30th-anniversary-of-the-icebreaker-oden-at-the-north-pole/>

Arctic expeditions: <https://www.polar.se/en/expeditions/synoptic-arctic-survey-2021/>

Swedish Polar Research Secretariat

## Marine plastic pollution in the Arctic

Plastic in the ocean is an increasing global problem. Plastic debris harms marine flora and fauna, and degrades coastal areas and ecosystems. It also has social and economic consequences.

In the summer of 2021, the Norwegian Polar Institute and partners carried out an extensive research cruise to study plastic pollution in the ocean and coastal



*New samples collected by divers under sea ice (credits: Trine Lise Sviggum Helgerud, Norwegian Polar Institute)*

areas around Svalbard. Samples of air, sea ice, ocean surface waters, the deep water column, sediments, fish and benthic organisms were collected. The analysis of this comprehensive data set will greatly improve our understanding of the distribution of plastic pollution in Arctic waters and provide the basis for assessing and further improving the methods being used for sample collection and analysis. Findings will be fed into Arctic Council working groups AMAP and PAME's processes set up to establish monitoring and action plans to tackle the growing problem of marine plastic pollution in the Arctic.

Further information:

Article: <https://www.npolar.no/en/themes/plastic-arctic/>

The Research Council of Norway

## Traits-based modelling for predicting biodiversity outcomes and carbon sequestration

GRID-Arendal interviewed Andre Visser, Professor of Physical Oceanography at DTU about his role on the recent research cruise DANA which explored marine ecosystems off the West coast of Greenland. He believes that the traits-based modelling techniques being used in the ECOTIP Horizon 2020 project can be worked into Earth-System Models to predict



*Andre Visser on the DANA research cruise interacting with high school teachers (credits: Niels Vinther)*

environmental changes for the entire globe. There is not enough biology in the global Earth System Models, the kinds of models that IPCC and IPBES need. They currently use biogeochemical-based models, where life is treated as a chemical reaction. Alongside traits-based models, Bayesian network models can be used to answer simple questions for policy makers looking at what-if scenarios. These are approaches based on science, statistics, and on the most likely outcomes of particular actions.

Further information:

Website: <https://ecotip-arctic.eu/>

GRID-ARENDAL

## A new record for ancient DNA from mammoth teeth found in Siberian permafrost

A new study led by researchers from the Centre for Palaeogenetics (CPG) recently published in [Nature](#) has set a new record for ancient DNA. The DNA comes from mammoth teeth found in the Siberian permafrost with an estimated age of over one million years. This makes it by far the oldest DNA ever to be



*Mammoth tooth on Wrangel Island (credits: Love Dalén)*

recovered and sequenced. Despite its fragmented state, the DNA reveals new important insights into the evolution of mammoths, including the discovery of a completely new genetic lineage.

International media coverage has also been intense, and Stockholm University has released the news as a [YouTube video](#).

Further information:

Article: <https://www.nature.com/articles/s41586-021-03224-9>

News: <https://edition.cnn.com/2021/02/17/world/mammoth-oldest-dna-million-years-ago-scn/index.html>

YouTube video: <https://www.youtube.com/watch?v=kDSMxRpBnPO>

Swedish Polar Research Secretariat

## Highlights in European polar research in the Antarctic

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## Polarstern expedition investigates massive calved iceberg

In February 2021, a massive iceberg calved from the Brunt Ice Shelf in the Antarctic. As the only research vessel nearby, the German RV Polarstern took the opportunity to enter the area between the iceberg and the Brunt Ice Shelf. The first images from the seafloor reveal an amazing level of biodiversity in a



*Polarstern in the Brunt Ice shelf A74 (credits: Tim Kalvelage)*

region that was covered by thick ice for decades. The sediment samples gathered are expected to provide more detailed insights into the ecosystem, while a geochemical analysis of the water samples collected will allow conclusions to be drawn regarding the nutrient content and ocean currents.

Further information:

Link to article: <https://www.awi.de/en/about-us/service/press/single-view/polarstern-expedition-erkundet-abgebrochenen-rieseneisberg.html>

Alfred Wegener Institut

## Beyond EPICA field campaign 2021/22

The Beyond EPICA project ([www.beyondepica.eu/en/](http://www.beyondepica.eu/en/)) overcomes its second year of work, despite the cancellation of the field activities of 2020-21 due to COVID19 restrictions.

A field camp at Little Dome C has been established during the 2019-20 season and the material and equipment have been already



*Little Dome C Camp (January 2020) (credits: J. Schwander)*

transported from Europe to Antarctica. The next field season 2021-22 is now close to start (November 2021-to-January 2022).

The Project Coordinator, Carlo Barbante, will participate to the 2021-22 field activities in a team of 12 people (in total 6 scientists/drillers and 6 logistics in the field) with the aim to finalise the camp, set-up the drilling area, along with the drilling of the pilot hole, reaming the hole and installation of the casing. The complete drill system is planned to be installed and tested towards the end of the season. The temporary storage cave at Little Dome C Camp will be also planned to be completed during the next field season.

Further information:

Website: <https://www.beyondepica.eu/en/>

Istituto di Scienze Polari of the National Research Council

## 25 years of ocean temperature monitoring between Tasmania and Dumont D’Urville, East Antarctica, reveal significant subsurface warming of the Southern Ocean

A consortium of scientists from CNRS, CNES, IRD, Sorbonne University and Toulouse University in France has recently performed a comprehensive analysis of the Southern Ocean temperature evolution over the last 25 years. Their analysis relies on a unique dataset which has been routinely collected during



*PLV Astrolabe in the Southern Ocean (credits: © Lucie Maignan/IPEV)*

repeated crossing performed several times a year by the supply vessel Astrolabe between Australia and the Antarctic continental shelf off the French Antarctic station Dumont D’Urville. Based on what appears today as the longest time series of the upper 800 m temperature along meridional sections across the Southern Ocean, it has been possible to identify a robust warming trend in the subsurface subpolar waters of the region. This trend appeared to be of same order of magnitude as those reported in West Antarctica and was associated with a shoaling of almost 40 meters of the subsurface temperature maximum, a value 3 to 10 times larger than has been suggested by earlier studies. These recent findings highlight the invaluable contribution of systematic long-term ocean measurements to improved mapping of Southern Ocean changes, a prerequisite to adequately estimate the potential ocean water implication in the current and future evolution of Antarctic glaciers, including those in East Antarctica.

Further information:

Article Auger, M. et al. Southern Ocean in-situ temperature trends over 25 years emerge from interannual variability. *Nat Commun* 12, 514 (2021). <https://doi.org/10.1038/s41467-020-20781-1>

Centre National de la Recherche Scientifique

## Glacial melt shifts benthic metabolism of an Antarctic fjord

The fjords along the West Antarctic Peninsula experience pronounced disturbance from climate-change related glacial retreat. The work of the Marine Biology Research Group (UGent, Belgium) in Potter Cove demonstrates that glacial melt plumes of fine particles bury the microalgae at the shallow seafloor, making them less productive. This



*Scientific diver (Pasotti Francesca, Ghent University) taking samples of the water from the seafloor in a fjord on the West Antarctic Peninsula. Microalgal mats cover the seafloor (credits: Anders Torst).*

process shifts the metabolism of the seafloor community from a net sink to a net source of carbon dioxide.

In the next decennia, climate change will drive further melting of the glaciers along the Western Antarctic Peninsula. This study shows that the consequences of melting glaciers have the potential to enhance global climate change. This research is the result of a fruitful collaboration with the Alfred Wegener Institute for Polar and Marine Research, the Max Planck Institute for Marine Microbiology, Universities of Bremen, Buenos Aires, Gothenburg, and Ushuaia, the Argentine Antarctic Institute, CONICET and the Centro Austral de Investigaciones Cientificas, Ushuaia.

Further information:

Article: Glacial melt disturbance shifts community metabolism of an Antarctic seafloor ecosystem from net autotrophy to heterotrophy. <https://rdcu.be/ceqoE> or <https://doi.org/10.1038/s42003-021-01673-6>

Belgian Science Policy Office

## A sensational discovery: Traces of rainforests in West Antarctica

An international team of researchers led by geoscientists from the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, have now provided a new and unprecedented perspective on the climate history of Antarctica. In a sediment core collected in the Amundsen Sea, West Antarctica, in February 2017, the team



*Dr Johann P. Klages (AWI) and Prof Dr Tina van de Flierdt (Imperial College London) try to extract over-compacted sediment from the MeBo core catchers. (credits: Thomas Ronge; Alfred-Wegener-Institut)*

discovered pristinely preserved forest soil from the Cretaceous, including a wealth of plant pollen and spores and a dense network of roots. These plant remains confirm that, roughly 90 million years ago, the coast of West Antarctica was home to temperate, swampy rainforests where the annual mean temperature was ca. 12 degrees Celsius – an exceptionally warm climate for a location near the South Pole. The researchers surmise that this warmth was only possible because there was no Antarctic ice sheet and because the atmospheric carbon dioxide concentration was significantly higher than indicated by climate models to date.

Further information:

Article: <https://www.awi.de/en/about-us/service/press/single-view/a-sensational-discovery-traces-of-rainforests-in-west-antarctica.html>

Alfred Wegener Institut

## Meteorite impact over Antarctica 430,000 years ago

An international research team of planetary scientists found new evidence for a meteorite airburst just above the Antarctic ice cap 430,000 years ago. Extra-terrestrial particles, known as condensation spherules, were recovered during the 2017-2018 Belgian Antarctic Meteorites expedition funded by BELSPO from



*Touchdown impact: Artist's impression of a touchdown impact event (credit: Mark Garlick/markgarlick.com)*

the Princess Elisabeth Station. The

particles, found near the top of Walnumfjellet in the Sør Rondane Mountains of East Antarctica, indicate an unusual touchdown event where a jet of melted and vaporised meteoritic material resulting from the atmospheric entry of an asteroid at least 100 m in size reached the surface at high velocity. The study underlines the importance of mapping the threat posed by medium-sized asteroids as accurately as possible, since future objects of similar size are likely to explode in the atmosphere and generate a shockwave. If this explosion occurs too close to the Earth's surface, the damage could be severe, especially in densely populated areas.

Further information:

Link: <https://advances.sciencemag.org/content/7/14/eabc1008>

Belgian Science Policy Office

## Cultural Heritage Antarctica 2020 - CHAQ 2020 - an Argentinean-Swedish expedition to the remains of the First Swedish Antarctic Expedition 1901-1903

Cultural Heritage Antarctica 2020 (CHAQ 2020) was an Argentinean-Swedish expedition to the historical remains of the First Swedish Antarctic Expedition 1901-1903 on the Antarctic Peninsula that took place in January-February 2020. The results explain why countries and people want to protect cultural heritage in Antarctica, how cultural



*CHAQ 2020 Swedish and Argentinian team leads Dag Avango (LTU) and Pablo Fontana (IAA) (credits: Kati Lindström (KTH))*

heritage protection in Antarctica has been understood by different people and in different periods, but also what this means for the possibility of preserving the sites in the face of climate change.

Further information:

On Creating Cultural Heritage in Antarctica (CHAQ): <https://meltinghistory.org/>

Swedish Polar Research Secretariat

## Fostering polar research

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## The EU-PolarNet 2 Polar Expert Group was created

A key objective of EU-PolarNet 2 is to prioritise polar research themes of high societal relevance and to support and



# EU-PolarNet

advice European decision makers on topics related to the Polar regions. To work towards this aim, EU-PolarNet 2 collected more than 200 nominations for its Polar Expert Group over the last months, to form a group of internationally recognised experts in all kinds of Polar Research, including different sector representatives. The Polar Expert Group will be the expert forum for implementing European Polar research internationally, by specifying overarching priorities, research needs and specific actions. The final composition of the Polar Expert Group will be available on our website soon.

Further information:

EU-PolarNet Webpage: <https://eu-polarnet.eu/consortium-structure/>

EU-PolarNet 2

## EU-PolarNet 2 launched its first call for Services in July 2021

One of the core objectives of EU-PolarNet 2 is to prioritise and specify the key societally relevant Polar



# EU-PolarNet

research themes, which have been defined in the **European Polar Research Programme (EPRP)**, the EU-PolarNet White Papers and in European Polar strategies. For this purpose, EU-PolarNet 2 offers financial support and opened a Call for Services on July 1st, 2021. With this Call, EU-PolarNet 2 seeks support from the European Polar Community to develop ideas for concrete research activities.

EU-PolarNet 2 service applications was open to offers related to one of two research needs of the European Polar Research Programme:

- 1) Prospering communities in the Arctic
- 2) Inclusive creation, access and usage of knowledge

Calls for services for the other four research themes of the European Polar Research Programme will follow in the consecutive years, each with two of the research needs.

On July 7th, EU-PolarNet 2 held a webinar on “How to apply for an EU-PolarNet 2 Service Contract”. The webinar detailed the expectations on the applications, the definition of EU-PolarNet 2 Service Contracts, as well as the application guidelines. A recording of the webinar is available on the project [YouTube channel](#).

The guidelines for preparing an offer for the Call for Services are available on [eu-polarnet.eu/call](http://eu-polarnet.eu/call) webpage.

EU-PolarNet 2

## Strengthen international and inter-agency cooperation

The objective of EU-PolarNet 2 Task 1.3 (Strengthen international and inter-agency cooperation) is to identify areas of common interest and to develop stronger linkages between the European Polar research community, and relevant international partners and programmes. Internal planning meetings took place to explore how Europe can best engage and strengthen links with its valued partners. This included suggestions such as putting effort into running a series of dedicated workshops that bring together the main actors, working through the main international organisations such as IASC, IASSA and SCAR, or requesting input from the Arctic Council Members. The advantages/disadvantages of grouping countries together, such as North America (US and Canada), Asia (China, Japan Korea etc), or focusing on more bilateral discussion such as EU-US, EU-Russia, EU-Japan etc have also been discussed. It is still early days, and these and other avenues will be explored further in the next reporting period.

UK Research and Innovation - British Antarctic Survey

## The Swiss Polar Institute selected as Research Institution of National Significance

The Swiss Polar Institute (SPI) has recently been selected as a “Research institution of national importance” for the period 2021-2024. This new status and additional funding by the Swiss Confederation will raise SPI to a new level to support and facilitate access of Swiss researchers to international infrastructure in Polar Regions but



*Antarctic expedition (credits: ©Preben Van Overmeiren, all rights reserved)*

also to enhance the visibility and relevance of polar research in Switzerland.

On February 1st 2021 the SPI opened the call for proposals for a new and ambitious programme, the SPI Flagship Initiative. The SPI Flagship Initiatives programme aims to enable Swiss-led multi-annual and multi-disciplinary research programmes in polar or remote high-altitude regions. The funding will be focused on field campaigns (logistics, safety, etc.), data management, outreach, and programme coordination, thus providing temporary infrastructure for a Swiss-led polar research programme.

Further information:

SPI Flagship Initiatives: [www.swisspolar.ch/spi-funding-instruments/spi-flagship-initiatives](http://www.swisspolar.ch/spi-funding-instruments/spi-flagship-initiatives)

SPI online event “New momentum for Swiss polar science” on the 26th May 2021:

<https://swisspolar.ch/event/new-momentum-for-swiss-polarscience/>

Swiss Polar Institute

## The new Arctowski Polish Antarctic Station is being built

The Arctowski Polish Antarctic Station (King George Island, South Shetland Archipelago) has been operating continuously since 1977, conducting interdisciplinary and international research throughout the years. The facility gained financial support from the Polish Ministry of Education and Science, and in the current season (2020/2021) the project of



*Model of the projected new Arctowski Polish Antarctic Station (credits: Pracownia Kuryłowicz & Associates)*

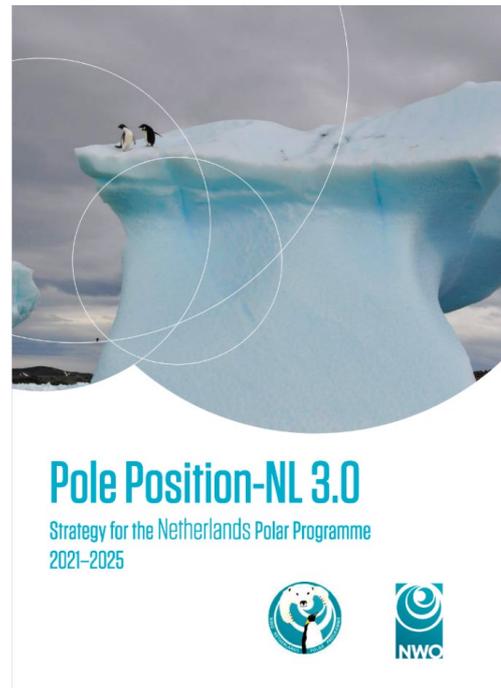
Station's modernisation has been launched successfully. A geodetic survey for the new infrastructure location and environmental impact assessment of the investment was carried out by the expedition members returning to Poland during Easter. Machinery and construction materials for the building were delivered as well.

The implemented modernisation project (Pracownia Kuryłowicz & Associates) focuses on as minimal environmental impact as possible: energy system based on photovoltaic panels, a dedicated sewage treatment plant, building elevated 3 meters over the landscape on a steel lattice substructure, allowing water, wind, and snow to flow freely underneath, etc. The new infrastructure should be ready in 2024.

Centre for Polar Studies of the University of Silesia

## New strategy for the Netherlands Polar Programme

PolePosition-NL 3.0 is the new strategy for the Netherlands Polar Programme (NPP), the long-term funding programme for polar research in the Netherlands. The strategy outlines opportunities for thematic rounds, strategic priorities and optimal use of our own polar infrastructure, and that of our partners in Germany and the UK. With these plans, Dutch polar science can contribute to our knowledge of the vulnerable polar regions and advise government on the implementation and development of its polar policy. More attention will be paid to strengthening the connection between polar science, policy and NWO.



*Pole Position-NL 3.0 Strategy for the Netherlands Polar Programme 2021-2025 (credits: Netherlands Polar Programme)*

Further information:

Pole Position-NL3.0: <https://www.nwo.nl/en/researchprogrammes/netherlands-polar-programme/poleposition-nl-30>

Netherlands Polar Programme

### 3<sup>rd</sup> National Call for Polar Research in Bulgaria

The third National Call for Polar Research Projects opened in May 2021. Seven applications were received and evaluated by a commission of scientists. All were accepted. The research topics are fresh water hydrobiology (2), the complex geology of Bernard Point (1), human medicine (2), geophysics (1) and biological monitoring (1). The



*Scientific work at the Bulgarian Base's aquatory, 2020 (credits: Bulgarian Antarctic Institute)*

projects are two-year long, with exception of one and will be logistically supported by the Bulgarian Antarctic Institute. The plans are for the scientists to be at the Bulgarian Base St. Kliment Ohridski from the mid January 2022, depending on the evolution of the pandemics-related restrictions.

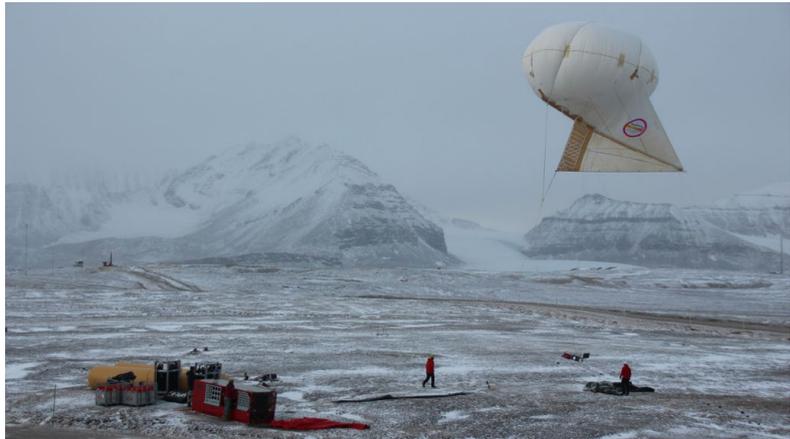
Further information:

Webpage: <http://www.polarcenter-bg.com/10501086108510821091108810891080-2021.html>

Bulgarian Antarctic Institute

## Launch of Swiss polar programmes

In 2021, the Swiss Polar Institute opened a call for the submission of the first Swiss polar Flagship programmes. These ambitious multi-annual programmes will combine science and technology projects from different disciplines and different groups/institutions in Switzerland around a polar or remote high altitude focus region.



*SPI Flagship Initiatives (credits: © 2021 Matthias Buschmann, all rights reserved)*

The funding will support field campaigns (logistics, safety, etc.), data management, outreach and programme coordination, thus providing temporary infrastructure for a Swiss-led polar or remote high-altitude research programme. In order to maximise the programmes' impact, international collaboration and incorporation of their data into international initiatives and platforms will be at the core of the Flagship programmes.

The evaluation of the future Flagships is ongoing and the result will be made public in December 2021. The programmes will start their work in 2022.

Further information:

Webpage: <https://swisspolar.ch/spi-funding-instruments/spi-flagship-initiatives/>

Swiss Polar Institute

## The International Arctic Hub

The International Arctic Hub (Arctic Hub) is a secretariat established by the governments of Greenland and Denmark in 2020. The secretariat's purpose is to enhance interdisciplinary international cooperation related to Arctic research, education and innovation in Greenland. IAH is financed by both Denmark (DKK 3 million) and Greenland (DKK 0.75 million) via the Finance Act.

The Arctic Hub will be an important link in building networks and partnerships between local, national, and international researchers.

Furthermore, its intention is to strengthen communication between national and international research and education and Greenlandic citizens, industry, political decision-makers and stakeholders and contribute to evidence-based sustainable development in Greenlandic communities.

The secretariat is located within the facilities of the Greenland Institute of Natural Resources in Nuuk. As of November 1st 2020 Anna-Sofie Skjervedal took up the position as head of secretariat.

Further information:

Webpage: <https://naalakkersuisut.gl/en/Naalakkersuisut/Departments/IKTIN/International-Arktisk-Hub>



*Arctic Hub logo (credits: International Arctic Hub)*

Danish Agency for Science and Higher Education

## The National Centre for Climate Research in Denmark

National Centre for Climate Research (NCKF) has been established in 2020 to support green transition and climate adaptation in the Kingdom of Denmark and let Denmark take a leading position within climate science.



NCKF performs research in the most critical areas, collects

*Field surveys in the Arctic, NCKF (credits: Steffen M. Olsen, Danish Meteorological Institute)*

knowledge and bridges climate research across the Danish Kingdom through collaborations across universities, knowledge institutions, authorities and decision makers – also international collaborations.

On the Arctic areas specifically:

- NCKF monitors, analyses and predicts the balance of the ice caps and the historical development, since this is essential to the level of the oceans.
- NCKF has a close focus on the effect of global warming on the ice around Greenland and in the Arctic Ocean – through remote sensing, observations and models, climate time series for sea ice captured from satellite.

Danish Meteorological Institute

## The Turkish Academy of Sciences Young Scientists Award Programme Polar Studies Prize

“TÜBA AWARDS” consisting of International Academy Prizes, Young Scientists Award Programme (GEBİP) and University Textbooks Award Programme given by Turkish Academy of Sciences (TÜBA) under the auspices of the Presidency, have been awarded.



*President Recep Tayyip Erdogan and Minister of Industry and Technology Mustafa Varank handed Award (credits: Turkish Academy of Science)*

This year, TÜBA-GEBİP Prize

winners included 4 young scientists with high achievements from 4 different universities and institutions winning the “TÜBA-GEBİP Polar Studies Prize” for the “Antarctic Scientific Research and Science Base Project”, identified as a strategic and national priority field. In the field of Polar Studies, Assoc. Prof. Burcu Ozsoy, Director of TÜBİTAK MAM Polar Research Institute and Faculty Member of Istanbul Technical University Maritime Faculty, was awarded the TÜBA GEBİP Prize for her high achievements. All the prizes were handed to winners by the President of Turkey Recep Tayyip Erdogan in a ceremony in the Presidential Complex on January 28, 2021.

Further information:

Webpage: <https://kare.mam.tubitak.gov.tr/en/news/tubitak-mam-gets-2020-tuba-gebip-prize>

Webpage: <http://tuba.gov.tr/tr/haberler/akademiden-haberler/2020-tuba-odulleri-sahiplerini-buldu>

TÜBİTAK Polar Research Institute

## To foster Polar research, the University of Lisbon creates the College on Polar and Extreme Environments

Framed within the initiative of the University of Lisbon to promote research excellency and interdisciplinary cooperation among its different schools, the proposal for the creation of the College on Polar and Extreme Environments (POLAR2E) has been approved in 2020, with its regulations implemented in June 2021. POLAR2E aims



at creating synergies between research teams of ULisboa in areas such as the cryosphere, climate modelling, ecology, remote sensing, social sciences, astrobiology, engineering and aerospace technologies, linking them to other research domains in the university. Currently POLAR2E is a collaboration between IGOT – the Institute of Geography and Spatial Planning, ISCSP – Institute of Social and Political Sciences, IST – The Instituto Superior Técnico and FCUL – The Faculty of Sciences, involving several research centres and laboratories.

The specific objectives of Polar2E are:

- Promoting scientific and technological synergies, maximising sharing of resources and logistics.
- Consolidating the critical mass on Polar sciences, Planetary sciences and Astrobiology, enlarging it to other schools of ULisboa.
- Consolidating the international relevance of ULisboa, by increasing its scientific impact and attracting new funding and partnerships.
- Foster new international partnerships in post-graduate teaching, research and technology.

Institute of Geography and Spatial Planning, IGOT – University of Lisbon

## World Press Photo Award for AWI Photographer

Caught in the glare of Polarstern's spotlights, a curious mother polar bear and her cub explore the MOSAiC ice camp – with this image Esther Horvath, a photographer and photo editor at the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI), won the World Press Photo Award for an individual



*Polar bear mom and cub visit the ice floe (credits: Esther Horvath, Alfred-Wegener-Institut)*

picture in the category "Environment", as the World Press Photo Foundation announced on the evening of 16 April.

"For me as a photographer, winning a World Press Award is almost like taking home the Oscar in the film industry," says Esther Horvath. "It's always been one of my greatest dreams, and I'm delighted that I won it for my photographic coverage of the MOSAiC expedition."

Further information:

Webpage: <https://www.awi.de/en/about-us/service/press/single-view/world-press-photo-award-for-awi-photographer.html>

Alfred Wegener Institute

# Insights into the EU Polar Cluster

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## News from the EU Polar Cluster

A lot of work has been done in the EU Polar Cluster in the last year. The website has been updated with coverage on all projects. A new task group on policy advice has been implemented. Collaborative (cross-project and cross-task group) events included Arctic Frontiers 2021, Arctic Science Summit Week 2021, COP26, and input to the ESA Polar Science Week. The new projects Arctic PASSION and CRiceS have been added to the EU Polar Cluster. The first of the Cluster newsletters was published in September. The Newsletters will be quarterly updates from the Task Groups, links to the newsletters of member projects, and focus pieces on a few projects - for the first edition the two new projects, and those that just ended - APPLICATE and KEPLER, have been highlighted.



*EU Polar Cluster Logo (credits: EU Polar Cluster)*

Further information:

EU Polar Cluster website: [www.polarcluster.eu](http://www.polarcluster.eu)

UK Research and Innovation - British Antarctic Survey

## FACE-IT: The Future of Arctic Coastal Ecosystems - Identifying Transitions in fjord systems and adjacent coastal areas

Glacier fronts and sea ice are hotspots of biodiversity. Their retreat poses a threat to the function of Arctic coastal ecosystems and thus to the livelihoods of local and Indigenous communities. The overarching goal of FACE-IT is to enable adaptive co-management of Arctic fjord social-ecological systems in the face of rapid changes in the cryosphere and biodiversity. In



*Glacier fronts – hotspots of biodiversity (credits: Geir Wing Gabrielsen)*

In summer 2021, FACE-IT has conducted several parallel field campaigns for a comparative analysis of fjord systems under different degrees of cryosphere loss.

Further information:

Webpage: <https://www.face-it-project.eu/>

EU Polar Cluster

## PROTECT

PROTECT is a H2020 research project aiming at better anticipating the future evolution of the land-based cryosphere and related impact to sea level. A key feature of the project is the stakeholder's involvement in the research design to make sure the produced projections of sea level rise meet their needs.



*credits: Anne Chapuis*

New state of the art projections of sea level rise were published on 6th May 2021 in Nature: Projected land ice contributions to 21st century sea level rise.

Further information:

Webpage: <https://protect-slr.eu/>

EU Polar Cluster

## Arctic PASSION

The EU Polar Cluster is happy to welcome Arctic PASSION as a new project in the Cluster. Arctic PASSION stands for ‘Pan-Arctic observing System of Systems: Implementing Observations for societal Needs’. The project is coordinated by AWI and has 35 partners from 17 countries. It aims



# ARCTIC PASSION

Pan-Arctic Observing  
System of Systems:  
Implementing Observations  
for Societal Needs

to enhance integration of international environmental observing systems for the Arctic. The consortium will put efforts to tailor the observation systems to match better with the needs of diverse user groups, which range from the local people and academia to industry and decision-makers.

Further information:

Webpage: <https://arcticpassion.eu/>

EU Polar Cluster

# Conference highlights

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## Arctic Science Summit Week 2021

With over 1400 participants, the Arctic Science Summit Week 2021 took place online from 19 to 26 March 2021. The conference included 5 days of business and community meetings and 3 days of science conference with 82 science sessions, 5 keynote lectures and two IASC medal lectures. A total of 168h



of video were recorded during the science sessions. The event was organised by the Portuguese Science and Technology Foundation with support from the Agency Ciência Viva and the University of Lisbon College on Polar and Extreme Environments, with IGOT, a partner at EU-PolarNet 2 playing a key role.

Co-creating Arctic Research together with Indigenous Rightsholders was the topic of a workshop co-organised by EU-PolarNet 2 at ASSW2021. In this workshop, the participants shared experiences and discussed how to improve the co-production of knowledge between researchers and Indigenous rights holders. The identified key ingredients are collaboration in all parts of the research process, working on new methodologies and decolonisation, reciprocity in relationships, allocation of sufficient time and funding, and capacity building (e.g., through the support of Indigenous PhDs).

Institute of Geography and Spatial Planning, IGOT – University of Lisbon

## All-Atlantic2021 side event on Polar Research

On Wednesday, 2nd June 2021, EU-PolarNet 2 and the European Polar Board held a virtual meeting side event on Polar Research “Networking from Pole to Pole: Facilitating Access for Research and Infrastructure”, as part of the All-Atlantic2021 – All-Atlantic R&I for a Sustainable Ocean:



Ministerial High-Level & Stakeholders Conference. The side event started with All-Atlantic partners from Brazil, South Africa, Canada and Europe introducing their Polar Research Programmes, followed by best practise examples for cross-border access to infrastructures and sharing of logistics. 138 participants joined the event to follow the presentations and the discussion on how we can better cooperate in Polar Research (Arctic and Antarctic/Southern Ocean) and infrastructures.

EU-PolarNet 2 has also contributed with the first polar pledge to the All-Atlantic pledging campaign to better collaborate in infrastructure access for a better understating of the Atlantic polar regions.

A recording of the side event is now available on the EU-PolarNet YouTube channel.

Further information:

All-Atlantic pledging campaign: <https://allatlanticocean.com/allatlanticpledge>

YouTube channel: [https://www.youtube.com/watch?v=z\\_DdQAGqztQ](https://www.youtube.com/watch?v=z_DdQAGqztQ)

EU-PolarNet 2

## ICASS X Panel on Co-creation of knowledge and co-design in Arctic research projects

A discussion panel on Co-creation of knowledge and co-design in Arctic research projects: rethinking calls, seed money and evaluation criteria of funding organisations, was held on the 19th June 2021 within the International



Conference on Arctic Social Sciences (ICASS X). The session had 30 participants and was moderated by Gunn-Britt Retter, with the contribution of eight panellists. Equity-based research collaboration between Indigenous rights holders and Arctic researchers from the natural sciences, social sciences and humanities has been intensely debated. As a result, ethics and research principles have been developed, but extensive implementation is still lacking. Funding organisations play a crucial role in steering Arctic research into an inclusive direction through setting the terms for the implementation of co-creation and co-design principles in Arctic research. The session discussed how funding agencies can better support the co-creation of Arctic research projects by asking these questions: How can formulation of calls foster co-creation? What are suitable criteria for evaluating this approach in applications? Do we need specific means to support this process, e.g., providing seed-funding for jointly designed applications?

EU-PolarNet 2

## First European Polar Science Week report

The report of the first European Polar Science week 2020, organised by the European Space Agency the European Commission and EU-PolarNet has been released. EU-PolarNet and the EU Polar Cluster projects actively participated in this event. This report is the result of a process involving many players identifying key research and knowledge gaps, feeding into the European Commission's policy making. The launch of the new EU-PolarNet 2 project during the conference showed the willingness of the EU to sustain these coordination efforts.

Further information:

Report: <https://lnkd.in/ea5i-59>



EU-PolarNet 2