

PolarPredictNews

Newsletter #03

Aug. 2017



Photo: Alfred Wegener Institute / J. Müller

Dear Colleagues,

The last few months have been a very busy period, as can be seen from this third issue of PolarPredictionNews. For example, YOPP has been officially launched at WMO on 15 May 2017; important planning meetings have taken place, including the eighth meeting of the PPP Steering Group as well as the second YOPP-Southern Hemisphere meeting; major international projects have started that will make significant contributions to YOPP (e.g. the Horizon2020 project APPLICATE); a call for applications for the second Polar Prediction School, which will close on 15 September, has been issued; a first version of the YOPP Data Portal has come online; and the first YOPP modelling datasets are now available.

I invite everyone to find out more details on the progress with YOPP in this latest issue of the PolarPredictNews – and I hope that you will enjoy the new design.

With the start of the first YOPP Special Observing Period (SOP) just a few months away, the need to engaging the community is becoming ever more important. Therefore, we have decided to hold monthly YOPP online meetings, starting in September 2017. All dates will be communicated through www.polarprediction.net and our mailing list polarprediction@climate-cryosphere.org. We are looking forward to meeting you online.

Best wishes,
Thomas Jung

The Year of Polar Prediction (YOPP) is a major international activity that has been initiated by World Meteorological Organization's World Weather Research Programme (WWRP) as a key component of the Polar Prediction Project (PPP). It will take place from mid-2017 to mid-2019. The overarching goal of YOPP is to significantly advance our environmental prediction capabilities for the polar regions and beyond. As an internationally coordinated period of intensive observing, modelling, prediction, verification, user-engagement, and education activities which involves various stakeholders, the YOPP contributes to the knowledge base needed to manage the opportunities and risks that come with polar climate change.

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01 YOPP Launch | On 15 May, the World Meteorological Organization (WMO) officially launched the Year of Polar Prediction (YOPP) in Geneva, Switzerland. From mid-2017 to mid-2019, scientists and operational forecasting centers from more than 20 different nations aim to close gaps in polar forecasting capacity in order to improve future environmental safety in the Arctic and Antarctic. Enhanced forecasts in polar regions are also expected to result in better weather prediction at lower latitudes where most people live.

Initiated by WMO as a response to rapid polar climate change and related transformation of societal and economic activities at the poles, the Year of Polar Prediction includes Special Observing Periods (see **03**) when routine observations will be intensified, for example by increased weather balloon launches from meteorological stations or buoy deployments from research vessels to measure atmospheric and oceanographic conditions, respectively. Coordinated aircraft campaigns, satellite observations, and newly installed automatic weather stations

will provide novel insights into the processes governing the Arctic and Antarctic climate and their impacts on global weather systems.

The WMO's Information System will house the data collected across the initiative, making it publicly available for operational forecasting centres to feed into their forecasting systems in real-time. Social scientists will then assess how better polar forecasts affect socio-economic decision-making, while representatives of transport, shipping, and tourism sectors will provide insights on the practical needs of their communities.

On the occasion of the launch, the International Coordination Office has prepared various information materials available at www.polarprediction.net/yopp-media-kit/ including the YOPP Explorer (see **06**) which provides an overview of ongoing YOPP activities.

Two new videos available via the [YOPP YouTube Channel](#) introduce the topic of polar prediction to the public: a video animation jointly produced by ICO, WMO and AWI explains the Year of Polar Prediction in five minutes. In a second video experts from operational centres and research institutes personally explain what the Year of Polar Prediction means to them.



What is YOPP: Video animation released at YOPP launch on 15 May ([video](#) on YOPP YouTube channel)

02 Italian YOPP Launch Event | In order to enhance Italian contributions to YOPP, the Italian Research Council CNR organized a national YOPP launch event on 19 June at its headquarters in Rome. The meeting aimed at better coordination of

Italian-led YOPP activities. More than 40 participants of the meeting entitled „Italian Contribution to the Year of Polar Prediction (YOPP): a Day of Presentation and Discussion“ agreed on further stimulating Italian contributions. The Italian Foreign Ministry and the Meteorological Service are

supporting the goals of Italian YOPP-endorsed activities during the YOPP Special Observing Periods including making use of the GTS infrastructure to make the resulting data available to the public.

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03 Special Observing Periods – Update | In January, WWRP and ICO sent out official WMO letters to national weather services and stakeholders to inform them on the Special Observing Periods (SOP) that will take place during the core phase of YOPP.

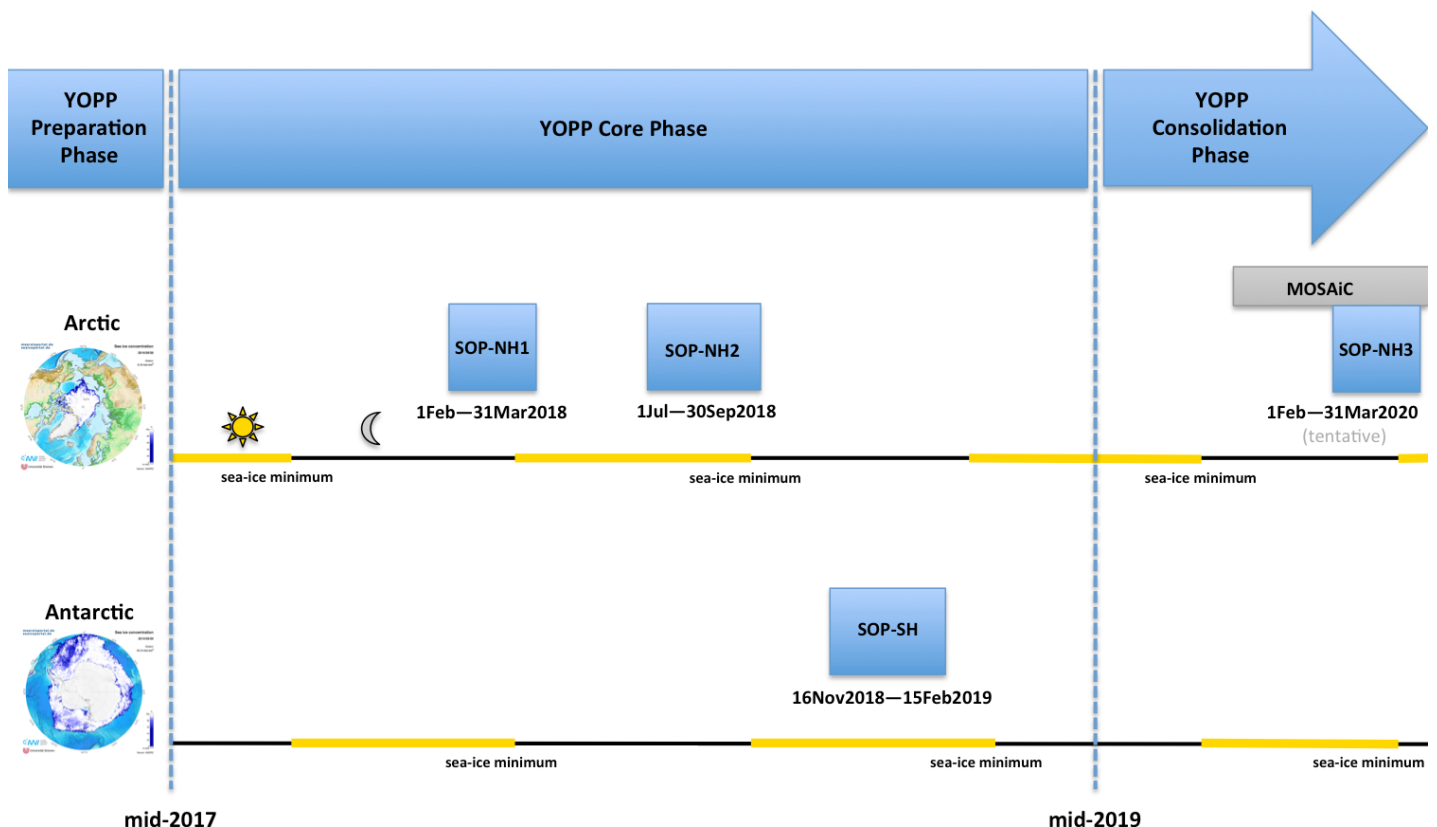
Three main Special Observing Periods are planned (see also figure below):

- **1 Feb – 31 Mar 2018** in the Arctic,
- **1 Jul – 30 Sep 2018** in the Arctic and
- **16 Nov 2018 – 15 Feb 2019** in the Antarctic.

The purpose of the SOPs is to enhance routine observations to close gaps in the conventional polar observing system for an extended period of time (i.e., several weeks). This allows for subsequent forecasting system experiments aimed at opti-

mizing observing systems in polar regions and providing insight into the impact of better polar observations on forecast skill in lower latitudes.

Responses by national operational centers and stakeholders to WMO and ICO have been overwhelmingly positive. More than 20 national weather services and 16 stakeholders responded to the WMO letter to support YOPP SOPs by various activities. In total, about 60 stations consider to launch extra radiosondes during the Arctic and Antarctic SOPs. In addition, an number of barometric buoys are planned to be deployed in the Arctic prior to the summer SOP in the Northern Hemisphere. Further, various organizations such as the Scientific Committee of Antarctic Research (SCAR) and the International Arctic Science Committee (IASC) agreed to provide full support to YOPP when it comes to outreach and communication activities. An interactive map comprising all committed and planned extra observations during SOPs is currently being developed by ICO and will be made available over the coming weeks.



When is YOPP: YOPP Special Observing Periods (SOPs) in the Arctic and Antarctic.

04 YOPP Institutional Endorsement | YOPP endorsement is now also available for institutions whose activities contribute to the goals of the Year of Polar Prediction. Since October 2015,



57 projects aiming at improving polar prediction skills by various scientific approaches have been endorsed by YOPP. We now open the institutional YOPP endorsement and invite research institutes and operational forecasting centers whose activities contribute to the success of YOPP to request endorsement. Institutional endorsement differs from the hitherto available YOPP endorsement for projects as it addresses mostly in-kind contributions to improving polar predictive skill rather than individual academic projects or programmes often sponsored through third party funding. With the institutional endorsement we provide the possibility for organizations such as operational weather forecasting centres and academic institutions to link with the Year of Polar Prediction.

To submit a request for institutional YOPP endorsement, go to <http://apps3.awi.de/YPP/> and register at <http://apps3.awi.de/YPP/register>. Once logged-in to the site, you will be able to choose between **institutional** or **project endorsement** to fill out the respective form. Entering your information requested includes a short summary (max. 250 words) and a detailed description (max. 1000 words) of your institution or project focusing on details of how your institutional or project activity links to YOPP. After having received the submission, the ICO forwards your request to two members of the PPP Steering Group who review the submission with regard to the relevance for YOPP and provide their recommendation regarding endorsement.

For any question, please contact the ICO at office@polarprediction.net. More information can also be found [here](#).

05 Polar Prediction School | In cooperation with the EU Horizon 2020-funded [APPLICATE](#) project (see also under **12**) and the [Association of Polar Early Career Scientists](#) (APECS), PPP is organizing the second **Polar Prediction School 2018** on weather and climate prediction in the polar regions from **17–27 April 2018** at Abisko Scientific Research Station in Sweden.

This school will include a combination of polar weather and climate theory lectures with exercises on modelling and field meteorology techniques as well as soft skill training. Each of



Hands-on: Students setting up a weather mast on a frozen lake near Abisko Research Station as part of the first Polar Prediction School (Photo: Jonathan Day)

these components forms a crucial pillar of the prediction problem, and the motivation for combining these is to provide participants with a complete overview of the components required to understand and predict polar weather.

The Polar Prediction School 2018 will be open to thirty early career researchers (focus on advanced graduate students, PhD students, and postdoctoral researchers) from around the world. An international set of instructors will be teaching the sessions. As during the [first Polar Prediction School](#) 2016, classes will be held at the Swedish Abisko Scientific Research Station where instructional facilities are conveniently located in an environment well suited to Arctic observations.

More information including details how to apply can be found on the [Polar Prediction School 2018 website](#). Application deadline is **15 September 2017**.

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06 YOPP Explorer | The newly developed YOPP Explorer available from www.polarprediction.net is a web application jointly developed by WMO and ICO. Two maps of the Arctic and Antarctic provide a quick visual overview on the projects and field activities endorsed by YOPP during its

core phase. Detailed time line searches are exploitable for each map as well as further information on each of the activities. Different categories such as observations, modelling/verification, socio-economic and interdisciplinary research, as well as educational activities allow for a view at a glance. Also included are national contributions of extra routine measurements during Special Observing Periods. The YOPP Explorer is based on a living document that will be kept up-to-date by ICO on a regular basis. For any questions or additions to the YOPP Explorer, the ICO can be contacted at office@polarprediction.net.

07 YOPP Data Portal | A YOPP Data Portal currently under development and to be accessed at yopp.met.no will provide metadata and links to respective data sets generated during the Year of Polar Prediction. As a legacy for YOPP, this data portal is going to take into account the various requirements of end-users working with the YOPP data collection. As the majority of data collected during observational campaigns as well as by



modelling and verification efforts will be stored at national data centres and portals, the YOPP Data Portal will be particularly developed in close collaboration with those data centres which provide sufficient interoperability and work with the so-called FAIR Guideline Principles. Following these guidelines the data will be Findable, Accessible, Interoperable, and Re-usable. YOPP-endorsed projects and programmes will play a key role for the envisaged data management activities.

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08 PPP-SG New Members & Departures | The PPP Steering Group welcomes three new members: Vasily Smolyanitsky, Bob Grumbine and Jørn Kristiansen recently joined the PPP SG in replacement for Alexander Makshtas, Christopher Fairall, and Trond Iversen. We are grateful to Alexander, Chris and Trond for their outstanding contributions to PPP and YOPP and are looking forward to continue the good cooperation with them also

beyond their official PPP SG membership.

New to PPP SG are:

Vasily Smolyanitsky is the head of the laboratory of sea ice climate manuals, at the Arctic and Antarctic Research Institute (AARI), St. Petersburg, Russia. His expertise includes sea-ice and iceberg climatology, sea-ice information systems, and operational services. Vasily Smolyanitsky chairs the WMO/IOC JCOMM Expert Group on Sea Ice (ETSI) and is the national coordinator of the WMO GCW CryoNet and APRCC-network RA-II node currently under implementation.



Vasily Smolyanitsky
(Photo: private)

Robert Grumbine is a polar oceanographer working for NOAA/National Weather Service, Environmental Modeling Center, College Park, Maryland, USA. He works on both observing and modeling of the oceans and sea ice, for both the Arctic and Antarctic, including inland waters such as the Great



Bob Grumbine
(Photo: private)

Lakes. Bob also acts as the US lead for the WMO Data Quality Monitoring System Task Team.

Jørn Kristiansen is Director of the Development Centre for Weather Forecasting at the Norwegian Meteorological Institute (MET Norway). He is involved in the development and operational running of the high-resolution forecast model Arome-Arctic. This includes the optimization of observational data usage in polar areas, improvements in the representation of physics, as well as novel post-processing of the model output. His future work involves the investigation of dyna-



Jørn Kristiansen
(Photo: Kamilla Pedersen/MET Norway)

mical and physical processes within a coupled model system. Being in charge of the web portal yr.no, Jørn has an end-to-end responsibility for the operational MET Norway weather forecasts.

09 YOPP Meetings & Reports | From 27 February to 1 March, a **YOPP Open Session** was held in conjunction with the **8th meeting of the PPP Steering Group (PPP SG#8)** at the National Centers for Environmental Prediction (NCEP/NOAA) in College Park, Maryland, USA. During the YOPP Open Session, members of PPP SG and experts on polar prediction provided an overview about the current level of YOPP planning and encouraged discussion with the US community interested in YOPP. During the subsequent PPP SG#8, the current state and activities of the YOPP Task Teams during the YOPP Core Phase were discussed and further planned. The full report on the Maryland meetings is available [here](#).

The 3rd meeting of the **PPP Societal and Economic Research and Applications subcommittee (PPP-SERA)** was held in Fairbanks, Alaska, USA from 5–9 April. PPP-SERA members discussed various issues regarding YOPP and social-science research objectives for PPP but devoted most of their time to finalizing a foundational document for the subcommittee's work during YOPP. This document which is entitled „Navigating Weather, Water, Ice and Climate Information for Safe Polar Mobilities“ outlines user requirements for polar forecasting products and services from a social-science perspective. The document is currently being processed for publication and will be officially released via the Polar Prediction website. The PPP-SERA meeting report can be downloaded [here](#).

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Beautiful Arctic: Northern lights during the April PPP-SERA meeting in Fairbanks, Alaska (Photo: Winfried Hoke/AWI)

In conjunction with the 12th Workshop on Antarctic Meteorology and Climate (AMC workshop) and the 12th Session of the CLIVAR/CliC/SCAR Southern Ocean Region Panel (SORP), the second **YOPP in the Southern Hemisphere (YOPP-SH#2)** meeting was held from 28–29 June at NCAR, Boulder, Colorado, USA. Objectives of this meeting were to elaborate national contributions to the YOPP SOP in the austral summer period scheduled from 16 November 2018 to 15 February 2019. Confirmed and planned observations both at Antarctic stations and during various field campaigns, as well as modeling efforts such as the Antarctic Mesoscale Prediction System were discussed during the meeting. As a second key goal of YOPP-SH#2, in a joint session with representatives of the Southern Ocean Regional Panel (SORP), Southern Ocean oceanographic observations during the Antarctic YOPP-SOP, as well as the Southern Ocean data that are to contribute to the YOPP data portal were discussed. See the agenda and presentations for YOPP-SH#2 [here](#).

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For better overview: YOPP-SH#2 workshop participants added their national contributions on post-its to an Antarctic map (Photo: Kirstin Werner/AWI)

10 SALIENSEAS – EU Funding Secured | Funding from the joint-planning EU initiative ERA4CS has been confirmed to the YOPP-endorsed project „Enhancing the Saliency of Climate Services for Marine Mobility Sectors in European Arctic Seas“ (**SALIENSEAS**) which is led by PPP-SERA co-chair Machiel Lamers based at the University of Wageningen, the Netherlands. In SALIENSEAS, a team of social and natural scientists, met-ocean service

personnel, and end-users, will jointly develop climate Arctic forecast products tailored to key social, environmental and economic needs. Based on a thorough understanding of the current mobility patterns and challenges, as well as the uptake and need for climate services in several mobile Arctic ocean end-user groups, a range of demonstration services will be co-defined and co-produced together with these stakeholders. SALIENSEAS brings together a strong consortium of international research institutes, whereby high-level experts on Arctic socio-economic sectors and governance processes, weather and climate prediction, and data dissemination will work in line with stakeholder representatives.

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11 Start of YOPP-endorsed Field Campaigns

| The first two campaigns of the YOPP-endorsed German Transregional Collaborative Research Centre “**Arctic Amplification**” or “**(AC)³**” took place in May and June. The **ACLOUD** campaign (“**Arctic C**loud **O**bservations **U**sing airborne measurements during polar **D**ay”) studied physical processes in, above, and below Arctic clouds to better understand the clouds’ role for the amplified Arctic climate changes. Onboard the research aircraft Polar 5 and 6, operated by the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), airborne observations were closely coordinated from 22 May to 28 June with surface-based observations at AWIPEV station in Ny Ålesund, Svalbard, and ship-and ice-floe-based measurements during the accompanying **(AC)³ PASCAL** campaign. Onboard RV Polarstern, scientists from the universities of Leipzig, Bremen and Cologne, from AWI, and from the Leibniz Institute for Tropospheric Research investigated the “**Physical feedback of Arctic Polar Boundary Layer, Sea ice, Cloud And Aerosol**” in the central Arctic. PI of **(AC)³** Manfred Wendisch and his team are “*excited about the promising results of ACLOUD and PASCAL. Now our PhD students and PostDoc researchers have plenty of nice data to work with in order to clarify the role*



Arctic Cloudiness: Airborne observation during the ACLOUD campaign by research aircraft Polar 5 and 6 (Photo: Raimund Waltenberg)

of clouds in Arctic Amplification.” Read about the campaigns [here](#) and in an [Eos article](#). **Contact:** Manfred Wendisch m.wendisch@uni-leipzig.de

The icebreaker RV Araon operated by the Korea Polar Research Institute (KOPRI) started her travels to the Chukchi, East Siberian and Beaufort Seas on 5 August. One of the several projects involved in the Arctic expedition is the YOPP-endorsed project “The Korea Polar Prediction System for Climate Change and Weather Disaster” (**KPOPS**). **KPOPS** Co-PI Joo-Hong Kim from KOPRI (joo hong.kim@kopri.re.kr) leads the expedition’s Arctic meteorological observations of surface and upper-air meteorological variables (including radiosondes). **KPOPS** in particular aims at improving „predictability of Arctic-mid-latitude climate change and weather disasters by enhancing Arctic atmospheric observations and climate and weather forecast models”. More on the project can be found in the [YOPP Explorer](#) and [here](#).

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Radiosonde launched at RV ARAON (Photo: Joo-Hong Kim)

12 Horizon2020 Kick-Off Meetings | The projects APPLICATE, Blue-Action, INTAROS, ICE-ARC, INTERACT, EU-PolarNet and the newly funded Nunataryuk are all part of a cluster of EU-funded projects with a focus in the Arctic. The new EU-Arctic Cluster (Horizon2020 programme) covers a wide spectrum of topics from both natural and social sciences perspectives to improve our understanding of how the Arctic is changing and what are the expected impacts on the environment and communities living in the region. APPLICATE and Blue-Action are two of the projects in the EU-Arctic cluster that specifically contribute to YOPP.

The YOPP-endorsed project **APPLICATE** (<http://applycate.eu>) officially launched on 8–9 February when delegates from the 16 partner institutions met in Bremerhaven, Germany, to discuss their collaborative efforts to improve climate and weather prediction for the Arctic and the mid-latitudes. The EU-Horizon 2020 project APPLICATE is receiving funding of €8M for four years of



Teaming up: APPLICATE kick-off at Bremerhaven Klimahaus (Photo: Folke Mehrtens/AWI)

Arctic and industrial organisations, Blue-Action will demonstrate new opportunities for growth through tailored climate services. These will give users the information they need to live and work safely and successfully in the rapidly changing regions in and surrounding the Arctic” says project coordinator Steffen M. Olsen.

Contact: Steffen Olsen smo@DMI.dk

13 Polar Prediction Workshop | From 27 to 30 March 2017, the 4th Polar Prediction Workshop was held at the German Maritime Museum (Deutsches Schifffahrtsmuseum) in Bremerhaven, Germany. The Polar Climate Predictability Initiative (WCRP-PCPI), the Polar Prediction Project (WWRP-PPP), the Sea Ice Prediction Network (SIPN), and the Sea Ice Model Intercomparison Project (SIMIP) were pleased to welcome about 80 international sea-ice experts who discussed environmental prediction capabilities in the polar regions on subseasonal to interannual timescales, thereby helping to build a “seamless” polar prediction community.



On the sunny side of Bremerhaven Deich: Participants of the Polar Prediction Workshop 2017 (Photo: Winfried Hoke/AWI)

08 collaborative research with partners from ten
/ European countries as well as from Russia, Ca-
11 nada and the US. “The Kick Off Meeting was an important milestone of the APPLICATE project, as it provided the foundation for effective collaboration in the coming months, both within the consortium and with European and international partners,” said APPLICATE coordinator and PPP SG chair Thomas Jung. Several European partners such as INTAROS, Blue Action, PRIMAVERA, CRESCENDO and EU-PolarNet were invited to this meeting for overview presentations and joint discussions.
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On January 18–20, **Blue-Action** (www.blue-action.eu) had its official kick-off meeting in Berlin, Germany. Led by Steffen Olsen from the Danish Meteorological Institute (DMI) in Copenhagen, Denmark, Blue-Action aims to improve how we describe, model and predict the weather and climate on seasonal to decadal time scales in the Arctic and over the northern hemisphere and brings together experts from 40 organisations in 17 countries on three continents. “Working directly with local communities, businesses operating in the

As in previous years, sea-ice prediction again played a central role, with regard to the compilation of recommendations for the 2017 Sea Ice Outlook season. The workshop also aimed to stimulate discussion about other relevant predictands of the polar weather and climate system in the frame of the Year of Polar Prediction. The workshop started with the Alfred Wegener Lecture entitled “A Decade of Sea Ice Prediction” given by Cecilia Bitz (University of Washington).

14 Two Meetings Targeting Arctic-Mid Latitude Linkages | The international workshop **Arctic Change and Possible Influence on Mid-latitude Climate and Weather** organized by the US CLIVAR Working Group was held from 1–3 February at Georgetown University in Washington, DC, USA. It brought together more than 100 experts from 13 different countries covering the fields of atmosphere, ocean and cryosphere sciences. In order to better understand Arctic to mid-latitude linkages such as the impact of sea ice on mid-latitude atmospheric circulation, workshop participants proposed a list of physical processes and mechanisms that may be important for linking Arctic change to mid-latitude climate and weather.

The second workshop entitled **Understanding the Causes and Consequences of Polar Amplification** was held from 11–16 June at the Aspen Global Change Institute, Colorado, USA.

The workshops resulted in the development of a proposal for a new Coupled Model Intercomparison Project (CMIP). With the new MIP called **Polar Amplification MIP (PA-MIP)** the causes and consequences of polar amplification and its global impacts will be investigated. The PA-MIP proposal is planned to be submitted to the CMIP6 panel for consideration as an endorsed CMIP6 MIP over the coming months.

Contact: Doug Smith, MetOffice doug.smith@metoffice.gov.uk

15 YOPP-endorsed! ACE-SPACE | So far, 57 projects, programme and initiatives have received YOPP endorsement. The YOPP-endorsed project “Study of Preindustrial-like-Aerosol Climate Effects” (ACE-SPACE) is led by the atmospheric physicist Julia Schmale from Paul Scherrer Institute (PSI), Switzerland. From 20 December 2016 to 20 March 2017, Julia joined the Antarctic Circumnavigation Expedition (ACE) on board the RV Akademik Troyshnikov. While aboard, Julia took the time to report on the current state and plans of ACE-SPACE.

Dr. Schmale, what are you going to find out within ACE-SPACE?

J.S.: The project aims at understanding the ae-

rosol-cloud interactions in a preindustrial-like atmosphere. Aerosol-cloud interactions contribute the single largest uncertainty to anthropogenic radiative forcing. While the latest IPCC report suggests our level of understanding is “low”, we know from previous studies that the largest contribution to the uncertainty comes from our poor understanding of aerosol-cloud interactions in pristine conditions. The Southern Ocean is one of the last pristine environments on our planet. ACE allows us to measure aerosol variables continuously around Antarctica for three months. These variables include the aerosols’ concentrations and size, their chemical composition and ability to act as ice or cloud nuclei amongst other. We use this in-situ data to improve processing of satellite observations of e.g., cloud condensation nuclei and cloud droplets. This will allow much wider information coverage both in space and



Around Antarctica in ninety days: Julia Schmale and colleagues from PSI and TROPOS are collecting atmospheric filters onboard the Akademik Troyshnikov. (Photo: Jean-François Lagrand)

time compared to station or ship-based observations. Additionally, we use in-situ and remote sensing data to constrain uncertainties in a global aerosol and climate model.

Who is working with you in the project?

J.S.: ACE-SPACE is headed by the Laboratory of Atmospheric Chemistry at PSI. The Leibniz Institute for Tropospheric Research (TROPOS), Germany, the University of Cranfield, UK, the Hebrew University of Jerusalem, Israel, the University of

Leeds, UK, and the Federal Institute of Technology, Switzerland, are the main partners. Funding comes from Ferring Pharmaceuticals, Switzerland, a private funder who finances the entire ACE expedition which is managed by the newly founded Swiss Polar Institute.

When did ACE-SPACE start and how long will it last?

J.S.: The project started in August 2016 and will end late 2018. Currently, we perform measurements on board the Russian icebreaker Akademik Troyshnikov as we circumnavigate Antarctica. The expedition started in Cape Town, South Africa. We travelled via the Prince Edward, Crozet and Kerguelen Islands to Hobart, Tasmania. On 22 January we left port and are now (2 February) arriving at the Balleney Islands after we have spent half a week near the Mertz Glacier in Antarctica. The expedition will continue to Punta Arenas and from there via South Georgia and the South Sandwich Islands back to Cape Town in March.

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What measurements are you currently carrying out aboard, and how will they help achieving the project's goals?

J.S.: The objective of ACE-SPACE is centered around the measurements we are currently conducting aboard the research vessel. By characterizing the air masses we cross and the varying aerosol populations in terms of their chemical composition and microphysical properties, we aim to improve our understanding of particles activating as cloud droplets or acting as ice nuclei. At the same time, we are interested in the sources of aerosol particles and in particular the contribution of new particle formation events. To investigate the latter, we are measuring the number concentration, size and chemical composition of ions and clusters in the atmosphere.

How does the project contribute to improve polar prediction skills?

J.S.: The representation of clouds over the Southern Ocean in models is highly biased. Mostly, the presence of clouds is underestimated. In the models this leads to an overestimation of absorbed shortwave radiation in the ocean by as much as 30 W/m². This in turn has consequences for the estimation of heat transport towards the poles, so broadly speaking it impacts atmospheric and oceanic dynamics. By helping to improve the representation of clouds in models through enhanced understanding of aerosol-cloud interactions in the Southern Ocean these biases might be reduced.

What else would you like the polar prediction community to know about your project?

J.S.: ACE-SPACE is one out of 22 studies currently being conducted on the research vessel. One of the assets of ACE is the high degree of interdisciplinarity. This opens the door for process studies in addition to compartmental studies. To give just one example, our project focuses on the atmosphere. But together with projects focusing on phytoplankton and krill abundance and their impact on sea surface layer chemistry, we have the opportunity to link observations of trace gases in the surface water with trace gases concentrations observed in the atmosphere and their potential implications for aerosol formation and growth.



Measurements in a box: Julia Schmale and Andrea Baccarini (both PSI) checking the instrument set up for ACE-SPACE in a ship's container. (Photo: Sharif Mirshak)

More on the project can be viewed on the [project blog website](#). All projects during ACE are listed [here](#).

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16 Upcoming Events

05th to 06th October 2017

Airborne Activities in the Arctic: Science and Prospects, Leipzig, Germany.

01st to 3rd November 2017

8th International Workshop on Sea Ice Modelling, Data Assimilation and Verification, Joint Workshop by IICWG, WWRP PPP, WWRP JWGFVR and GOV, Bergen, Norway.

23rd to 25th January 2018

Arctic Frontiers Conference 2018 „The New Arctic in the Global Context“ – YOPP Joint Topic with APPLICATE, MOSAiC, Nansen Legacy, N-ICE2015, GreenEdge and BAYSYS, Tromsø, Norway.

Any upcoming events to be announced to the community? The next issue of PolarPredictNews is expected to be out in October/November. Send your dates and events to office@polarprediction.net

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