

Report from the SCAR Standing Scientific Group –Physical Science (SSG-PS) Business Meeting, Wednesday August 24, 2016, KLCC, Meeting Rooms 406 and 407, Kuala Lumpur, Malaysia.

OPEN BUSINESS MEETING

Dave Bromwich opened the meeting by thanking people for coming along and also to inform people that the officer positions would be up for election in the closed session later in the day. Dave Bromwich will be re-running for the chief officer position and Steve Colwell would be re-running for the secretary position, the position of deputy chief officer is currently vacant. Anyone wishing to be considered for any of the posts was asked to make the meeting aware of this before the start of the closed session.

Verbal reports were given by the following groups:

Expert Group International Partnership in Ice Coring Science (IPICS) – Tas van Ommen

Expert Group on Operational Meteorology in Antarctica (OpMet) - Steve Colwell

Action Group on Snow in Antarctica (SnowAnt) - Martin Schneebeli

Expert Group on GNSS Research and Application for Polar Environment (GRAPE) - Giorgiana De Franceschi

Expert Group on Antarctic Sea-ice Processes and Climate (ASPeCT) - Marilyn Raphael

Expert Group on Ice Sheet Mass Balance and Sea Level (ISMASS) - Frank Pattyn.

Action Group on Sun Earth relationships (SERAnt) - Al Weatherwax

The presentations will be made available on line when available.

A proposal for a new Scientific Research Programme called Radio Sciences Research on AntarctiC AtmospherE (Resource) was put forward which would combine GRAPE and SERAnt. This proposal would be presented formally at the 2018 meeting in Davos.

Highlights of National Research Programs:

Belgium

Organized a symposium in Brussels on the research at the Belgian Princess Elisabeth Station on 30 April 2016, with substantial contributions from both the physical and the geosciences.

Brazil

We have kept an automated module at 84°S, 79.5°W measuring CO₂, sampling air (pumps and filters for micro particles), cosmic rays, plus an AWS.

Canada

Polar Knowledge Canada, which is Canada's lead federal agency to strengthen Canadian leadership in polar science and technology, will convene a workshop in Ottawa in early October to advance development of a Canadian Antarctic Research Program (CARP). Canadian researchers, program managers, and policy analysts who have a current or potential interest in Antarctica and Antarctic science will meet to discuss Canadian Antarctic science capacity and the potential nature and scope of a CARP, and explore additional opportunities to strengthen Canadian Antarctic research activities.

France

CNFRA is the French adhering body to SCAR. CNFRA organizes a meeting every year of all of the French scientific community. In 2016, this meeting lasted 3 days in May with a whole day devoted to austral ocean and atmosphere. Physical science programs were also presented in glaciology and astrophysics.

Germany

German research relevant for the SSG-PS is conducted in numerous activities by the Alfred Wegener Institute (AWI) and by projects funded by the German Research Foundation (DFG) in the frame of the Research Priority Program 1158 “Antarctic Research”. A highlight of the austral season 2015/16 was the Polarstern cruise PS96 (6 December 2015 – 14 February 2016) in the southern Weddell Sea. It was one of the few occasions when a research icebreaker went as far south as the Ronne Ice Shelf and multidisciplinary measurement programs for biology, oceanography, glaciology, geology and meteorology were conducted.

Italy

The Italian Scientific Committee for Antarctic Research (CSNA) of the Italian National Programme for Antarctic Research (PNRA) has identified a series of scientific themes, among which climate, paleoclimate, climate change, atmosphere and ocean are clearly identified. For the next oceanographic cruises, mooring maintenance and redeployment (PNRA maintains since 1994 a network of moorings in the Ross Sea within the MORSea project) and underway measurements of surface temperature and salinity are planned. XBT/XCTD launches and lagrangian (in collaboration with ARGO Italy) measurements will be performed in the Antarctic Circumpolar Current between New Zealand and South Africa to Antarctica. As to hydrology, CTD, LADCP, turbulence profiles as well as biogeochemical measurements will be carried out in the Ross Sea in the framework of the CELEBER and P-ROSE project. For the upper atmosphere and Space Weather the main activities are addressed to the study of the GNSS signal corruption and consequently degradation of communication and navigation systems in order to contribute to the SCAR Horizon Scan (Theme 6). Such activities are supported by two national funded projects (PNRA_14/00133 and PNRA_14/000110). The related infrastructures are located at Antarctic and Arctic and contribute to the SCAR SSG PS through the GRAPE Expert Group.

Korea

The Antarctic research activities from Korea are largely driven by Korea Polar Research Institute (KOPRI). KOPRI has several projects to examine physical sciences of Antarctica. The first is to

examine the cause of the east-west climate change differences through comparisons of in-situ observation data from the King Sejong Antarctic research station at the King George Island of the Antarctic Peninsula and the newly opened Jang Bogo station at Terra Nova Bay in the Ross Sea embayment. Second, KOPRI has been drilling ice cores near the Jang Bogo stations and analyses are underway to find out sea ice cover and atmosphere circulation histories at Terra Nova Bay. Third, KOPRI is monitoring the movement of the ice sheet around the Jang Bogo station such as Drygalski ice tongue by installing monitoring equipment and by analyzing satellite remote sensing data. Finally, in the Amundsen Sea, KOPRI had several expeditions to examine the water mass circulations and their role in the melting of the Pine Island Glacier.

Switzerland

The Swiss Polar Institute is a consortium of Swiss universities - EPFL, the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), ETH Zurich and the University of Bern - and was cofounded with Editions Paulsen. It is devoted to polar research and guided by the following objectives:

Global Challenges. The SPI shall enhance the Swiss scientific, economic and diplomatic contribution to understanding and solving Global Challenges such as climate and environmental changes and management of global resources through cutting-edge science and technology.

Interdisciplinary Science and Technology. The SPI shall bundle Swiss research in polar and other extreme environments (Alpine and Extreme Ecosystems and Landscapes, Lakes, Glaciers and Water Systems, Planets) with cutting edge technological developments such as: space technologies; satellites; remote sensing and data processing; drones; robotics; sensors for environmental monitoring; big-data handling; renewable energy; and health monitoring.

The Swiss Polar Institute will study the Earth's poles and extreme environments. Its first project is ambitious: an international scientific expedition, comprising 55 researchers from 30 countries working on 22 research projects, will circumnavigate Antarctica.

To mark its launch, the SPI is organizing a major project: the Antarctic Circumnavigation Expedition (ACE) will be the first scientific expedition to fully sail around the southernmost continent. The purpose of this expedition, with key logistical support from Ferring Pharmaceuticals, will be to measure and quantify the impact of climate change and pollution in the Southern Ocean.

At the end of December 2016, some 50 researchers from around the world will set off for three months onboard the Akademik Treshnikov, a Russian ship dedicated to scientific research. Twenty-two research projects - submitted by teams from Switzerland, the UK, France, Australia, etc. - were selected for the expedition. The projects range from glaciology to climatology, biology and oceanography.

CLOSED BUSINESS MEETING

Dave Bromwich was elected for a second term as Chief Officer
Deputy Chief Officer position remains unfilled and an online election will be held.

Steve Colwell was re-elected for a second term as Secretary

The financial requests from each of the groups were discussed and approved but may need some slight adjustment before being presented to the Delegates for final approval.

A new Expert Group called Forum for Research into Ice Shelf Processes (FRISP) was proposed by Kenny Matsuoka.

This would look at the processes of the interactions between ice shelves and the ocean, and ice shelves and the atmosphere. It was noted that ice shelves are an Essential Climate Variable (ECV) and the proposal was supported by the ISMASS expert group.

A new Action Group on Tropical Antarctic Teleconnections (TATE) was proposed by Jefferson Simoes, details are below.

Overview

There are very distinct connections between tropical and Antarctic climates, particularly over the South Pacific and South Atlantic with the West Antarctic/Antarctic Peninsula regions, but these are not fully explored. For example, atmospheric wave trains show spatial and temporal (seasonal, interannual) variations in both regions.

All these variations have important roles on the tropical-Antarctic relationships including, for example, the one between climate and sea ice extent. Coupling of tropical forcing with the SAM also impacts the weather and climate throughout the Southern Hemisphere. For example, extreme weather events in subtropical South America result from interactions between tropical and Antarctic regions.

Goals

1. This AG intends to increase discussion and collaboration to explore tropical and polar weather and climate interactions, carrying out at least one interdisciplinary workshop;
2. To investigate the tropical forcing of the atmospheric circulation in the present and in the recent past (the last 200 years based on proxy records such shallow ice core studies);
3. To explore the air-sea ice coupled systems and their relation to weather and climate of the tropics and subtropics, including interactions with the monsoon systems;
4. To emphasize studies of the complex weather and climate patterns in the South Pacific-South Atlantic region and how they are connected to natural modes of climatic variability (e.g., ENSO, SAM, PSA) or anthropogenic-induced changes;
5. To organize a session in the XXXV SCAR (Davos, 2018) exploring the tropical polar teleconnections (to be carried out together with IASC);

6. To produce at least a special volume of articles on the tropical polar teleconnections.

Both FRISP and TATE were approved and went to the Delegates.

Here is the summary extracted from the SCAR report on the Delegates Meeting concerning SSG-PS. It includes a few items that were not discussed at the business meeting but were included in the SSG-PS report to the Delegates that was circulated to SSG-PS for comment well before the Kuala Lumpur meeting.

“The Chief Officer of SSG Physical Sciences, D. Bromwich, introduced this item and reported briefly on progress and plans. In brief:

Antarctic Near-shore and Terrestrial Observing System (ANTOS) was approved to become an Expert group with an extended life span (>4 years).

The International Partnership in Ice Core Sciences (IPICS) Expert Group was externally reviewed and received outstanding endorsement from all reviewers for its continuation. The SSG recommended that IPICS is extended as an Expert Group for an additional 8 years.

Two new groups were also approved. Forum for Research into Ice Shelf Processes (FRISP) as an Expert Group and Tropical Teleconnections (TATE) as an Action Group.

Polar Atmospheric Chemistry at the Tropopause (PACT) Action Group and the Southern Ocean Acidification Action Group are completing their tasks and by end of 2016 will be disbanded.

Continuation of Scientific Research Programme (SRP) Antarctic Climate in the 21st Century (AntClim21) is strongly recommended.

Chief Officer D. Bromwich and Secretary S. Colwell were re-elected for an additional 4-year term. The Deputy Chief Officer Position has not been filled as no eligible candidates came forward. An electronic election will be held as soon as suitable candidates can be found. The approval will be by the Executive Committee.

The SSG agreed to the name change from Scientific Standing Group on Physical Sciences to Physical Sciences Group.

SSG prefers to keep names Action Group and Expert Group as the definition of what the groups do is well defined and easy to manage. Changing both to task groups would be harder to administer.

Norway comments they are happy to see the teleconnection AG suggested, particularly because this is also a very important topic in the Arctic and provides a strong argument on why

polar research is important, particularly to politicians and stakeholders. IUGG also welcomed this group and encouraged them to work with other disciplines and groups that are also addressing similar topics.

The meeting thanked D. Bromwich for the presentation and the many researchers involved in PS activities. The report was noted by the Delegates and recommendations approved.

Action: Secretariat to update website and make other arrangements to reflect extension of IPICS for 8 years and the addition of the FRISP and TATE groups.”

Recent Developments:

Adriana Gulisano was elected Deputy Chief Officer via electronic balloting conducted after the Kuala Lumpur meeting.

The official name of SSG-PS is now the Physical Sciences Group.
