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Agenda Item: 4.1.1

Person Responsible: D Bromwich

D.XXXIV SCAR Delegates Meeting

Kuala Lumpur, Malaysia, 29-30 August 2016

Standing Scientific Group on Physical Sciences (SSG-PS) Report

Executive Summary

Authors: D. Bromwich, M. Candidi, and S. Colwell.

Important Issues or Factors:

Provide a brief summary of the document, no more than 100 words, with the most important point(s) of your paper.

Expert Group IPICS was externally reviewed and received outstanding endorsement from all reviewers for its continuation.

Scientific Research Programme AntClim²¹ was enthusiastically supported by the external reviewers.

Recommendations/Actions and Justification:

Provide input on what you would like the Delegates to do with this information. Should delegates just note the update? Are you asking SCAR to take an action – if so, please indicate that here. Limit ~50 words.

Renewal of Expert Group IPICS is strongly recommended.

Continuation of Scientific Research Programme AntClim²¹ is strongly recommended.

Support for new Expert Group FRISP and Action Group TATE is strongly recommended.

Action Groups PACT and Southern Ocean Acidification will complete their activities by the end of 2016 and be disbanded.

Budget Implications:

If you are requesting funds, please indicate how much and what it will be used for in 1 sentence.

SSG-PS requests 28.5K in 2017 and 28.5K in 2018 to support meetings and research activities of the Action and Expert Groups.

Introduction/Motivation

The Standing Scientific Group (SSG) on Physical Sciences includes the following Action and Expert Groups plus the Scientific Research Programmes (SRPs) on Astronomy and Astrophysics from Antarctica (AAA) and Antarctic Climate Change in the 21st Century (AntClim²¹). A very high level overview of the activities for the past two years by the Action and Expert Groups are presented here. Please see the individual group reports that are presented nearby for details. The online SRP reports summarize their extensive activities.

Action Groups:

- Antarctic Clouds and Aerosols (ACA)
- Antarctic Near-shore and Terrestrial Observing System* (ANTOS)
- Southern Ocean Acidification**
- Polar Atmospheric Chemistry at the Tropopause (PACT)
- Animal monitoring via remote sensing** (Remote Sensing)
- Sun Earth Relationships and Antarctica (SERAnt)
- Snow in Antarctica (SnowAnt)

Expert Groups:

- Antarctic Climate Change and the Environment (ACCE)
- Antarctic Sea-ice Processes and Climate (ASPeCt)
- GNSS (Global Navigation Satellite System) Research and Application for Polar Environment*** (GRAPE)
- International Partnership in Ice Core Sciences (IPICS)
- Ice Sheet Mass Balance and Sea Level (ISMASS)
- Operational Meteorology in the Antarctic (OpMet)
- CLIVAR/CliC/SCAR Southern Ocean Region Panel (SORP)

* Sponsored by SSG-GS, SSG-LS and SSG-PS

** Co-sponsored by SSG-LS and SSG-PS

*** Co-sponsored by SSG-GS and SSG-PS

Progress to Date

Most groups organized or participated in important meetings. Particularly noteworthy were the 2nd International Open Science Conference of IPICS and the ANTOS planning meeting to be an Expert Group. SnowAnt conducted Snow Science Winter Schools in 2015 and 2016. ISMASS arranged 4 meetings since the Auckland SCAR OSC.

Other activities included ACCE putting their important publication into a wiki for ease of updating. The ASPeCt digital underway ice observation method, version 2 has been launched; voyages from October 2015 - March 2016 are using this version 2. OpMet in conjunction with the WMO Antarctic Task Team (ATT) put together an information paper that will go to the Antarctic Treaty Consultative Meeting (ATCM) on the state of operational meteorology in Antarctica. PACT will complete its tropopause database by December 2016, and Southern Ocean Acidification will release its long awaited report in Kuala Lumpur. SERAnt met with GRAPE in Kuala Lumpur to scope out the ReSource proposal (see below). Remote Sensing met in Kuala Lumpur with the new Southern Ocean Observing System (SOOS) Working Group on Censusing Animal Populations from Space (CAPS).

SORP has been very active since its last panel meeting in September 2015 with extensive participation in international research coordination and collaboration with relevant programs, including SOOS, the Ocean Observations Panel for Climate (OOC), the WMO Polar Prediction Project (PPP) and the WMO Polar Climate Predictability Initiative (PCPI).

Finally, IPICS underwent external review for renewal as an Expert Group and was strongly supported by all reviewers. The AntClim²¹ Scientific Research Programme was also reviewed and all reviewers enthusiastically endorsed its efforts. The online documents contain the review results.

Future Plans

All continuing groups have active programs planned for 2017 and 2018 including supporting scientific meetings. Some highlights are the following.

GRAPE has recently established a task force in conjunction with SERAnt and AAA to propose a new Scientific Research Programme entitled ReSource (Radio Sciences Research on Antarctic Atmosphere) to be presented at the 2018 SCAR meeting.

ACA will establish a database of polar cloud observations.

SnowAnt will propose pristine snow areas for protection.

IPICS will actively plan for its 2020 Open Science Conference.

A new Expert Group on Forum for Research into Ice Shelf Processes (FRISP) is proposed. A short summary is appended, and a much more extensive document was prepared that is available if needed. This Expert Group is distinct from and complementary to the existing ISMASS Expert Group in that FRISP concentrates on the processes controlling ice shelf behaviour whereas ISMASS is broadly concerned with the ice sheet contribution to sea level rise.

A new Action Group on Tropical Antarctic Teleconnections Action Group (TATE AG) is proposed. The proposal is attached. This proposed AG is distinct from and complementary to the AntClim21 Scientific Research Programme in that it is concerned with the processes linking the tropics to Antarctica which are not well understood yet are key to the future trajectory of Antarctic climate. AntClim21 is a much broader effort that emphasizes coupled climate modelling for the 21st century.

Elections

The following officers were elected for 2016-2020 during the SSG-PS business meeting on August 24, 2016:

Chief Officer: David Bromwich (USA)

Deputy Chief Officer: Open as no suitable candidates were present at the business meeting. Four potential candidates, not from the US or UK, have replied as of August 28, 2016

morning to an email solicitation for interest in the position. An electronic election will be held and the result forwarded to the SCAR Executive Committee.

Secretary: Steve Colwell (UK)

Maurizio Candidi is thanked for his long service to SSG-PS. He did not stand for re-election as Deputy Chief Officer.

Recommendations/Expected Outcomes

Renewal of Expert Group IPICS is strongly recommended.

Continuation of Scientific Research Programme AntClim²¹ is strongly recommended.

Authorization of proposed FRISP EG is recommended.

Authorization of proposed TATE AG is recommended.

PACT and Southern Ocean Acidification will complete their activities by the end of 2016 and be disbanded.

Proposed SCAR SSG-PS Budget for 2017 and 2018

<u>Group</u>	<u>2017</u>	<u>2018</u>	<u>Use/Comments</u>
ACCE EG	2000	2000	SCAR Budget Convenience
ANTOS EG (LS/GS)	2000	2000	Workshop. Database develop.
ASPECT EG	3000	3000	Meetings
FRISP EG (TBD)	2000	2000	Meetings
GRAPE EG (GS)	4000	2000	Mtgs,-website.
IPICS EG	0	3000	Oldest Ice Meeting.

ISMASS EG	2500	2500	Workshops.
OpMet EG	2000	2000	AMOMFW Mtgs. 17 & 18.
SORP	2000	2000	SCAR Budget Convenience
ACA AG	0	0	No funds requested
Remote S. AG (LS)	500	500	Early Career Travel
SERAnt AG	1500	1500	Mtgs.
SnowAnt AG	2000	2000	Snow Schools
TATE AG (TBD)	500	500	Meetings
SSG-PS	4500	3500	Contingency/Early Career Travel.
Total:	\$28.5K	\$28.5K	

Appendices

PROPOSAL FOR A NEW SCAR ACTION GROUP

NAME: Tropical Antarctic Teleconnections Action Group (TATE AG)

Proposers:

Azizan Abu Samah (Malaysia)
David Bromwich (USA)
Francisco Aquino (Brazil)
Jefferson C. Simões (Brazil, Chair)
Kyle Clem (New Zealand)
Seong-Joong Kim (Korea)

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 wavetrains show spatial and temporal (seasonal, interannual) variations in both regions.

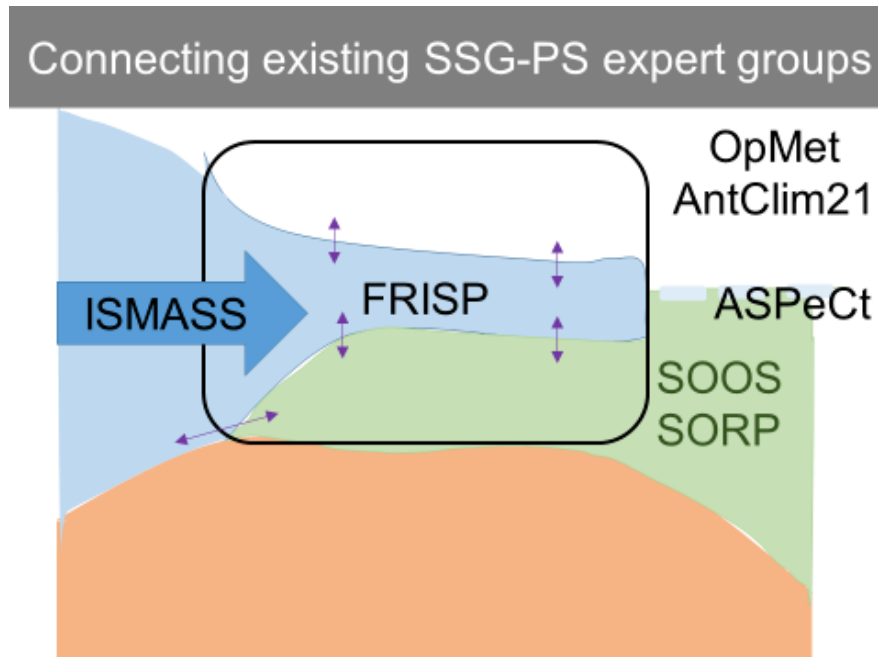
All these variations have important roles on the tropical-Antarctic relationships including, for example, the one between climate and sea ice extent. Coupling of tropical forcing with the SAM also impacts the weather and climate throughout the Southern Hemisphere. For example, extreme weather events 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 monsoons systems;
4. To conduct case studies on the relation between complex weather and climate patterns in the South Atlantic, Indian and Pacific regions and the Southern Ocean sea ice cover, and how they are connected to natural modes of climatic variability (e.g., ENSO, SAM, PSA, PDO) or anthropogenic-induced changes;
5. To organize a session at the XXXV SCAR (Davos, 2018) exploring the tropical polar teleconnections (to be carried out together with IASC);
6. To produce at least one special volume of articles on the tropical polar teleconnections.

Proposed new Expert Group: Forum for Research into Ice Shelf Processes (FRISP)

- Developed by SCAR in 1983 with specific geographical focus on the Filchner-Ronne Ice Shelf.
- Broadened its scope to entire Antarctica and Greenland.
- Will hold 30th conference October 2016 in Sweden.
- Desires to be a SCAR expert group under SSG-PS to focus on the oceanic and atmospheric processes governing the behavior of ice shelves that are key to the ice sheet contribution to sea level change.



Funding Request:

- 3K USD each in 2017 and 2018 to support FRISP workshop participants who have limited access to travel support especially students and early career scientists.
- SSG-PS is acknowledged in all workshop announcements.
- Awarded individuals are referred to as “SCAR Bursaries.”

1) The availability of SCAR Bursaries and the criterion for application (the need for financial support for attendance) will be indicated in the workshop announcements.

2) Those wishing to apply for a SCAR Bursary will be required to indicate their intention when registering and provide a separate one page justification (including intended workshop contribution, an estimate of the total cost of attendance, including travel, and a justification for the award of a Bursary).

3) The closing date for SCAR Bursary applications will be in advance of the general registration deadline and will be notified in the workshop announcements.

4) Awards will be confirmed shortly (typically two weeks) after the closing date.

5) No funds will be paid directly to awardees, but the bursary will be used by the local organising committee of the relevant workshop to subsidise the registration and accommodation costs, such that awardees can be charged reduced rates.

6) The scheme will be administered by the local organising committee, but the distribution of awards will be subject to approval by the FRISP Steering Committee.

7) The operation of the Scheme will be subject to periodic review by the FRISP Steering Committee.