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**Report of the XXXIV SCAR Delegates' Meeting
Kuala Lumpur, Malaysia
29 - 30 August 2016**



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Report of the XXXIV SCAR Delegates' Meeting Kuala Lumpur, Malaysia, 29 - 30 August 2016



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In Attendance:



Executive Committee: J. López-Martínez (President), K. Lochte (Vice President), B. Storey (Vice President), T. Wilson (Vice President), A. Abu Samah (Vice President), J. Baeseman (Executive Director).

Full Members: R. Sanchez (Argentina), I. Schloss (Argentina), S. Chown (Australia), G. Fenton (Australia), F. Pattyn (Belgium), N. Pattyn (Belgium), J. Simões (Brazil), E. Secchi (Brazil), N. Chipev (Bulgaria), A. Neshev (Bulgaria), D. Scott (Canada), M. Leppe (Chile), Yang H. (China), Wu J. (China), J.M. Rintala (Finland), P. Kujala (Finland), M. Raccurt (France), P. Koubbi (France), K. Lochte (Germany), G. Heinemann (Germany), R. Madhavan Nair (India), M. Ravichandran (India), A. Meloni (Italy), S. Onofri (Italy), K. Shiraishi (Japan), S. Imura (Japan), Y.D. Kim (Korea), H.C. Shin (Korea), A. Abu Samah (Malaysia), S. Mohd Nor (Malaysia), J. Stefels (Netherlands), T. de Bruin (Netherlands), B. Storey (New Zealand), F. Shanhun (New Zealand), J.G. Winther (Norway), R. Villanueva (Peru), W. Majewski (Poland), R. Bialik (Poland), I. Mokhov (Russian Federation), M.Y. Moskalevsky (Russian Federation), I. Meiklejohn (South Africa), T. Klarenbeek (South Africa), J. López-Martínez (Spain), J. Galindo-Zaldivar (Spain), M. Friberg (Sweden), A. Wåhlin (Sweden), K. Steffen (Switzerland), M. Schneebeli (Switzerland), K. Kalyta (Ukraine), J. Francis (United Kingdom), D. Hopkins (United Kingdom), T. Wilson (United States), D. Karentz (United States), A.M. Pizzanelli (Uruguay).

Union Members: J. Storey (IAU), I. Meiklejohn (IGU), A. Barbosa (IUBS), I. Allison (IUGG), C.A. Ricci (IUGS), G. De Franceschi (URSI).

Associate Members: M. Bartak (Czech Republic), R. Forsberg (Denmark), N. Hadjizadeh Zaker (Iran), A. Inam (Pakistan), A. Canário (Portugal), F. Toparceanu (Romania), J. Alfonso (Venezuela).

Secretariat: J. Baeseman (Executive Director), E. Griffin (Executive Officer), H. Nielsen (Rapporteur)

SCAR Subsidiary Groups: J. Storey (AAA), N. Bertler (AntClim²¹), H. Griffiths (AntEco), J. Gutt (AnT-ERA), P. Convey (Development Council), D. Liggett (HASSEG), E. Leane (HASSEG), A. Constable (ICED), L. De Santis (PAIS), T. Naish (PAIS), A. Van de Putte (SCADM), A. Terauds (SCATS), T. Wilson (SERCE), L. Newman (SOOS), J. Galindo-Zaldivar (SSG-GS), Y. Ropert-Coudert (SSG-LS), D. Bromwich (SSG-PS).

Observers: *G. Fugmann (APECS), M. Reinke (ATS), K. Reid (CCAMLR), K. Hughes (CEP), K. Shiraishi (COMNAP), R. Badhe (EPB), V. Rachold (IASC), J. Buckeridge (ICSU), D. Kulhanek (IODP), E. Charpentier (WMO), Jin B. (China), J.M. Soltau Ospina (Colombia), V. Echeverri (Colombia), R. Rincon (Colombia), A. Di Donato (Italy), V. Di Felice (Italy), A.M. Fioretti (Italy), S.A. Alias (Malaysia), R. Dambul (Malaysia), M. Tahar (Malaysia), C. Hansen (South Africa), B. Soonthornthum (Thailand), S. Aukkaravittayapun (Thailand), S. Chanthawan (Thailand), V. Viyakarn (Thailand), E. Kalkan (Turkey), B. Ozsoy-Cicek (Turkey), L. Geller (United States).*

Explanatory Note: *several names appear more than once in the attendees list as some people represent more than one body.*

1. Opening Business

1.1 Welcome

J. López-Martínez, President of SCAR, opened the meeting and welcomed Delegates and Observers to the XXXIV SCAR Delegates' meeting.

A minute of silence was held for past SCAR Delegate and Vice-President Roland Schlich who passed away in April 2016.

J. López-Martínez thanked the local organising committee for hosting the 2016 SCAR meetings, including the Open Science Conference, and invited A. Abu Samah to address the meeting. A. Abu Samah welcomed the meeting to Malaysia and thanked MOSTI, the University of Malaya, the event managers, and the Delegates for coming to tropical Kuala Lumpur for this meeting.

J. López-Martínez welcomed the new SCAR Executive Director Jenny Baeseman, and Executive Officer Eoghan Griffin. He thanked Rosemary Nash, SCAR Administrative Assistant for her many years of dedication to supporting SCAR.

1.2 Adoption of the Agenda and Timetable (WPs 1,2,3)

J. Baeseman proposed a change to the agenda, for item 2.2 to be addressed prior to item 2.1, and it was approved. No other changes to the agenda were made.

Delegates adopted the agenda (WP01), the timetable for the meeting (WP02), and the list of documents (WP03).

2. Membership (CLOSED to Observers and Associate Members)

2.1 SCAR Membership issues, including possible future members (WP 5)

The SCAR President, J. López-Martínez, presented a paper on the current membership of SCAR. Delegates were asked to note the Rules of Procedure regarding membership arrears. According to the Rules of Procedure, members who are two years in arrears cannot vote. Uruguay and Denmark are both in arrears for 2015, and both are working through their country's systems to resolve the situation. Ukraine is more than two years in arrears and thus was not allowed to vote. The willingness of all members to find solutions in these special circumstances was noted.

Uruguay conveyed a message from the Uruguayan Antarctica Institute. Uruguay has conducted scientific research in Antarctica since becoming a consultative member of Antarctic Treaty, and participates in a range of different research projects. Currently they are undergoing a process of restructuring science at national and programme levels. The Ministry of the Environment will take over the administration of the programme at the Uruguayan Institute for Antarctic issues. Because of these changes, the resolution of payment is taking longer than expected but should be resolved by the end of the year.

Ukraine conveyed message that the decision has been made to pay the remainder of arrears for 2013 and 2014 by the end of the year. Payment for 2015 and 2016 will be made as soon as possible. Beginning in 2017, Ukraine would like to move to the associate membership level. Once the economic and political situation improves, Ukraine plans to seek to return to full membership. Delegates approved the movement to associate level and noted with appreciation the willingness to pay the arrears in full.

J. López-Martínez presented the remainder of the membership paper, which highlighted the growth of SCAR over the years and pointed out potential new members who are engaged in the Antarctic Treaty System and other organizations, such as the Asian Forum for Polar Sciences (AFoPS), but are currently not members of SCAR. It was also noted that for the first time, a scientist from Guatemala participated in the SCAR Open Science Conference and Saudi Arabia asked to attend the Delegates Meeting as an observer. Both of these countries should be encouraged to become more engaged in SCAR activities. Delegates were also invited to suggest ways additional members may be recruited.

The meeting welcomed comments from the Czech Republic and Portugal expressing their desire to move from associate to full SCAR membership by the 2018 Delegates meeting.

Brazil commented that it is important to foster the development of Antarctic programmes in the new member countries.

New Zealand informed Delegates about a 10-year report on Belarus' Antarctic activities. The meeting welcomed the report and encouraged Belarus to consider joining SCAR.

Action: Secretariat to send letter to the Ukraine notifying of Delegates approval of moving to associate membership and paying of arrears.

Action: Secretariat to send letter to the Czech Republic and Portugal to support move to full member status.

2.2 Applications of Colombia, Austria, Thailand and Turkey for Associate Membership of SCAR (WP 4a, b, c, d)

The papers for these applications were distributed six months in advance of the meeting, in accordance with the Rules of Procedure, and were available as WP4a (Colombia), WP4b (Austria), WP4c (Thailand) and WP4d (Turkey).

Colombia

Colombia's application was presented by Juan Manuel Soltau Ospina. The Antarctic Colombian Program (PAC) is coordinated by the Colombian Ocean Commission (CCO). The research roadmap, scientific agenda, and guide for Colombian researchers in the Antarctic region were presented, as well as plans for future Antarctic expeditions. Projects include the study of the correlation between El Niño and La Niña weather more locally and what happens in the Antarctic, and a mammal project that involves using satellite tags to study behaviour of migrating animals that travel from the tropics to Antarctica. They are also working to complete various nautical charts. Brazil emphasised the importance of Colombia joining the efforts to understand connections between Antarctica and the tropics. Malaysia asked for

elaboration on the research Colombia plans to conduct with links between tropics and Antarctica. Chile expressed support for the application – understanding the Pacific coast is an important part of the system. Colombia is one of the partners they would like to see involved in Antarctic science. Argentina has had Antarctic cooperation with Colombia in recent years, and are glad to see they are applying for associate membership of SCAR.

Austria

Austria submitted all the required documents but, due to a family emergency, the representative was not able to attend the meeting in person. Delegates approved the virtual presentation of the Austrian application under this special condition. This is an exceptional case and must not be used in general for applications to SCAR.

Birgit Sattler introduced the Austrian application, providing a background to Austria's involvement in Antarctic research. The Austrian Polar Research Institute (APRI) was founded in 2013. The scientific pillars of APRI are Polar Ecology, Cryosphere and Climate, and Social and Cultural Systems. Participation in SCAR would help develop scientific linkages between Austrian scientists and those in other SCAR nations.

Germany asked how Austria intends to conduct research in Antarctica when Austria currently has no active platforms in Antarctica. In the past, Austria has taken part in several expeditions on the international level, thanks to strong collaborations with scientists in countries willing to share logistical support. Austria plans to continue carrying out research in this way.

Thailand

Thailand's application for associate membership was presented by B. Soonthornthum. The National Astronomical Research Institute of Thailand (NARIT) is the designated body to liaise with SCAR. HRH Princess Maha Chakri Sirindhorn became the first Thai to visit Antarctica in 1993. An MoU between the Thai National Science and Technology Development Agency (NASTDA) and the Chinese Arctic and Antarctic Administration (CAA) was signed on 30 July 2013, and an MoU with the Polar Research Institute of China (PRIC) was signed on 6 April 2016. A roadmap for Thai Antarctic research (2014-2024) was presented.

Korea thanked Thailand for the application, and noted that Thailand has worked for many years in collaboration with other partners (Japan, Korea, China). Thailand has participated in the Asian Forum for Polar Sciences (AFoPS) for many years, and Korea welcomes this application. China commented that Thailand has well-established connections and is an active member of AFoPS. Japan commented that they have been working together with Thailand in a number of fields. Japan strongly supports Thailand's application. Malaysia welcomed Thailand's application, as another ASEAN member. Complementarity between Thai and Malaysian programmes was noted.

Germany asked whether there was potential to have Delegates on working groups of life sciences and geosciences. Thailand focuses not only on Astronomy, but have many other fields doing Antarctic work. These include marine science and oceanography.

Turkey

Turkey's application for associate membership was presented by E. Kalkan. The Scientific and Technological Research Council of Turkey (TUBITAK) is a member of ICSU, and the application comes under the banner of TUBITAK. An overview of Turkey's involvement in Antarctic research from the past 49 years was presented. The Istanbul Technical University Polar Research Center (PolRec) was inaugurated in 2016. 2016 also saw the Turkish Antarctic Expedition (TARE) take place in Antarctica, in collaboration with Ukraine. Turkish research interests in the polar regions include physical sciences and life sciences, as well as geosciences and human and social sciences. Outreach activities were highlighted, including APECS Turkey (established 2012) and hosting the COMNAP/SCAR photographic exhibition from September 2016. Turkey expects to sign the Protocol on Environmental Protection to the Antarctic Treaty at the end of 2016, and to support international collaborations with Turkish scientists. The Piri Reis world map from 1513, created by a Turkish cartographer, was also presented. This early map included South America and the Antarctic region.

South Korea remarked that it was good to know that Turkey's history of Antarctic science goes back to the sixteenth century, and that Turkey has long-term plans going forward. Malaysia welcomed Turkey's application. Ukraine supported Turkey's application. The joint 2016 expedition was a good example of cooperation in Antarctic research. Chile endorsed the application, having witnessed interest at the ATCM. Spain asked whether Turkey has plans to develop geosciences in the future. Turkey is working to develop geosciences, as well as human and social sciences.

After due consideration, Colombia, Austria, Thailand and Turkey were accepted as associate members of SCAR.

Action: Secretariat to send new member information to Thailand, Austria, Turkey, and Colombia and make other arrangements as necessary, including updates to website.

3. SCAR Officers (CLOSED to Observers)

3.1 Notification of elections of two Vice Presidents (IP 19)

The President noted that the offices of the President (J. López-Martínez) and two Vice Presidents (K. Lochte and B. Storey) would fall vacant at the end of the meeting, the incumbents having completed their appointed terms of office. The Executive Director briefly reviewed SCAR election procedures.

IUGG suggested that the Rules of Procedure be adjusted so the nomination process is further up in the description of the process. It was also suggested to add wording about both the President and Vice President being elected by simple majority.

Candidates were allowed to provide a written statement to voting Delegates on their motivation for running for election. Presidential candidates were given six minutes to present their platform and Vice Presidents were allotted three minutes.

Later in the meeting, S. Chown was elected as President and K. Lochte was re-elected as Vice President. J. Simões from Brazil was elected as a new Vice President. They

join A. Abu Samah and T. Wilson, the current Vice Presidents. J. López-Martínez will also begin a two-year term as Immediate Past President.

Action: *Allow all candidates for election to speak on their applications, with 3 minutes for Vice Presidential candidates and 6 minutes for Presidential candidates. Written statements to be circulated.*

Action: *The Rules of Procedure to be adjusted so the nomination process is further up in the description, and to add wording of the process about both the President and Vice President being elected by simple majority.*

3.2 Nomination of Standing Finance Committee Ad Hoc members

The Delegates appointed two *ad hoc* members of the Finance Committee: M. Schneebeli (Switzerland) and H. C. Shin (Korea). They joined B. Storey, VP for Finance, M. Leppe (Chile) and G. Heinemann (Germany) who are the full members of the Standing Committee.

4. Science (OPEN)

4.1 SCAR SSGs: Highlights, Progress and Plans

SCAR Vice President, A. Abu Samah chaired this item. He reminded Delegates of the importance of appointing up to four representatives to each SSG to ensure that SCAR can operate effectively and represent the interests of each member.

4.1.1 Report of SSG Physical Sciences (WP 6a,b,c)

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

Chief Officer D. Bromwich (USA) and Secretary S. Colwell (UK) 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 a suitable candidate 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.

The SSG prefers to keep the 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 commented they are happy to see the teleconnections 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.*

4.1.2 Report of SSG Life Sciences (WP 7a,b)

The Secretary of the SSG Life Sciences, Y. Ropert-Coudert, introduced this item and reported briefly on progress and plans. Y. Ropert-Coudert highlighted for Delegates the main achievements of SSG-LS, which can be found in more detail in WP 7a and b. In addition, LS fully supports the ICED benchmarking project and the conference, www.measo2018.aq (Hobart 2018), described in WP16.

The SCAR Action Group on Remote Sensing (“Development of a satellite-based, Antarctic-wide, remote sensing approach to monitor bird populations”) emphasized the high demand of freely available high-resolution multispectral satellite images by the Antarctic scientific community. Currently, the coverage of Sentinel-2 is restricted to 56° South latitude and therefore does not cover the Antarctic region. In this context, the Action Group asks SCAR to note this serious demand to ESA with the aim to extend the coverage of the Sentinel-2 satellite over the area of Antarctica (at least up to 80° South latitude). SCAR should write a letter to ESA suggesting an initial tasking of at least one cloud-free image per month over the whole of Antarctica taken between November and February (the Antarctic summer season), with the possibility of this coverage being repeated on annual basis henceforth.

Y. Ropert-Coudert (France) was elected Chief Officer. M. Shepanek (USA) was re-elected as the Deputy Chief Officer representing the Human Biology and Medicine group. I. McDonald (New Zealand) was appointed as the new Secretary of the group. It was recommended that a letter of appreciation be sent to G. Hosie for his decades of service to SCAR, in addition to the Certificate of Appreciation given for his leadership of the SSG-LS. It was also noted that the LS group has three APECS representatives.

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

The SSG prefers to keep the 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.

The Executive Director noted that in the Joint SCAR/COMNAP Executive Committee meeting both organisations noted the progress and increased activity of the Joint Expert Group on Human Biology and Medicine and asked the CO to pass along their remarks.

Australia and Belgium sought clarification on the status of the Action Group on Ocean Acidification. The Executive Director informed the meeting that the final draft of the report on Southern Ocean Acidification is in revision and layout has begun. It is expected to be complete by the end of the year. Funds for the Action Group to publish the report still remain but should not be carried over if the report is not done.

The UK commented that the topic of remote sensing has been brought up at the Antarctic Treaty Consultative Meeting, with lots of interest in the impact of UAVs and drone use on all types of Antarctic environments. The Treaty is waiting on new evidence from science on drones and UAV use and encourages SCAR to make sure the report to ATCM on this issue is submitted this year. The UK also supports the human biology and medicine work as it is important for COMNAP members and to those who run national programmes and helps with support of field staff.

Portugal suggested that Antarctic Permafrost And Soils (ANTPAS) Expert Group and Antarctic Near-shore and Terrestrial Observing System (ANTOS) become better connected as there seems to be some unexplored synergies between the two groups that could make both projects stronger; especially since ANTPAS already has observation sites near-shore in various locations around Antarctica for permafrost borehole temperature monitoring.

Germany asked if there was overlap between the proposed Action Group on Biogeochemical Exchange Processes at the Sea-Ice Interfaces (BEPSII) and the Antarctic Sea-ice Processes and Climate (ASPeCt) Expert Group. The Netherlands commented that they are indeed in contact with ASPeCt, but there are different interests as the BEPSII group is mainly interested in biogeochemistry and ASPeCt looks more at the sea-ice processes. There is good collaboration between the groups and a liaison has been identified. It was also noted that BEPSII is polar, meaning both Arctic and Antarctic research questions are being addressed. IUGG supported the links between SCAR, BEPSII and ASPeCt.

Sweden asked if adding all these groups with such small amounts of money is useful. The presenter commented that often the small amount is used for leveraging larger funds and that having the SCAR logo to start with can be key to getting further support.

Italy thanked the presenter for the presentation and is in full support of the ANTOS group as observing systems in the extreme Antarctic environment could be useful for gathering data useful for space exploration. They suggest expanding cooperation between Antarctic and space science, as there might be opportunities for collaboration as well as funding, for all those interested in studying the limits of human life. Italy suggests SCAR introduces this topic as a new frontier for science.

Australia supported the efforts of EG-BAMM as they are developing useful information on the ability to track population trends, which is also useful for the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

Germany asked about the budget request that is double what is normally funded and how they might deal with not getting their full request. The presenter suggested that one way would be to eliminate the tag interface on the website and to use a

percentage decrease across all requests, but suggested that increasing budget above \$24,000 USD would be ideal.

Delegates were asked to approve recommendations in the SSG-LS report

The meeting thanked Y. Ropert-Coudert for the presentation and the many researchers involved in LS activities. The report was noted by the Delegates and the request for a letter to be sent to NASA, as well as the transition of the Continuous Plankton Recorder Research (CPR) Expert Group to the Southern Ocean Continuous Plankton Recorder Database Expert Group (SO-CPR), the transition of ANTOS to a longer-term Expert Group, and the continuation of the very successful Expert Group on Birds and Marine Mammals (EG-BAMM), which has reached the end of its nominal life span.

Action: ED, in consultation with Remote Sensing AG leadership, to send letter to ESA to request extended satellite coverage over Antarctica and Southern Ocean.

Action: Secretariat to update website and make other arrangements to reflect ANTOS becoming an Expert Group, the addition of the BEPSII Expert Group and name change for CPR to SO-CPR with updated ToRs.

Action: Secretariat to send letter of appreciation to G. Hosie for years of service to SCAR in SSG-LS.

4.1.3 Report of SSG Geosciences (WP 8a,b)

The Deputy Chief Officer of the SSG Geosciences, J. Galindo-Zaldivar, introduced this item on behalf of outgoing Chief Officer W. B. Lyons, and reported briefly on progress and plans. Full details can be found in WP 8a and b. All the action and expert groups are active and have presented significant results. Some groups have special needs such as providing advice to the Antarctic Treaty, generating new products, beginning to develop their activities and others are approaching critical milestones.

The SSG-GS will continue to support the publication of the Bathymetric Map of the Drake Passage as a SCAR product. The XIII International Symposium on Antarctic Earth Science (ISAES) will be hosted by South Korea and held in Incheon in 2019. They also recommended continuation of all of their groups.

J. Galindo-Zaldivar (Spain) was elected Chief Officer, the Deputy Chief Officer will be N. C. Pant (India), and the Secretary and GeoReach Editor will be M. Leppe (Chile). They have also selected a new SSG-GS representative to the SCAR Standing Committee on the Antarctic Treaty System (SCATS): M. A. Reguero from Argentina. A Certificate of Appreciation was awarded to W. B. Lyons for leadership of the SSG-GS.

Italy noted that with new techniques, gravity and magnetic go together and create more effective opportunities for collaboration between the various SCAR groups. For example, there is a group working on geophysics and geology, to support geological interpretation.

IUGS asked if there was any discussion in the SSG-GS meeting about the proposal from ANTOS to become an expert group. The presenter indicated there was discussion but no conclusion was reached.

Korea expressed thanks to the SSG-GS for approving their proposal to host the next ISAES meeting in Incheon (2019).

The meeting thanked J. Galindo-Zaldivar for the presentation and expressed thanks to the many researchers involved in GS activities. The report was noted by the Delegates and recommendations approved.

4.2 SCAR Scientific Research Programmes (SRPs)

A. Abu Samah introduced this item. Delegates were reminded that the AntEco, AnT-ERA, AntClim²¹, PAIS and SERCE SRPs had undergone an external review this year and AAA has two years left in its activity.

4.2.1 Astronomy and Astrophysics from Antarctica (AAA) (WP 10)

The Chief Officer, J. Storey, presented progress and plans for the SRP Astronomy and Astrophysics from Antarctica (AAA). The full report can be found in WP10.

AAA was a test pilot for the SRP programme and is now the oldest remaining SRP. Discussions are ongoing regarding where to go next, and how the Horizon Scan questions may fit. However, the Scan only included a small number of questions and it is important to recognise that it is not capturing the full scope of the field. There are also discussions ongoing on what is the best structure for astronomy within SCAR; a new SRP based on a Scan question, a new cooperative SRP with other disciplines, a totally new SRP, an expert group, action group, or something new.

J. Storey also welcomed Thailand as a new associate member of SCAR and acknowledged that this is the first country to join SCAR based mainly on its interest in Astronomy. Thailand will be hosting the next AAA workshop.

It is important for SCAR to ask what scientists think of the SRP programmes and define what the international community should expect from them. SCAR should also define what an SRP is expected to deliver: collaboration, coordination, community building, added value to national and individual research programmes, a port for scientists to connect with Antarctic, an interface between scientists and logistics managers, increased visibility for SCAR – and what does it cost to achieve this?

A. Abu Samah thanked J. Storey for presentation and his service to the AAA programme and welcomed Dr Anna Moore as the new Chief Officer.

Australia commented that this SRP has clearly demonstrated how Antarctica can be used as a platform to look outwards – for science not concerned with Antarctic itself, but other aspects of scientific endeavours, and aspects of what it means to be human.

URSI commented that astronomy and astrophysics are important from a radio science point of view. They also noted the clear mention of the SCAR Horizon Scan and its importance in prioritizing SSG budgets and future action and expert groups.

4.2.2 Introduction to SRP External Review process (WP 9a,b)

A. Samah, VP for Science, asked J. Baeseman to introduce this item. Each SRP's report was reviewed by 3-4 external reviewers. Recommendations were compiled, reviewed and discussed by the SCAR Executive Committee. SRPs were asked to

respond to recommendations. Delegates were then asked to provide scores (A-D) for each SRP prior to the Delegates Meeting. Thanks were given to Australia, Belgium, Canada, Finland, Japan, France, Germany, Netherlands, New Zealand, Portugal, Sweden, UK, and USA for providing useful comments.

4.2.3 State of the Antarctic Ecosystem (AntEco), with external review (WP 11a,b)

H. Griffiths reported on progress and plans for the SRP State of the Antarctic Ecosystem (AntEco), including the responses to the external review.

The overarching questions/objectives of AntEco are: Evolution and current status of Antarctic biodiversity; Diversity and distribution of Antarctic biodiversity; Inform and improve conservation planning. The research is divided into fixed sectors: Spatial ecology, Molecular ecology and evolution, Ecoinformatics and systems biology, Paleoecology, and Impacts, trends and conservation.

AntEco has over 500 members on its mailing list and is a community-driven programme. Some recent activities have included a cross-programme SCAR workshop on 'Interactions between biological and climate processes in the Antarctic' (September 2015, Barcelona, Spain); the SO-Ant-Eco Expedition to South Orkney Islands with 22 participants, 9 countries, 16 institutions (#SOAntEco reached 1 million twitter users worldwide); several sessions run at 2016 SCAR OSC, Malaysia (2016) and support for ECRs to attend workshops and conferences.

AntEco received positive external reviews noting its impressive publication list and the Biogeographic Atlas of the Southern Ocean as an outstanding contribution to Antarctic science and conservation. The AntEco committee believes SCAR should centrally coordinate activities such as: collating education materials, media and publicity, stimulating interactions with members of less well-developed Antarctic programmes and that providing support to the Secretariat would help with these issues.

France thanked H. Griffiths for the presentation and remarked that the Biogeographic Atlas of the Southern Ocean is an excellent SCAR product, but there needs to be more effort to have it used for other purposes.

4.2.4 Antarctic Thresholds – Ecosystem Resilience and Adaptation (AnT-ERA), with external review (WP 12a,b)

J. Gutt presented progress and plans for the SRP Antarctic Thresholds – Ecosystem Resilience and Adaptation (AnT-ERA), including the responses to the external review.

Key achievements for the group regarding scientific output were several papers, special issues and reviews, published within the scientific scope of AnT-ERA or with specific AnT-ERA support. With regard to capacity building, a cross-programme, interdisciplinary workshop was organised, and an opinion survey provided the basis for a mini-symposium during the 2016 OSC. Additional workshops were also supported. Regarding dissemination, the key "tool" is the AnT-ERA webpage with a total of 72000 hits. Additionally, AnT-ERA contributed to SCAR products, e.g. ACCE, Antarctic Environments Portal, UNFCCC interactions and the SCAR Strategic Plan. They have supported more than 20 mini-grants to early-career

scientists. Several leading AnT-ERA scientists have acted as PIs of expeditions or their sub-projects.

AnT-ERA is community driven, but led by an active Steering Committee, that is open to everybody, with a non-competing atmosphere, and is independent concerning the scientific basis for advice.

Germany commented that Ant-Eco and AnT-ERA both have similar aims and wondered where is the work in areas that overlap, and how can these areas be best addressed. They also asked if there is the potential to provide a product / final conclusion about adaptation long / short term, for policy makers and others. J. Gutt thanked Germany for that question as usually he is asked what is the difference between the two (AntEco looks long term, AnT-ERA is a shorter timescale, looking more at climate change). Looking at adaptation, there are overlaps. The Barcelona workshop produced protocols (joint effort between AntEco, AnT-ERA, AntClim²¹ and others) and there are only a few joint products so far.

Bulgaria asked if the group have connections with the international network on international long-term ecosystem research. The response was simply put, no, and that they were not aware of this organization but if the group would like to cooperate they should get in touch.

J. Baeseman thanked J. Gutt for his amazing work on the AnT-ERA website which is continually updated with new information about both the programme, and science advances in the area. As a result of his efforts, the Secretariat is now looking to restructure the website to help to feature these contributions.

4.2.5 Antarctic Climate Change in the 21st Century (AntClim²¹), with external review (WP 13a,b)

The outgoing chief officer, N. Bertler, reported on progress and plans for the SRP AntClim²¹, including the responses to the external review. T. Bracegirdle will take over as chair of AntClim²¹ after the meeting.

John Turner is stepping down from his position as steering committee member and the aim is to replace him with another atmospheric scientist. Dr. Turner was thanked for his leadership, contributions, and mentorship. He brought a tremendous amount of experience and wisdom to the team and provided critical input needed to create this SRP. All remaining steering committee members continue to serve on the steering committee to ensure successful completion. In addition, they aim to recruit at least one additional steering committee member, including an expert on sea ice.

AntClim²¹ aims to improve climate models through the following objectives: quantification of Antarctic climate variability, climate model verification for the Antarctic region, Antarctic climate projection and impacts 2100 AD and beyond and user-friendly access to climate model outputs and evaluations. Research targets include extending observations with historical and proxy data; evaluating and improving model skill; constraining future trends; and increasing uptake of modelling results. They aim for the community as a whole to be able to make use of these results and to make them accessible to anyone with an interest in projections or reconstructions. They are working closely with SOCCOM, ESMValTool, CMIP5, CMIP6, and IPCC, feeding into IPCC projections. SCAR and SOCCOM are currently the only organisations signed up to the tool (ESMValTool)

The next steps for the programme are for the AntClim²¹ portal to be included on the ESMValTool Portal within six months and to allow for broad community access to models. They are planning the Great Antarctic Climate Hack to empower the community – people who are not modellers can learn to use the tool to assess model strength for their own purposes.

The long-overdue implementation plan is currently being prepared by T. Bracegirdle, and coordination with other groups for AntClim²¹ portal, CliC, CORDEX, and PCPI are important. They plan to increase outreach; improve representation of smaller Antarctic research programmes; further develop linkages between SCAR and IPCC and provide input to special reports.

India asked if there was an Antarctic node of CORDEX. J. Baeseman noted that there is but it is not that active, however they did provide one of the external reviews for AntClim²¹.

Canada gave congratulations on a clear and concise presentation and noted that AntClim²¹ was an impressive example of how a group can come together and achieve excellent results.

A. Abu Samah asked why AntClim²¹ workshops are by invitation only. N. Bertler noted that workshops have been invitation only up until now because they were working on distinct products during the workshop, but results were always sent out to the broader community for input prior to publication. This will be last workshop held in this sense, as products now exist. They will need help from the community to modify products, and future workshops will have a different focus.

Australia commented that although the SRP has a narrow focus with small numbers of people at these meetings, it was that set up that helped the group achieve its ends, and it can now go out and expand.

4.2.6 Past Antarctic Ice Sheet Dynamics (PAIS) (WP 14a,b)

L. De Santis presented progress and plans for the SRP Past Antarctic Ice Sheet Dynamics (PAIS), including the responses to the external review. It was noted that PAIS is strongly aligned with one of the six priorities of the SCAR Horizon Scan “Antarctic ice sheets and sea-level and tries to understand how, where and why ice sheets lose mass.”

Major highlights for the PAIS SRP include: The International Ocean Discovery Program (IODP) scheduled two new Antarctic margin drilling expeditions, P751 West Antarctic Ice sheet and Climate History, led by Rob McKay (NZ) to be drilled in the Ross Sea in 2018 summer, and P839 Amundsen Sea West Antarctic Ice Sheet history, led by Karsten Gohl (Germany) to be drilling in 2019 summer. An Antarctic Drilling workshop was held in College Station, Texas, USA on May 9-11th 2016 with USSSP, MagellanPlus, ANZIC and PAIS funds. The aim was to review the science objectives of drilling proposals currently in the IODP review system. The workshop was attended by 84 participants (65 from USA, 15 from Europe, 4 from the rest of the world) among which there were 24 students and 8 early-career scientists. Of particular note is a paper in *Nature* by DeConto and Pollard. This paper presents new projections of the Antarctic ice sheet contribution to future sea-level rise that elevate the IPCC projections for all Representative Concentration Pathways except RCP 2.6. The modelling was based on paleo data-model evaluation on past warm periods (e.g.

Pliocene and Last Interglacial), and this contribution from paleoclimate science has received an unprecedented level of media, public and scientific attention.

PAIS members have received awards: Rob DeConto was awarded the 2016 Tinker-Muse Prize for Science and Policy in Antarctica, and Rob Dunbar was awarded the 2016 SCAR Medal for Excellence in Antarctic Research. Tim Naish and Rob DeConto were successfully nominated by SCAR and ICSU to attend a scoping meeting, in Geneva on 15th July, for the IPCC special report on limiting warming to 1.5°C, requested by the Paris Climate Accord. Of 17 nominations by ICSU, only SCAR's nominations were successful.

A PAIS conference has been announced for September 10th-16th in Trieste, Italy with the aim to present recent results that address still-open questions in understanding the sensitivity of the Antarctic Ice Sheet and its contribution to past and future sea level and climate change.

PAIS plans to create a sub-committee to identify and promote research in areas of critical data-modeling gaps. There is also scope for improvement in communications and engagement of scientists in countries with small Antarctic research programmes.

SCAR has asked COMNAP to provide, in partnership with IODP, icebreaker support for the two scheduled PAIS-IODP expeditions to be drilled in 2018 and 2019. New Zealand commented that it is a great achievement to bring IODP and drilling ships back into Antarctic waters and PAIS is to be congratulated for the role they have played in making this happen.

4.2.7 Solid Earth Responses and Influences on Cryospheric Evolution (SERCE), with external review (WP 15a,b)

T. Wilson reported on progress and plans for the SRP Solid Earth Response and influence on Cryospheric Evolution (SERCE), including the responses to the external review. P. Whitehouse and M. King will take over as Co-Chairs of SERCE after the meeting. Topics highlighted include solid earth deformation due to glacial isostatic adjustment and solid earth deformation and future ice sheet stability.

Activities to date have focussed on a number of thematic workshops, training schools, and on facilitating data exchange. 2016-17 activities will follow this vein with a number of training schools and other conferences; interdisciplinary partnerships sought; and a focus on key Horizon Scan questions.

Delegates discussed the progress of all the SRPs and decided all SRPs should continue. It was requested that future reports focus more on the scientific achievements rather than on the meetings that were held.

A discussion followed on how long action and expert groups should continue and the need for SCAR to wind down some groups to remain nimble enough to tackle new problems on the cutting edge of science. It was agreed that the Executive Committee will investigate this issue further and recommend to the Chief Officers to wind down some groups.

***Action:** EXCOM and Secretariat, in consultation with COs, to develop proposals for ending groups and templates for the initiation of new Expert and Action groups.*

***Action:** Secretariat to officially notify SRPs of renewal for next 4 years.*

4.3 Other Science Topics:

4.3.1 The Humanities and Social Sciences Expert Group (WP 16)

4.3.2 The History Expert Group (WP 17)

Co-chairs D. Liggett and E. Leane reported on progress with the Humanities and Social Sciences Expert Group (HASSEG) and the History Expert Group.

The group intends to continue working to achieve its aims through promotion of the polar social sciences and humanities network, the group's own workshops and symposia, website and other channels, publishing research papers, collaboration with other groups both inside and outside SCAR, and targeted research efforts addressing those questions generated by the first SCAR Antarctic and Southern Ocean Horizon Scan that require social sciences and/or humanities input.

The proposal for the formation of a Humanities and Social Sciences SSG is not one group taking over another they are two groups with mutual interests coming together. It was noted that the division between the History Expert Group and Humanities and Social Sciences Expert Groups is a result of the order the groups were formed (History then HASSEG).

Delegates were asked to agree to the establishment of a Humanities and Social Sciences SSG or structural equivalent.

ICSU asked what relationship does the group have with the International Social Science Council (ISSC). Currently there are no links, but if ISSC were interested in collaborating, this would be welcomed.

New Zealand commented that this is an important and expanding group within SCAR and anyone attending sessions at SCAR OSC saw that the sessions were well-attended and created much interest. NZ also suggested that the proposal for an SSG-equivalent structure is approved in principle and that the group is asked to come with a full proposal and structure to approve formally in 2018. Germany commented that this would change SCAR's focus, but it is necessary. Sweden, UK, Argentina and Norway supported Germany and New Zealand. Australia echoed the support and hoped that SCAR can find a mechanism for the group to do this work with support.

Action: EXCOM and Secretariat to consult with HASSEG and History on ways to support development of proposal for new Humanities equivalent to SSG.

4.3.3 The Southern Ocean Observing System (SOOS) (WP 18a,b)

L. Newman reported on progress with the Southern Ocean Observing System (SOOS), including responses to the external review. The SOOS is sponsored by SCAR and SCOR, and currently endorsed by POGO and the WCRP projects CLIVAR and CliC.

L. Newman thanked SCAR for support over past years and requested further support over the coming year. A few milestones over the past years were continued funding of IPO and staff, the Ecosystem Essential Ocean Variables publication, a mooring network and the field project database.

Delegates approved SCAR's continued support for SOOS for 2017-18 and agreed to the participation of the SCAR ED in the next steering committee meeting. Delegates also approved the SOOS report, and continued support for SOOS

4.3.4 The Southern Ocean Acidification Report (IP 1)

J. Baeseman reported on the plans for publication and launch of the SCAR Southern Ocean Acidification Report. It is recognised that this report will have an impact beyond SCAR, in particular within the Antarctic Treaty System, and it is expected the report will be finished by the end of the year.

4.3.5 Partnerships between the WMO and SCAR (IP 2)

E. Charpentier of the WMO reported on WMO activities that are most relevant and of most interest to SCAR, stressing WMO Polar and High Mountain activities, including Global Cryosphere Watch (GCW), the Antarctic Observing Network (AntON), development of Polar Regional Climate Centres (PRCCs) and outlook forums, and WMO research activities in the polar regions, which are conducted through WCRP: the Climate and Cryosphere (CliC) project, the Global Integrated Polar Prediction System (GIPPS), and the Year of Polar Prediction (YOPP). Delegates were asked to note current partnerships (e.g. ISMASS, Southern Ocean Panel, AntON, YOPP) and future potential collaborations (e.g. on Antarctic Treaty papers, the Global Cryosphere Watch, Polar Regional Climate Centres, Polar CORDEX).

The meeting noted with interest WMO's contribution to YOPP and its intensive observation period (mid-2017 to mid-2019), and WMO Executive Council Decision 7(2)/1 (EC-68) on YOPP, which urged WMO members to coordinate with the Polar Prediction International Coordinating Office in order to (i) support the improvement of the existing conventional observing systems over and near the Polar Regions, by increasing the frequency of routine synoptic and radiosonde observations during IOPs; (ii) provide logistical support to planned field campaign activities; (iii) promote possible additional observations; (iv) provide access to remote-sensing observations over and near the Polar Regions; (v) support and participate in YOPP activities including modelling and forecasting experiments as well as verification, user-engagement, education and outreach; (vi) promote the development of the YOPP data legacy, through the implementation of a YOPP data portal that exploits the expertise gained with the Global Cryosphere Watch (GCW) portal; and (vii) provide adequate voluntary resources to support the development and implementation of YOPP, including contributions to the Polar Prediction Trust Fund.

The UK shared their appreciation for WMO's excellent contribution to the ATCM in collaboration with SCAR.

4.3.6 ICSU, Unions and SCAR (WP 19)

J. Buckeridge reported on developments at ICSU and interactions with the ICSU Unions.

SCAR has nine ICSU Union members who have interests in the Antarctic. Collaboration with the Unions is mostly done through representatives to SCAR chosen by the Unions. In the ICSU Review of SCAR (2016), it was recommended that stronger ties be formed amongst the ICSU Union members and the SCAR community.

Delegates were asked to consider encouraging a stronger interaction between the SCAR Secretariat and Union Secretariats, as well as representatives of the Unions to SCAR, to try to enhance communication and exchange.

IUBS specifically suggested that there would be strong links between IUBS and AntEco and AnT-ERA and discussions were initiated during the Open Science Conference.

IUGG commented that it might be good to consider the funding opportunities through ICSU.

4.3.7 ICED Programme (Integrating Climate and Ecosystem Dynamics in the Southern Ocean) (IP 15)

4.3.8 Future Multi-National Initiatives from ICED and SOOS (IP 16)

Presentations of IP15 and IP16 were combined.

A. Constable reported on the Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme. Delegates were asked to note the mutually beneficial opportunities for strengthening interactions and collaborations, including work with CCAMLR and the CEP; work on models, scenarios and projections; and the forthcoming workshop and conference.

ICED has been working with AnT-ERA, AntEco and AntClim²¹ and engaging in dialogue with end users.

A. Constable reported on the SCAR co-sponsored ICED (Integrating Climate and Ecosystem Dynamics in the Southern Ocean) and SOOS (Southern Ocean Observing System) projects:

- International Conference on Marine Ecosystem Assessment of the Southern Ocean (April 2018)
- Benchmarking Southern Ocean Ecosystems in 2022 – Building on the Census of Antarctic Marine Life

These are multi-national, trans-disciplinary programmes that are planning large-scale initiatives to facilitate information flow and foster international collaboration on status and trends of Southern Ocean ecosystems.

Delegates were asked to note the planned ICED/SOOS initiatives, which will continue to foster international collaboration with SCAR subsidiary groups and others, and inform and advise CCAMLR, CEP, the Antarctic Treaty System, IPCC and other bodies.

France commented on the importance of continuing the work done with the Census of Antarctic Marine Life (CAML).

5. Data and Information: Highlights, Progress and Plans

5.1 Standing Committee on Antarctic Data Management (SCADM) (WP 20)

The SCADM Chief Officer, A. Van de Putte, reported on progress and plans with the Standing Committee on Antarctic Data Management (SCADM). Delegates were asked to assist SCADM in preserving valuable Antarctic data by making submission of metadata to the AMD (Antarctic Master Directory), to ensure that their country is fully represented in SCADM, and to help SCADM identify data centres within their

country, which could take on the role of National Antarctic or Polar Data Centre, if none currently exists.

SCADM has become an Associate Member of the International Oceanographic Data and Information Exchange. They are also working on a 2017-2022 strategy to coincide with SCAR's new strategic plan.

The UK commented that there is much talk about data and data management at BAS with an emphasis on data processing to ensure it is in a user-friendly format that can be used by a greater community. Does SCADM focus on data processing or capture? A. Van de Putte responded that for SCADM, discovery of data remains the most important issue. Members of SCADM are involved in different communities and they are looking at improving data standards.

5.2 The Standing Committee on Antarctic Geographic Information (SCAGI) (WP 21)

J. Baeseman reported on progress and plans of SCAGI on behalf of A. Fox and J.-Y. Pirlot. SCAGI products include the Antarctic Digital Database, Air Operations Planning Maps, Composite Gazetteer of Antarctica (CGA), and the SCAR Map Catalogue. An aerial photographs database is planned for the future.

Australia, Bulgaria and Italy were thanked for their active participation and strong support of various SCAGI efforts. It was noted that it is important for every country to have a national representative on SCAGI in order to have complete and accurate maps. Members were asked to report this to their national mapping agencies.

Delegates were asked to ensure that they were familiar with SCAGI's work, to encourage their national representatives and scientists to become involved with and contribute all new data to SCAGI products, to replace retiring national representatives, and inform the SCAGI co-Chairs of the new representatives. Delegates were also asked to approve the re-election of the current chairs for another four-year term.

Australia expressed support for the activities of SCAGI in that they are diverse and useful throughout the range of the SCAR community and beyond.

5.3 SCAR Products (IP 3)

J. Baeseman updated Delegates on progress with the SCAR products. For the benefit of SCAR scientists and the wider community (including the Committee for Environmental Protection), SCAR provides several products that support the work of SCAR scientists but are also made widely available to others. These products provide scientific information in a form that is useful to scientists and others, for example providing meteorological data (Met-READER) or biodiversity data (e.g. biodiversity.aq) in a more easily usable format, or providing access to information on bathymetry in the Southern Ocean (IBCSO).

Delegates approved a budget line to help with outreach and marketing of various products and to create and populate a 'database' of SCAR publications, and to remind relevant national entities to contribute data for SCAR products.

Action: Secretariat to develop database of SCAR products and publications and, with participation of wider community, develop promotional materials to market these products.

6. Partnerships: Highlights, Progress and Plans

6.1 SCAR Partnerships, MoUs and other agreements (WP 22)

J. Baeseman updated Delegates on recent developments regarding SCAR partnerships.

Delegates were informed of the re-signing of the MoU with IASC and the signing of a new MoU with AFoPS at the Open Science Conference.

J. López-Martínez thanked IASC President S. Barr for attending the Open Science Conference for the whole week, not only the ceremonial signing of the MoU. He noted that the 2018 SCAR Open Science Conference will be held jointly with IASC in Davos, Switzerland and will be a special occasion for strengthening links with the Arctic community.

6.2 SCAR/ IASC Think Tank Report (IP 4)

J. Baeseman (SCAR) and V. Rachold (IASC) reported on the SCAR/IASC Think Tank meeting and the resulting recommendations. The following points were highlighted:

- The joint SCAR and IASC Executive Meeting was held in Potsdam in February 2016, in Potsdam, Germany. ICSU, APECS, COMNAP, FARO and an IASC fellow were invited to attend the meeting, where strategies for the future were discussed.
- A SCAR/IASC Polar Task Force will be set up, under the chairmanship of Chuck Kennicutt, to identify polar overarching themes that would benefit from international research coordination. IASC has allocated funds, SCAR is asked to do the same.
- SCAR and IASC should work together on policy activities to maximize impact and further care for the IPY legacy.
- SCAR will establish a programme of Junior Officers such as IASC's Fellows Programme. A Joint Polar Research fellowship and Polar Medal should be discussed as part of the 2018 POLAR conference.
- The SCAR and IASC Secretariats should consider trying to share some administrative resources (e.g. calendar, conference abstract submission software).
- SCAR and IASC should continue to cooperate in terms of International Polar Partnership and involvement in Future Earth

V. Rachold noted that many members have the same representatives for both IASC and SCAR. It was noted that all full members of AFoPS are also now members of SCAR.

Action: SCAR and IASC EXCOMs and Secretariats to implement Polar Priorities project.

6.3 Horizon Scan Follow-up and ARC (IP 5)

J. López-Martínez reported on the Antarctic Roadmap Challenges (ARC) project and other Horizon Scan follow-ups on behalf of M. C. Kennicutt. The COMNAP Executive Committee who travelled from Goa to Kuala Lumpur for the OSC meeting were thanked. In 2018, the COMNAP meeting will again be held immediately prior to SCAR OSC to make travel easier for Delegates.

J. López-Martínez invited K. Shiraishi, president of COMNAP, to introduced IP05 and summarise briefly the ARC report and importance of the document.

Delegates were asked to note the report on ARC, and to suggest continued activities based on the Horizon Scan.

7. SCAR and Policy Advice

The SCAR President, J. López-Martínez, chaired this item.

7.1 Antarctic Treaty Secretariat Report (IP 18)

M. Reinke reported on activities of the Antarctic Treaty Secretariat (ATS).

The XXXIX Antarctic Treaty Consultative Meeting (ATCM) was held in Santiago, Chile, from 23 May to 1 June 2016.

The Meeting adopted a set of Measures, Decisions and Resolutions, including the revision of eight of the 75 Antarctic Specially Protected Areas (ASPAs) and a revised List of Antarctic Historic Sites and Monuments. It commemorated the 25th anniversary of the signing of the Protocol to the Antarctic Treaty on Environmental Protection and adopted the 'Santiago Declaration', reaffirming the commitment of the Consultative Parties to the protection of the Antarctic environment. M. Reinke noted that it was made clear that the Protocol on Environmental Protection to the Antarctic Treaty will not cease in 2048, but will continue until other decisions are taken.

SCAR was mentioned directly under Agenda Items 5, 12, 14, 15, 16 and 19. SCAR advice was considered during the meeting, and such advice will continue to play an important role in ATCM and CEP meetings. M. Reinke commented that the SCAR Lecture, given in the XXXIX ATCM by J. Lopez-Martinez, about Exploring the Future of Scientific Research in Antarctica, was very well received and SCAR has been invited to give a new Lecture in the 2017 ATCM. China will host XL ATCM in Beijing, tentatively from 15 May 2017, followed by Ecuador in 2018 and the Czech Republic 2019. M. Reinke noted that a new Executive Secretary for the ATS will be appointed in 2017.

7.2 Report of the Standing Committee on the ATS (SCATS), including interactions with the Treaty, CCAMLR, and other Treaty Parties (WP 23a, b, 24, IP 17)

A. Terauds reported on progress and plans with SCATS, interactions with the Treaty and the CEP, and the future of the Antarctic Environments Portal.

Since the last Delegates Meeting, the SCAR Standing Committee on the Antarctic Treaty System (SCATS) has continued to engage in a diverse range of international

activities that enhanced SCAR's reputation as a provider of independent, scientific advice to the Antarctic Treaty System and as a leader in Antarctic science. These activities have included active participation in two CEP/ATCM meetings, the development and participation in the Monaco Assessment meeting and associated outputs, the development of the Antarctic Conservation Strategy for the 21st Century, maintaining a key role in the Antarctic Environments Portal, and direct involvement in a diverse range of research projects.

The following agreements and/or commitments have been made (either in the meeting, associated discussions or in previous meetings):

- SCAR will continue to play an active role in supporting the Antarctic Environments Portal project, in particular through the provision of editorial and review services (coordinated through SCATS) and the development of content.
- SCAR will continue to provide updates to the Antarctic Climate Change and the Environment Reports, and consider the inclusion of a high level synthesis of the information in these updates
- SCAR will bring a selection of previous Codes of Conduct to CEP XX (2017) for consideration for endorsement by means of resolution
- SCAR will provide a report on the findings of the Monaco Assessment meeting held in 2015 to CEP XX (2017)
- SCAR will prepare a summary of the current state of knowledge, including any advances in research, regarding the impacts of UAVs on wildlife for CEP XX (2017) (agreed 2015, confirmed 2016)
- SCAR will provide a report to CEP XX (2017) on research and monitoring activities that are being undertaken that are of relevance to the CEP Climate Change Work Response Program (CCWRP)
- SCAR will provide an update on the current state of knowledge of the impact of underwater noise on marine biota to CEP XXI (2017)
- SCAR will provide the final report on Southern Ocean Acidification to CEP XXI (2017)
- The ATCM (2017) once again, invited SCAR to give a lecture on scientific issues relevant to ATCM XL
- SCAR will provide a proposal about the conservation of Antarctic geological and geomorphological values, including fossils, to CEP XXI (2018)

A. Terauds then introduced the Antarctic Environments Portal (www.environments.aq; the Portal) which is a web-based initiative that publishes high quality "state of knowledge" articles in a succinct, policy-ready format on issues of relevance to Antarctic environmental management and policy-making. The primary purpose of the Portal is to provide the Antarctic Treaty's Committee for Environmental Protection (CEP) and the Antarctic Treaty Consultative Meeting (ATCM), with ready access to up-to-date, summary information on the current state of knowledge on aspects of the Antarctic environment that are of interest or importance to policy-makers, so as to support discussions and decisions on Antarctic environmental management.

Argentina suggested that the outputs of the Portal should be more closely associated with SCAR as the affiliations are not always clear, and also that there should be a

focus on multi-national and multi-disciplinary papers. Argentina also pointed out that SCAR groups should be the most relevant source for reviewers of the articles that are to be published on the Portal. A. Terauds responded that the Portal tries to ensure the widest possible geographic spread in its authorship but that bringing the management of the Portal within SCAR would help drive improvements in that area.

Delegates approved the principle of SCAR taking over operational management of the Portal after June 2018, on the basis of external funding being found to support the project.

Delegates asked about the possibility of producing a policy-relevant “one pager” to highlight SCAR research for use at the ATCM. A. Terauds noted the possibility of doing so based on the annual SCAR ACCE Group update presented at the ATCM.

Australia noted that producing documents of that nature should be part of a funded, wider effort on communications, including use of outside experts, that was coordinated by the Secretariat.

Delegates endorsed the SCATS plans and approved their continued funding support.

***Action:** SCAR and New Zealand colleagues to explore cost-neutral options for SCAR to take over the operational management of the Portal after June 2018.*

7.3 Advice to other bodies, such as the IPCC (WP 25)

E. Griffin presented a report on the interactions with other policy bodies, such as the IPCC and UNFCCC.

Following the publication of the Antarctic Climate Change and the Environment (ACCE) report in 2009, SCAR has participated in several United Nations Framework Convention on Climate Change (UNFCCC) meetings to present its climate change science, including the major update to the ACCE report published in 2013, and at the recent Conference of the Parties (COP) 21 meeting in Paris.

Members and Antarctic Treaty parties have expressed interest in more policy-focused output to be generated, potentially based on the annual ACCE Group update. Closer engagement with the Intergovernmental Panel on Climate Change (IPCC) process has been evident recently and SCAR should build on the momentum generated. In particular, the two upcoming IPCC Special Reports will have key Antarctic input.

Opportunities to promote relevant SCAR research in these forums have often been on short notice and without supporting funding. Delegates were asked to authorise the Secretariat to plan and support a more coordinated approach to policy-relevant climate change communications through production of policy-relevant summaries of specific outputs (particularly the ACCE annual update) and active management of the relevant budget lines to support participation at meetings.

A proposed annual budget line of \$1,000 was sought to support production of a policy-relevant “one-pager” from the ACCE update. Default carry-forwards were also asked to be approved on ACCE and IPCC observer budget lines. Carry-forwards would be limited to a set termination at a targeted post-Assessment Report 6 release meeting, which would likely be following UNFCCC COP meeting.

Examples presented of short-term requests for SCAR participation include the IPCC 1.5° Thresholds Report scoping meeting (August 2016) and a proposed joint ICSU-WCRP-SCAR side event at the upcoming UNFCCC COP 22 meeting in Marrakesh.

Canada and Germany highlighted the importance of taking advantage of these opportunities and Delegates agreed to the proposals.

Action: Budget line of \$1,000 approved to support policy-relevant document production and publication. Budget lines for the ACCE group and IPCC engagement to be rolled as set out in WP25.

8. Capacity Building, Education and Training: Progress and Plans

SCAR Vice President K. Lochte chaired this agenda item.

8.1 The SCAR/COMNAP Fellowship Programme (IP 6)

E. Griffin presented an update on the SCAR/COMNAP Fellowships. The Fellowships allow researchers from one SCAR/COMNAP member country to undertake short term visits to major international laboratories, field facilities, and/or research institutes of other SCAR/COMNAP member countries.

The Fellowship programme is one of the key capacity-building activities undertaken by SCAR. Initiatives such as a mentoring webinar and improved guidance notes were introduced in 2016 to help applicants improve their proposals and also to expand the base of potential reviewers for the scheme.

In 2016, the scope of the Fellowships has been extended to include applicants from the Humanities subjects. The 2016 Fellows, announced at the 2016 OSC, were introduced as Jilda Caccavo (SCAR Fellow), Graeme Clark (SCAR Fellow), Ryan Reisinger (SCAR Fellow), Lavenia Ratnarajah (SCAR Fellow), Blanca Figuerola (COMNAP Fellow), Ronja Reese (COMNAP Fellow) and Chris Horvat (COMNAP Fellow). Graeme Clark became the second Prince Albert II of Monaco Biodiversity Fellow.

Delegates were asked to note progress, and to consider if their country would be willing to contribute to the programme with additional fellowships. It was noted that while gender balance amongst the awards was good in both applications and awards, this was not the case for representation of less-developed programmes.

Argentina indicated that the SCAR Fellowship Programme seems not to be reaching researchers from countries with new and developing Antarctic programmes, and suggested the meeting might focus more deeply on the reasons for this situation, and to consider likely options aiming to reverse it. Argentina, supported by Brazil, also suggested that language was a key factor in preventing greater representation of less-developed programmes and should be addressed as part of the efforts to support and mentor applications from these programmes. IUGG noted that support should also be provided in terms of identifying potential host institutions for applicants. Australia noted the importance of mentorship at all levels and suggested seeking support through organisations with an interest in developing nations.

Action: SCAR Secretariat and CBET Committee to continue efforts to support applications from less-developed programmes.

Action: SCAR Secretariat and CBET Committee to review application process, paying special attention to making sure it runs as efficiently as possible.

8.2 The Visiting Professor Scheme (IP 7)

E. Griffin summarised the SCAR Visiting Professor Scheme, which allows senior researchers from one SCAR member country to undertake short term (2-4 weeks) visits to major international laboratories or home institutions of other SCAR member countries. In 2016, Bryan Storey (New Zealand) will visit Iran, and Judd Case (US) will visit Argentina. E. Griffin noted that there were very few female applicants to date for the scheme and that a significant fraction of the proposed host institutes were in countries with well-established Antarctic research programmes.

Delegates were encouraged to consider ways to increase funding for the scheme externally in order to fund additional visiting professorships.

Action: SCAR EO to update guidance to emphasise importance of capacity building and seek to attract more female applicants.

Action: SCAR Secretariat and CBET Committee to review application process paying special attention to making sure it runs as efficiently as possible.

8.3 The Tinker-Muse Prize (IP 8)

E. Griffin presented an update on the Tinker-Muse Prize, including interactions with the Tinker Foundation and the results of the review. It was noted that the change of title (formerly known as the Martha T. Muse Prize) demonstrated the value the Tinker Foundation perceived in its sponsorship of the Prize. The Tinker Foundation approved funding for the 2013-2017 period in 2013 with total funding exceeding USD\$ 1 million. Further approval beyond this period will be subject to application in 2017.

The UK suggested that Tinker-Muse Prize winners might be invited to give the SCAR lecture at the Treaty Meeting, but that it was important the speaker was proficient in communicating with non-technical audiences. It was also commented to consider that the topic of the lecture should be of interest for the ATCM participants and different from immediate previous lectures.

Delegates were asked to be proactive in considering nominations.

8.4 Capacity Building, Education and Training including future plans (WP 26)

SCAR Vice President K. Lochte reported on progress with SCAR CBET activities, and on future plans for the committee. These activities reflected the new Terms of Reference approved at the previous Delegates meeting. Specific roles were identified with designated leaders for each, supported by small teams. A new SCAR Medal specifically to honour communication of Antarctic Research was proposed and accepted.

Action: SCAR to establish a SCAR Medal for Education, Capacity Building, and Outreach – awarded for innovation in, or sustained commitment to, communicating Antarctic research.

9. Communications: Progress and Plans

K. Lochte chaired this agenda item.

9.1 SCAR Communication Activities (website, media, climate communications, social networking, publications, Newsletter, etc.) (WP 27)

J. Baeseman presented an update on communication activities, including an overview of the various forms of communication used by the Secretariat, and potential new ideas for meeting the goals of the new Strategic Plan and improving SCAR communications in general. It was noted that external assistance would be required to develop a cohesive plan for SCAR Communications as a whole. SCAR now provides a central online teleconferencing service for groups to use and the example of the huge uptake of interest in the wikibomb event at the OSC demonstrates the impact successful communications can provide. Delegates were also asked to approve the creation of an ad hoc committee to update the SCAR Communication Strategy and to develop plans to meet the new Strategic Plan.

Australia noted the importance of communications to achieving its goals and that it was important the Secretariat had specialist assistance in this area. Canada also noted the importance of the website as a point of discovery for SCAR to many unfamiliar with the organisation. IASC noted that they were successful in attracting external support for similar activities from their member countries. J. López-Martínez commented on the possible help of the SCAR members, and in particular the main Antarctic research institutes that have press offices, to project the image of SCAR in some press news.

Action: Delegates agreed to take \$10k out of the SCAR reserves for both 2017 and 2018 to be used at the ED's discretion to enhance SCAR's communications. Delegates also approved the creation of an ad hoc committee to develop a SCAR Communication Strategy, and to develop plans to meet the new Strategic Plan.

9.2 Highlighting the role and activities of SCAR Groups, Union Members and National Committees (WP 28)

J. Baeseman presented a paper on the better sharing of activities and achievements of SCAR groups, Union members and National Committees. The work going on within SCAR groups, member countries and within the ICSU Union members dealing with better understanding Antarctica is extensive, yet it is often difficult to get a quick overview of what groups are doing, where new researchers might be able to get involved, and how countries might better collaborate with each other. SCAR is not receiving information in a format that is easy to circulate to the public or other SCAR countries. It was suggested that, where available, copies of reports in pdf format be forwarded to the Secretariat to allow wider dissemination within SCAR. J. Baeseman noted that these efforts would be coordinated as part of the overall efforts to improve communications.

The UK, supported by Australia, suggested that support for the Secretariat in these communications initiatives should be a priority when considering budget applications.

10. Major Meetings

J. López-Martínez chaired this agenda item.

10.1 Summary of XII ISAES in India (IP 9)

Delegates were asked to note the summary of the successful XII International Symposium on Antarctic Earth Sciences (ISAES), held in Goa (13-17 July 2015), and to thank India for hosting the symposium. J. López-Martínez invited M. Ravichandran, the Delegate from India, to briefly comment about the meeting, and added his thanks to the hosts.

J. Baeseman noted that archiving the online information (eg. websites) from important meetings such as this should be implemented.

10.2 Overview of 2016 OSC in Kuala Lumpur

A. Abu Samah presented an oral update on the 2016 OSC (20-30 August 2016). The meeting had 819 participants from 44 countries, with 423 oral presentations and 348 posters. There were also a total of 841 attendees at the side meetings.

J. López-Martínez thanked and congratulated Malaysian colleagues on a successful OSC.

Delegates were asked to thank Malaysia for hosting the OSC and Delegates meeting and show appreciation with applause.

10.3 Plans for Biology Symposium 2017 (IP 10)

A. Van de Putte presented an update on plans for the 2017 SCAR Biology Symposium (Leuven, Belgium, 10-14 July 2017).

Delegates were asked to note the progress on the XII SCAR Biology Symposium, to promote the symposium in their countries, and to send suggestions and comments to A. Van de Putte.

Subthemes for the Symposium include:

- Subtheme 1: *Distribution and trends*
- Subtheme 2: *Adaptation and processes*
- Subtheme 3: *New insights through multi-disciplinary research*
- Subtheme 4: *Threats and impacts: from the pole to the globe to the pole*
- Subtheme 5: *Societal impact of Antarctic biological science*
- Subtheme 6: *Human biology at the poles*

A. Van de Putte noted that an online form for side event requests would shortly be launched at <http://kuleuvencongres.be/scarbiology2017>

10.4 Plans for POLAR 2018 Meeting in Davos (IP 11)

M. Schneebeli and K. Steffen presented an update on the plans for the 2018 meeting (15-27 June 2018).

POLAR2018 is a joint event of SCAR and IASC. The Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) will host the SCAR meetings, the ASSW and the Open Science Conference under the patronage of the Swiss Committee on Polar and High Altitude Research.

Delegates were asked to note the progress on the POLAR 2018 meeting and to send suggestions / comments to M. Schneebeli and K. Steffen.

Netherlands suggested a “market place” event where the SCAR SRPs, EGs and AGs could advertise themselves and allow access to their leadership. J. Baeseman strongly supported this idea on behalf of the Secretariat.

10.5 Proposals for SCAR OSC 2020 Meetings (WP 29)

G. Fenton presented Australia’s bid to host the 2020 meeting in Hobart.

Australia is a member of both SCAR and COMNAP, thus the bid includes hosting both meetings. Australia also graciously hosted the 2006 SCAR meetings in Hobart.

Delegates accepted the proposal from Australia to host the 2020 conference in Hobart, Australia.

Action: SCAR Secretariat to work with Australian team on planning of SCAR 2020.

10.6 Other Major Meetings (IP 14)

Delegates were asked to note the letter of interest from India for hosting the SCAR 2022 meeting.

Chile presented plans to hold the 9th South American Congress on Antarctic Science in Punta Arenas in October 4-6 2017.

11. SCAR Business (CLOSED to all Observers)

J. López-Martínez chaired this agenda item.

11.1 Structural Review of SCAR, including changes to Rules of Procedure (WP 30a, b, c, IP 12)

T. Wilson, chair of the ad hoc group reviewing the structure of SCAR, presented the results of the Structural Review and the potential changes resulting.

The SCAR Structure Review Group (RG) solicited input from the SCAR community via an online survey. Over 100 survey responses were received. The Structure Review Group met for a two-day period in April 2015. The current structure of SCAR science groups was reviewed and some models from other science groups were considered.

A summary of survey responses was presented and discussed. The group then reviewed, in turn, the Standing Scientific Groups (SSGs), including the structure of their subsidiary bodies, Scientific Research Programmes (SRPs), Standing Committees and Advisory Groups and other groups (Humanities, Social Sciences), the SCAR meeting structure, and operation of the SCAR Secretariat.

Main recommendations were as follows:

- Group structures were not understood – too complex, and needed to be articulated in plain language,
- Clarification was needed on how and when to participate in the various types of groups,
- Reporting and evaluation of groups needed to be simplified as it is currently too repetitive and complex,
- Linkages – strengthen linkages between groups and with other international organisations and communities going forward.

T. Wilson handed over to E. Griffin to explain how recommendations link to the SCAR Constitution and its relevant documents. These were noted as the establishing documents that are required for SCAR's registration as a company and charity in the UK. Within these documents the Articles of Association take precedence over the Rules of Procedure and so any changes must be consistent.

Proposed changes fall into broad categories. Those specific to the Structure Review reflect changing both the relevant naming and procedures. More generally proposed changes reflect updating current practice, ambiguous wording and changes proposed to reflect, for instance, the move from a three-day Delegates Meeting to two days. Documents marked up with proposed changes have been circulated and examples of each category of the proposed changes were presented.

Delegates were asked to consider the results of the Structural Review and to consider the amendments to the Rules of Procedure and Articles of Association.

T. Wilson noted that, based on feedback received, the proposal to change Action Groups and Expert Groups to "Task Groups" was now being withdrawn.

IAU noted that the election procedures of "first past the post" may not reflect the best way to represent the will of the Delegates. T. Wilson suggested that an ad hoc group look at this for approval at the next Delegates meeting.

Germany, Italy and Australia all expressed concern over the lifetimes and closing of Action and Expert Groups. It was pointed out that, without closing down some groups, it reduced flexibility to be able to add new ones. It was hoped that this could be accomplished by clearer definitions of the purpose of the groups, as well as stronger review procedures.

Action: *Decision made to keep the Expert and Action Groups; to change the name of Standing Scientific Groups to Science Groups; and to retain the Standing Committee on Finance.*

Action: *Set up a group to review ToRs for AGs and EGs, addressing funding and timeframe, to send to Delegates to approve at next meeting. Suggests having format ready for next EXCOM meeting. Make these clear, well defined. Should be based on clear delivery product that community can use. Sweden volunteered to help with this.*

Action: *SCAR to set up an ad hoc group to consider election procedures for next SCAR meeting.*

Action: *Revised set of proposed changes to be produced for Articles of Association and Rules of Procedure to reflect decisions made in Structure Review.*

11.2 The SCAR Strategic Plan 2017-2022 (WP 31)

J. López-Martínez presented the draft SCAR Strategic Plan 2017-2022, and explained the process used to create it.

The new 2017-2022 SCAR Strategic Plan was one of the most important topics in the agenda at the SCAR Executive Committee Meeting in Tromsø, Norway (26-28 August 2015). At this meeting, a process was approved and followed to assure wide community input into the new plan. J. López-Martínez thanked all contributors to the content of the Draft Strategic Plan, and especially the members of the Strategic Plan team and the writing team for their excellent job.

The draft strategic plan outlined how SCAR's work in the next five years will focus on five key objectives:

- a) *To amplify its leadership in Antarctic research by further strengthening and expanding high-quality collaborative and visionary Antarctic research;*
- b) *To offer independent scientific advice to Antarctic Treaty Consultative Meetings and other bodies dealing with Antarctic and Southern Ocean matters;*
- c) *To enhance and grow research capacity in SCAR member countries;*
- d) *To enhance public awareness and understanding of Antarctic issues through communication of Antarctic research results in a timely and accessible manner; and*
- e) *To facilitate unrestricted and free access to Antarctic research data.*

Delegates were asked to approve the draft Strategic Plan in principle, to suggest modifications as necessary (in writing no later than the end of September 2016), and to authorise EXCOM for the task of final approval.

IAU suggested that minor changes to some terminology could avoid the perception that the Strategic Plan excluded the consideration of research efforts that used Antarctica as a platform, where the results were of more global significance. J. Baeseman asked that specific wording be provided to address the issue. The UK suggested that the present draft could add some subtle amendments to better communicate the role SCAR plays in bringing together a global community of nations and scientists to produce Antarctic research. J. Baeseman reported that a request had been sent to Delegates and National Committees to ask for materials to address this but there had been very little response. Canada noted that amendments at this point needed to be limited and minor as the document as it stood was strong.

***Action:** SCAR members were invited to send final suggestions for any modifications to the Secretariat in writing prior to October. Members were also asked to submit images for inclusion in the final document. Delegates agreed with the content of the Strategic Plan Draft document and accepted that EXCOM decides the final details for its publication before the end of 2016.*

***Action:** Funds for design and printing of Strategic Plan will be set aside from future budgets.*

11.3 ICSU Review of SCAR (WP 32)

J. Buckeridge presented the results from ICSU's review. The main findings were as follows:

- SCAR should simplify its structure,
- SCAR must define its role and niche,
- Expand links to global science,
- Continue providing science policy advice,
- Engage with FutureEarth,
- Expand membership,
- Build capacity in Asia, Africa, South America and other developing areas,
- Use ICSU Regional Offices in membership drive,
- Increase participation of women,
- Undertake a review every five years,
- Develop a fundraising strategy,
- Embrace technology for virtual meetings,
- Improve communication,
- Increase visibility of Antarctica,
- Improve capacity, especially with ECRs.

Delegates were asked to consider the review and suggest action items resulting.

J. Buckeridge noted that progress was being made already to address the majority of the recommendations and he would happily report back accordingly to ICSU. J. Baeseman requested guidance on the nature of the SCAR response to ICSU and whether the review cycle could be amended from 5 to 6 years to match better with the SCAR cycles of 6 years between Strategic Plans.

***Action:** SCAR to respond to ICSU with a list of key performance indicators and outline how SCAR plans to achieve them.*

11.4 Secretariat and EXCOM Reports (WP 33, IP 13)

J. Baeseman presented the Secretariat Report.

Since the 2014 Delegates meeting, new appointments have been made to both the Executive Officer and Executive Director roles. E. Griffin became EO in December 2014 replacing R. Badhe. In July 2015, J. Baeseman was hired as the new ED replacing M. Sparrow. Some issues arose as this was the first non-UK/EU citizen or permanent resident hire for SCAR since its inception in 1958. The final outcome of this difficult situation is that SCAR can now hire and sponsor international employees, and J. Baeseman moved to Cambridge in March 2016 with a valid work visa. Many thanks were given to David Carlson of the World Climate Research Programme and the Norwegian Polar Institute for assisting in the transition.

The SCAR Secretariat has been hosted by the Scott Polar Research Institute, University of Cambridge, Cambridge UK, since its inception. The agreement has just been renewed for another three years.

Delegates were asked to consider possible actions to address staff workload.

The Delegates passed a vote of thanks to the Secretariat for all their hard work. The Delegates also suggested that EXCOM review the Secretariat salary ranges to create a strategy that recognises the level of work of the Secretariat to match the salary ranges.

Germany asked if SCAR would consider having nodes in other countries. J. Baeseman confirmed that the Secretariat would enthusiastically welcome the opportunity, along with any other support that could be provided by members or institutions in a position to assist. It was also noted that internships were to be reinstated to add extra capacity.

Action: Secretariat to implement internships and Delegates to investigate potential ways to help support the Secretariat (i.e. secondments).

12. SCAR Officers (CLOSED to all Observers)

J. López-Martínez chaired this agenda item.

12.1 Presentation of candidates for President and two Vice-Presidents

Candidates interested in running for vacant positions introduced themselves and presented their platforms. Those running for President were A. Abu Samah (Malaysia), S. Chown (Australia), Y-D. Kim (S. Korea), B. Storey (New Zealand), T. Wilson (USA). Those running for Vice President were K. Lochte (Germany), and J. C. Simões (Brazil).

12.2 Election of President and Vice-Presidents

Delegates of full members and ICSU Union members were asked to vote for candidates to fill vacant positions.

Argentina, Canada, and Poland volunteered to help count the votes.

S. Chown (Australia) was elected as SCAR President. K. Lochte (Germany) and J. C. Simões (Brazil) were elected as Vice-Presidents.

13. Finance (CLOSED to all Observers) (WP 34)

Vice President B. Storey chaired this agenda item and gave a quick update on finance matters (WP 34).

In summary, the percentage of funds spent on science has increased significantly since 2010 (from an average of 33% to over 40%). Science Advice has remained level, as has spending on Capacity Building. Salaries and associated costs are a large part of SCAR's annual expenditure (36% to 30%).

13.1 Simplification of the Membership Levels (WP 35)

E. Griffin presented proposals for the simplification of membership levels.

SCAR currently has a complex structure with regard to National Contribution levels for its member countries. There are four levels (Categories A-D) for full members and one level (Category E) for associate members. These levels have been in place for over a decade with the intention to provide options for members to choose their appropriate level and advance to higher levels as their programme develops. The

expectation therefore was that there would be movement between levels, and for the associate level in particular to be a temporary point before moving to full member levels.

The principles behind the suggestions for alternative structures were presented followed by the proposals.

The options represented:

Option 1 – No Change – five Categories, with 4 for Full Members and 1 for Associate

Option 2 – Reduction to 4 Categories, with 3 for Full members and 1 for Associate

Option 3 – Reduction to 3 Categories, with 2 for Full members and 1 for Associate.

Option 3(a) – As for Option 3 above but the second Full member Category was at a lower contribution rate.

A majority of Delegates expressing opinions were in favour of Option 2, and following a vote of all Delegates this option was approved.

***Action:** Majority of Delegates voted in favour of option 2. SCAR Executive to proceed with option 2, which will come into effect for 2018.*

13.2 Review of Secretariat Remuneration (WP 36)

E. Griffin presented a review of Secretariat remuneration and explained that the salary scales used for SCAR are pegged to the University of Cambridge system. This is a historical convention, and benefits have not been revised in recent years.

Delegates were asked to recommend that:

1. EXCOM be authorised to award salary increases above the existing pay scales where required by the results of the annual inflation and appraisal increases, and
2. SCAR should provide the minimum employers contribution to pension, as newly required by UK regulation, as an additional contribution.

It was also recommended that a review should be conducted by SCAR in the medium term. This should be external to the Secretariat staff, and submitted by EXCOM to the Delegates, in order to determine the optimum number and nature of Secretariat roles, pay scales and the expected workloads.

Delegates were asked to note the recommendations in the review, and to approve a change to pension provision for the Secretariat staff, as required by UK law from 2017.

***Action:** Delegates authorised EXCOM to award salary increases above the existing pay scales where required by the results of the annual inflation and appraisal increases.*

***Action:** SCAR will provide the minimum employer's contribution to pension, as newly required by UK regulation, as an additional contribution.*

***Action:** An external review should be conducted by SCAR in the medium term. This should be external to the Secretariat staff, and submitted by EXCOM to the Delegates, in order to determine the optimum number and nature of Secretariat roles, pay scales and the expected workloads. The UK will assist with this.*

13.3 Financial Statements for 2014, 2015 (WP 37, 8)

E. Griffin presented notes to the 2014 and 2015 financial statements, giving details on some of the relevant exceptional items in each year. Small surpluses were produced in each year and the contributing factors were illustrated on the statements themselves.

One factor that would be relevant for 2016 was the interaction between the Secretariat and group COs to ensure that their funds were used before the close of budgets, as was done in 2014. This ensured that the COs were in a position to use as large a proportion of their budgets as possible before the year-end.

The UK asked for clarification on the definition of the SCAR Reserve and E. Griffin confirmed this was not a separate account but considered as a measure against the existing balances. It was noted that the balances are held in non-interest bearing accounts and never approach the Reserve figure.

The UK, Brazil and Canada all supported the suggestion that these funds be actively managed to produce better returns for SCAR.

Delegates approved the 2014 and 2015 statements.

Action: EXCOM were authorised to approve options presented by the Secretariat for moving funds to low risk, interest-bearing accounts and investments.

13.4 Revised Budget for 2016 (WP 39)

E. Griffin presented some factors relevant to the updated 2016 budget, including an updated estimate of Secretariat salaries. It was also noted that the Finance Update (WP34) Table 1, showing the relative spends on science and administration activities, reflects the fact that Fellowships have been re-allocated to be considered part of science spending from 2016.

The spending to the end of June 2016 was illustrated, with a note made that many groups were planning most of their expenditure around the Open Science Conference.

Germany, Australia and the UK expressed concern over the large carry-forwards from groups with a history of not spending their budgets, suggesting poor planning across the two-year funding cycle. B. Storey noted that these issues were in contrast to the large requests made by some groups for future funding, despite not spending existing allocations.

Delegates approved the updated 2016 Budget.

13.5 Revised Budget for 2017 (WP 40)

E. Griffin presented the updated 2017 budget, having noted the positive impact of the revised estimate for currency exchange rates. Allocations for the extra funds available as a result were explained and demonstrated on the budget.

Delegates queried the increase in allocations to the HASSEG and History Groups and the Secretariat explained that this reflected the increase in activity in these Groups.

Delegates noted the allocations to support the Secretariat in developing communications and other necessary activities, several enquiring whether these were sufficient to support the requirements. B. Storey suggested that Delegates could

authorise an amendment to the budget to allocate \$10,000 to the Secretariat, nominally from the SCAR Reserve, and representing a similar deficit in the proposed budget. This allocation is to be used primarily in support of communication activities, at the discretion of the Executive Director.

Delegates approved the proposal.

Delegates approved the revised 2017 budget.

Action: \$10,000 of 2017 reserve will be allocated to the SCAR Secretariat to fund the communications strategy and priority work, at the discretion of the ED.

Action: EXCOM to prioritise support for the Secretariat in re-allocating any contingency funds remaining at the end of 2016.

Action: EXCOM to further discuss allocations to SSGs, AGs and EGs in future budget preparations and amendments.

13.6 Draft Budget for 2018, including applications for major meeting funds (WP 41)

E. Griffin presented the proposed 2018 budget, based on the allocations updated in the 2017 budget.

Delegates discussed the continuation of the support for the Secretariat in dealing with communications and other priorities.

Delegates approved the draft 2018 budget.

Action: Delegates approved 2018 budget. The revision at the EXCOM 2017 Meeting is to consider further use of Reserve funds to be allocated to support continuing communications activities and other priorities within the Secretariat.

Action: \$10,000 of 2018 reserve will be allocated to the SCAR Secretariat to fund the communications strategy and priority work, at the discretion of the ED.

13.7 The SCAR Development Council (WP 42)

The Chair of the Development Council, P. Convey, presented progress with regard to the SCAR Development Council (DC).

The main activity of the DC in the past year has been to try to encourage engagement by existing SCAR Delegates, programmes and groups in the search for resources to enhance SCAR's activities. Known opportunities are now advertised more widely through the SCAR webpages and contact lists.

Significant SCAR successes have included the Tinker Foundation support of the Tinker-Muse Prize; Monaco Biodiversity Prize; sponsorship of important meetings such as the Horizon Scan; and international initiatives such as SOOS.

P. Convey emphasized that the DC would focus on high-likelihood areas for fundraising, reflecting a realistic approach to the opportunities that were relevant to SCAR. The expectation would be for one to two major proposals to be considered each year and it was noted that these efforts may require funding to support external professional advice as required. It was also noted that the DC sees its role in overseeing and supporting fundraising activities of SCAR groups, but it cannot undertake writing of fundraising proposals.

Delegates and SCAR group leaders were asked to actively engage with the search and application for opportunities within their own countries and wider scientific networks to enhance the funding that could be used to support SCAR scientific activities.

Delegates suggested that existing national Fellowships and Visiting Professorship programmes could be advertised through SCAR and may lead to greater support for SCAR's own programmes.

Action: Delegates granted the DC the ability to write letters of support for grants, in consultation with the ED.

13.8 Any other Finance Matters

B. Storey provided the opportunity for Delegates to raise any additional finance matters. There were no additional finance matters raised.

14. Other Business

14.1 Any other business

J. López-Martínez asked if there was any other business.

URSI encouraged consideration of the environmental impact when planning large meetings. The UK welcomed the point and emphasized that, where possible, smaller meetings should be conducted online.

Action: EXCOM and Secretariat to investigate further ways to ensure environmental impact is considered when planning meetings and other activities.

15. Actions Arising

15.1 Any other business

J. Baeseman indicated that an Actions list resulting from the meeting would be developed in next few weeks. Delegates were asked to look over the action items closely and respond with any requested changes. J. Baeseman thanked H. Nielsen for taking notes on action items.

Malaysia thanked SCAR for choosing Malaysia to host the 2016 SCAR OSC and Delegates meeting.

J. López-Martínez thanked Malaysia for its hospitality and the organisation of such a successful meeting. He also offered personal thanks to the SCAR community and the SCAR Vice Presidents throughout his mandate – B. Storey, K. Lochte, T. Wilson, A. Abu Samah, Y-D. Kim and S. Marenzii.

He further thanked the SCAR Secretariat for its support, including M. Sparrow, R. Badhe, R. Nash, J. Baeseman and E. Griffin and looked forward to a successful future for SCAR under the leadership of S. Chown and the new EXCOM.

S. Chown offered reflections on J. López-Martínez's leadership of SCAR, noting that SCAR had proven itself as an organisation that can effectively integrate a wide range

of science and provide policy advice. He noted that SCAR finds itself in a strong position, which is an extremely useful place for a new President to start.

16. Closure of the meeting

The SCAR President, J. López-Martínez, closed the meeting at 17:25.

Appendix 1: List of Acronyms

AA	Administrative Assistant
AAA	Astronomy and Astrophysics from Antarctica
ACCE	Antarctic Climate Change and the Environment
AFoPS	Asian Forum for Polar Sciences
AG	Action Group
AMD	Antarctic Master Directory
AntClim ²¹	Antarctic Climate Change in the 21st Century
AntEco	State of the Antarctic Ecosystem
AnT-ERA	Antarctic Thresholds - Ecosystem Resilience and Adaptation
AntON	WMO Antarctic Observing Network
ANTOS	Antarctic Near-shore and Terrestrial Observing System
ANTPAS	Antarctic and sub-Antarctic Permafrost, Soils and Periglacial Environments
ANZIC	Australian & New Zealand International Ocean Discovery Program Consortium
APECS	Association of Polar Early Career Scientists
APRI	Austrian Polar Research Institute
ARC	Antarctic Research Challenges project
ASAP	as soon as possible
ASEAN	Association of Southeast Asian Nations
ASPA	Antarctic Specially Protected Area
ASPeCt	Antarctic Sea-Ice Processes and Climate
ATCM	Antarctic Treaty Consultative Meeting
ATS	Antarctic Treaty System / Antarctic Treaty Secretariat
BAS	British Antarctic Survey
BEPSII	Biogeochemical Exchange Processes at the Sea-Ice Interfaces
CAA	Chinese Arctic and Antarctic Administration
CAML	Census of Antarctic Marine Life
CBET	Capacity Building, Education and Training
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCO	Colombian Ocean Commission
CEP	Committee for Environmental Protection (Antarctic Treaty)
CGA	Composite Gazetteer of Antarctica
CliC	Climate and Cryosphere Project (a project of the WCRP)
CLIVAR	Climate Variability and Predictability project (a project of the WCRP)
CMIP	Coupled Model Intercomparison Project
CO	Chief Officer
COMNAP	Council of Managers of National Antarctic Programs

COP	Conference of Parties (UNFCCC)
CORDEX	Coordinated Regional Climate Downscaling Experiment
CPR	Continuous Plankton Recorder
DC	Development Council
ECR	Early career researcher
ED	Executive Director
EG	Expert Group
e.g.	for example (from Latin: <i>exempli gratia</i>)
EG-BAMM	Expert Group on Birds and Marine Mammals
EO	Executive Officer
EPB	European Polar Board
ES	Executive Secretary
ESMValTool	Earth System Model eValuation Tool
EXCOM	Executive Committee
EXCOM 2015	Executive Committee Meeting, August 2015
FARO	Forum of Arctic Research Operators
FRISP	Forum for Research into Ice Shelf Processes
GCW	Global Cryosphere Watch
GIPPS	WMO's Global Integrated Polar Prediction System
GIS	Geographic Information System
GS	Geosciences
HRH	His/Her Royal Highness
IACS	International Association of Cryospheric Sciences
IASC	International Arctic Science Committee
IAU	International Astronomical Union
IBCSO	International Bathymetric Chart of the Southern Ocean
ICED	Integrating Climate and Ecosystem Dynamics
ICSU	International Council for Science
i.e.	that is (from Latin: <i>id est</i>)
IGU	International Geographical Union
IODP	Integrated Ocean Drilling Program
IOP	Intensive Observing Period
IP	Information Paper
IPCC	Intergovernmental Panel on Climate Change
IPICS	International Partnership in Ice Core Science
IPO	International Project Office
IPY	International Polar Year 2007-2008
ISAES	International Symposium on Antarctic Earth Sciences
ISMASS	Ice Sheet Mass Balance and Sea Level
ISSC	International Social Science Council
IUBS	International Union of Biological Sciences

IUGG	International Union of Geodesy and Geophysics
IUGS	International Union of Geological Sciences
JEGHBM	Joint Expert Group on Human Biology and Medicine (with COMNAP)
LS	Life Sciences
Met-READER	Meteorological data from READER (REference Antarctic Data for Environmental Research)
MoU	Memorandum of Understanding
MOSTI	Ministry of Science, Technology and Innovation, Malaysia
NAP	National Antarctic Programme
NARIT	National Astronomical Research Institute of Thailand
NASTDA	Thailand National Science and Technology Development Agency
OSC	Open Science Conference
PACT	Polar Atmospheric Chemistry at the Tropopause (Action Group)
PAIS	Past Antarctic Ice Sheet dynamics
PCPI	WMO's Polar Climate Predictability Initiative
POGO	Partnership for Observation of the Global Oceans
PolRec	Istanbul Technical University Polar Research Center
PRCCs	WMO Polar Regional Climate Centres
PRIC	Polar Research Institute of China
PS	Physical Sciences
RCP	Representative Concentration Pathways (adopted for IPCC's AR5)
READER	REference Antarctic Data for Environmental Research
SA	South Africa
SCADM	Standing Committee on Antarctic Data Management
SCAGI	Standing Committee on Antarctic Geographic Information
SCATS	Standing Committee on the Antarctic Treaty System
SC-Finance	Standing Committee on Finance
SCAR	Scientific Committee on Antarctic Research
SCOR	Scientific Committee on Oceanic Research
SERCE	Solid Earth Response and influence on Cryosphere Evolution
SOOS	Southern Ocean Observing System
SPT	Strategic Plan Team
SRP	Scientific Research Programme
SSC	Scientific Steering Committee
SSG	Standing Scientific Group
SSG-GS	Standing Scientific Group on GeoSciences
SSG-LS	Standing Scientific Group on Life Sciences
SSG-PS	Standing Scientific Group on Physical Sciences
TARE	Turkish Antarctic Expedition
TATE	Tropical Antarctic Teleconnections (Action Group)
ToRs	Terms of Reference

TUBITAK	Scientific and Technological Research Council of Turkey
UAV	Unmanned Aerial Vehicle
UK	United Kingdom
UNFCCC	United National Framework Convention on Climate Change
URSI	International Union of Radio Science
US / USA	United States of America
USSSP	US Science Support Program
VP	Vice President
WCRP	World Climate Research Programme
WMO	World Meteorological Organisation
WP	Working Paper
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research
YOPP	WMO Year of Polar Prediction

Appendix 2: Action Items

No.	Action	Whom	By When	Priority
D16-01	Send letter to the Ukraine notifying of Delegates approval of moving to Associate member and paying of arrears	ED	ASAP	Medium
D16-02	Send letter to Czech Republic and Portugal following up on desire to become full members.	ED	Jan 2017	Medium
D16-03	Send letter to Belarus following up on ATCM comment and letter read by B Story about desire to become an associate member.	ED	Jan 2017	Medium
D16-04	Develop new member packet	AA/ED	Oct 2016	High
D16-05	send new member packet to Thailand, Austria, Turkey, and Colombia	ED	Oct 2016	High
D16-06	Update website/lists with new officers/directors	AA	Sep 2016	High
D16-07	Extend IPICS for another 8 years	ED/AA	Oct 2016	Medium
D16-08	Add FRISP EG	ED/AA	Oct 2016	Medium
D16-09	Add TATE EG	ED/AA	Oct 2016	Medium
D16-10	Send letter to NASA on satellite coverage	ED/Remote sensing EG chairs	Nov 2016	Medium
D16-11	Send letter of appreciation to G Hosie for years of service to SCAR	ED	Nov 2016	Medium
D16-12	Meeting notes from SCAR/COMNAP Joint EXCOM Meeting	EO	Sep 2016	High
D16-13	Connect ANTPAS and ANTOS groups	ED	Sep 2016	Medium
D16-14	Add BEPSII EG	AA/ED	Oct 2016	Medium
D16-15	Develop plan for group sunsets	EXCOM	Jan 2017	Medium
D16-16	Develop template for starting an expert/action group	ED/AA	Dec 2016	Medium
D16-17	Make ANTOS an expert group	ED/AA	Oct 2016	Medium
D16-18	Change name of CPR group to Southern Ocean Continuous Plankton Recorder Database Expert Group and update TOR	AA/ED	Oct 2016	Medium
D16-19	Review EGBAMM	ED/LS CO	Jan 2017	Medium
D16-20	Figure out how to archive info from ISAES in India	AA/ED/India n hosts	Oct 2016	High
D16-21	Work with Korea to ensure website for ISAES is archived within SCAR website	AA/ED	Oct 2016	High
D16-22	Send letters of thanks to the reviewed SPRs notifying of approval for 4 more year.	ED/AA	Oct 2016	High

D16-23	Clarify SRP desired outcomes	EXCOM	Jan 2017	Medium
D16-24	Work with Humanities and Social Sciences Expert Group on developing a proposal for an SSG	ED	Delegates 2018	Medium
D16-25	Write a response to ICSU's review of SCAR	ED/EXCOM	Oct 2016	High
D16-26	Database for SCAR publications	AA/EO/ED	Jan 2017	Medium
D16-27	Marketing material for SCAR products	All	Mar 2017	Medium
D16-28	Implement Polar Priorities project	ED/CK/VR	Oct 2016	High
D16-29	Establish SCAR Junior Officers	AA/EO/ED/APECS	Nov 2017	Medium
D16-30	Add IPY info to SCAR website	AA/ED/JLM	Nov 2016	Medium
D16-31	Look for funding for Antarctic Environments Portal	ED/SCATS/NZ	Delegates 2018	High
D16-32	Create policy maker friendly ACCE update and SCAR Science update for ATCM	ED/EO/SCATS	ATCM 2017	High
D16-33	Review Fellowship application/evaluation process	EO/CBET	Dec 2016	High
D16-34	Fellowship webinar follow-up questionnaire	EO	Oct 2016	Medium
D16-35	Develop 'how to contribute to the fellowships' prospectus	Dev Council/ED	Nov 2016	High
D16-36	Develop 'how to contribute to the visiting professors' prospectus	Dev Council/ED	Nov 2016	High
D16-37	Review Visiting Professor application/evaluation process	EO/CBET	Dec 2016	High
D16-38	Update guidance of visiting professor application to emphasize capacity building	EO	Nov 2016	High
D16-39	Establish procedures for SCAR Medal for Education, Capacity Building and Outreach	CBET/EXCOM	Dec 2016	Medium
D16-40	Establish ad hoc group to develop SCAR Communication strategy	ED/AA	Oct 2016	High
D16-41	Establish ad hoc group to help with national committee communication and reporting	ED/AA	Oct 2016	High
D16-42	Implement online newsletter	AA/ED	Oct 2016	High
D16-43	Ask national committees for pdf version of yearly reports, in any language.	AA	Oct 2016	Medium
D16-44	Archive abstract book, presentations and posters from OSC 2016	AA/EO	Oct 2016	Medium
D16-45	Update rules of procedure based on Delegates meeting	EO/TW	Sep 2016	High
D16-46	Update website/documents based on rules of procedure changes from Delegates meeting (e.g. SSG to SG)	EO	Sep 2016	High

D16-47	Update group information on website	AA/EO	Oct 2016	High
D16-48	Set up ad hoc group to consider election procedures for next SCAR meeting	EXCOM	2017	Low
D16-49	Get update wording from J Storey for Strategic Plan	ED/JS	Sep 2016	High
D16-50	Send reminder request to national committees and delegates for photos	AA	Sep 2016	High
D16-51	Develop list of projects for interns	AA/ED	Oct 2016	High
D16-52	Develop intern programme	AA/ED	Oct 2016	Medium
D16-53	Follow up on Membership Level Simplification. Website update, articles/rules update, letters to members in category C encouraging movement before 2018.	EO/ED	Oct 2016	High
D16-54	Notifying associate members that their dues will increase in 2018.	EO/ED	Oct 2016	High
D16-55	Establish retirement plan for employees	EO/ED	Dec 2016	High
D16-56	External review of SCAR Secretariat salary levels, workloads, duties.	EXCOM	2017	Medium
D16-57	Submit 2014 and 2015 Financial statements to charity registration people.	EO	Sep 2016	High
D16-58	Signatories of new Directors	EO	Sep 2016	High
D16-59	Revise 2017, 2018 budgets based on Delegates decisions.	EO	Sep 2016	Medium
D16-60	Release \$10k from reserve for 2017&2018 for SCAR Communication Activities	EO/ED	Jan 2017	High
D16-61	Reallocate any contingency funds to Secretariat	EO/ED	Dec 2016	High
D16-62	Further discuss allocations to SSGs; AGs and EGs for future budget requests	EXCOM	Jan 2017	Medium
D16-63	Develop SCAR Booklet for Tourist ships	DevCouncil	Mar 2017	Medium
D16-64	Develop prospectus for donating to SCAR	DevCouncil	May 2017	Medium
D16-65	Hire consultant to advise on funding strategy	DevCouncil/ ED	May 2017	Medium
D16-66	Develop funding opportunity database	AA/ED/ DevCouncil	Dec 2016	Medium
D16-67	SCAR to look into being more environmentally friendly	EXCOM	Delegates 2018	Low
D16-68	Finalize Strategic Plan 2017-2022 and publish	EXCOM & Secretariat	Jan 2017	High

Appendix 3: List of Documents

In the interests of efficiency, papers are classified as either Working Papers (WP), which are essential for the conduct of business (usually require a decision), or Information Papers (IP).

Working Papers

Paper No.	Agenda Item	Document Title	Responsible for Paper Submission	Deadline
WP 1	1.2	Summary Agenda	J Baeseman/ R Nash	29-Feb
WP 2	1.2	Timetable and Annotated Agenda	J Baeseman/ R Nash	21-Jul
WP 3	1.2	List of Documents	J Baeseman/ R Nash	29-Feb
WP 4a	2.1.1	Application of Colombia for Associate Membership of SCAR	Rep from Colombia	29-Feb
WP 4b	2.1.2	Application of Austria for Associate Membership of SCAR	Rep from Austria	29-Feb
WP 4c	2.1.3	Application of Thailand for Associate Membership of SCAR	Rep from Thailand	29-Feb
WP 4d	2.1.4	Application of Turkey for Associate Membership of SCAR	Rep from Turkey	29-Feb
WP 5	2.2	Membership	J Lopez-Martinez	1-Jul
WP 6a	4.1.1	Report of SSG Physical Sciences	D Bromwich	1-Jul
WP 6b	4.1.1	Reports from Physical Sciences Action and Expert Groups	D Bromwich	1-Jul
WP 6c	4.1.1	IPICS External Review Summary, Report and Reviews	D Bromwich / J Baeseman	25-Jul
WP 7a	4.1.2	Report of SSG Life Sciences	G Hosie	1-Jul
WP 7b	4.1.2	Reports from Life Sciences Action and Expert Groups	G Hosie	1-Jul
WP 8a	4.1.3	Report of SSG Geosciences	B Lyons	1-Jul
WP 8b	4.1.3	Reports from Geosciences Action and Expert Groups	B Lyons	1-Jul
WP 9a	4.2.2	SRP Review Process	J Baeseman	1-Jul
WP9b	4.2.2	SRP External Reviews – Delegate scores and comments	J Baeseman / Delegates	1-Aug
WP 10	4.2.1	Report on AAA (Astronomy and Astrophysics from Antarctica)	J Storey	1-Jul
WP 11a	4.2.3	Report on AntEco (State of the Antarctic Ecosystem)	J Strugnell / H Griffiths	1-Jul
WP 11b	4.2.3	AntEco External Review Report	J Strugnell / H Griffiths	1-Jul
WP 12a	4.2.4	Report on AnT-ERA (Antarctic Thresholds – Ecosystem Resilience and Adaptation)	J Gutt	1-Jul
WP 12b	4.2.4	AnT-ERA External Review Report	J Gutt	1-Jul

WP 13a	4.2.5	Report on AntClim ²¹ (Antarctic Climate Change in the 21 st Century)	N Bertler	1-Jul
WP 13b	4.2.5	AntClim ²¹ External Review Report	N Bertler	1-Jul
WP 14a	4.2.6	Report on PAIS (Past Antarctic Ice Sheet Dynamics)	L De Santis / T Naish	1-Jul
WP 14b	4.2.6	PAIS External Review Report	L De Santis / T Naish	1-Jul
WP 15a	4.2.7	Report on SERCE (Solid Earth Response and influence on Cryosphere Evolution)	T Wilson	1-Jul
WP 15b	4.2.7	SERCE External Review Report	T Wilson	1-Jul
WP 16	4.3.1	Report from the Humanities and Social Sciences Expert Group (HASSEG)	D Liggett	1-Jul
WP 17	4.3.2	Report from the History Group	C Lüdecke	1-Jul
WP 18a	4.3.3	The Southern Ocean Observing System	L Newman	1-Jul
WP 18b	4.3.3	SOOS External Review Report	L Newman	1-Jul
WP 19	4.3.6	The ICSU Unions and SCAR	J Baeseman	1-Jul
WP 20	5.1	Report on SCADM (Standing Committee on Antarctic Data Management)	A Van de Putte	1-Jul
WP 21	5.2	Report on SCAGI (Standing Committee on Antarctic Geographic Information)	A Fox / J-Y PirLOT	1-Jul
WP 22	6.1	Report on Partnerships, MoUs and other agreements	J Baeseman	1-Jul
WP 23a	7.2	Report from SCATS (Standing Committee on the Antarctic Treaty System) on general activities	A Terauds	1-Jul
WP 23b	7.2	Antarctic Environments Portal	A Terauds	1-Jul
WP 24	7.2	Report of SCAR Delegation to XXXIX ATCM and CEP XIX	A Terauds	21-Jul
WP 25	7.3	Climate Change Communications	E Griffin	1-Jul
WP 26	8.4	Capacity Building, Education and Training, including future plans	K Lochte / E Griffin	1-Jul
WP 27	9.1	SCAR Communication Activities	J Baeseman / R Nash	1-Jul
WP 28	9.2	Highlighting the Role of SCAR Groups, Union Members and National Committees	J Baeseman / R Nash	1-Jul
WP 29	10.5	Bids to host SCAR 2020	J Baeseman	1-Jul
WP 30a	11.1	Proposed Amendments to SCAR Rules of Procedure from the Structural Review	T Wilson / E Griffin	29-Feb
WP 30b	11.1	Proposed Amendments to Rules of Procedure for Subsidiary Bodies from the Structural Review	T Wilson / E Griffin	29-Feb
WP 30c	11.1	Proposed Amendments to the SCAR Articles of Association	T Wilson / E Griffin	

WP 31	11.2	The SCAR Strategic Plan 2017-2022	J Baeseman	1-Jul
WP 32	11.3	ICSU Review of SCAR	J Baeseman	1-Jul
WP 33	11.4	Secretariat Report	J Baeseman / E Griffin	21-Jul
WP 34	13	Finance Update	B Storey / E Griffin	1-Jul
WP 35	13.1	Simplification of Membership Levels	B Storey / E Griffin / J Lopez-Martinez	1-Jul
WP 36	13.2	Review of Secretariat Remuneration	B Storey / E Griffin	1-Jul
WP 37	13.3	Financial Statement for 2014	B Storey / E Griffin	1-Jul
WP 38	13.3	Financial Statement for 2015	B Storey / E Griffin	1-Jul
WP 39	13.4	Revised Budget for 2016	B Storey / E Griffin	1-Jul
WP 40	13.5	Revised Budget for 2017	B Storey / E Griffin	1-Jul
WP 41	13.6	Draft Budget for 2018, including applications for major meeting funds	B Storey / E Griffin	1-Jul
WP 42	13.7	The SCAR Development Council	P Convey	1-Jul

Information Papers

Paper No.	Agenda Item	Document Title	Responsible for Paper Submission	Deadline
IP 1	4.3.4	Southern Ocean Acidification Report	R Bellerby	1-Jul
IP 2	4.3.5	Partnerships between the WMO (including WCRP) and SCAR	E Charpentier / M Sparrow	1-Jul
IP 3	5.3	The SCAR Products	J Baeseman	1-Jul
IP 4	6.2	SCAR/IASC Think Tank Report	J Baeseman	1-Jul
IP 5	6.3	Antarctic Roadmap Challenges (ARC) and Horizon Scan Follow-up	J Baeseman	1-Jul
IP 6	8.1	The SCAR/COMNAP Fellowship Scheme	E Griffin	1-Jul
IP 7	8.2	The SCAR Visiting Professor Scheme	E Griffin	1-Aug
IP 8	8.3	The Tinker-Muse Prize	E Griffin	1-Jul
IP 9	10.1	Summary of XII ISAES in India	N Pant	1-Jul
IP 10	10.2	Plans for Biology Symposium 2017	A Van de Putte	1-Jul
IP 11	10.3	Plans for POLAR 2018	M Schneebeli	1-Jul
IP 12	11.1	Structural Review Report	T Wilson / E Griffin	1-Jul
IP 13	11.4	EXCOM 2015 Report	J Baeseman	29-Feb
IP 14	10.6	Expression of interest from India in hosting 2022 Biennial Meetings	M Rajeevan	

IP 15	4.3.7	ICED (Integrating Climate and Ecosystem Dynamics in the Southern Ocean) Report	R Cavanagh / E Murphy	1-Jul
IP 16	4.3.8	Future multi-national initiatives from ICED and SOOS	A Constable	1-Jul
IP 17	7.2	Report on joint CEP/SC-CAMLR Workshop, May 2016	A Terauds	1-Jul
IP 18	7.1	Antarctic Treaty Secretariat Report	M Reinke	