

**WORLD METEOROLOGICAL ORGANIZATION
EXECUTIVE COUNCIL
PANEL OF EXPERTS ON POLAR OBSERVATIONS, RESEARCH AND SERVICES
EC-PORS Third session
SODANKYLÄ, FINLAND, 6-8 FEBRUARY 2012**

**REPORT
Executive Summary**

We held a very successful session of the EC-PORS with sincere thanks to the Finnish Meteorological Institute for creating an excellent work environment and arrangements to make us comfortable in Lapland. The programme flowed smoothly due, in great part, to Professor Taalas who co-chaired in the absence of Dr. Greg Ayers. Shortly after the meeting we were informed that Dr. Ayers would retire from the Australian Bureau of Meteorology. From of us in the international community, I extend our highest respect and sincere wishes to Greg as he charts a new path in life.

During the meeting, each of the four Task Teams (i.e. Antarctic, Observations - including the Polar Space Task Group, Research and Services) reported on outcomes and future work plans. Together, we engaged in a dialogue on how to ensure the Panel broadly supports Polar initiatives including the Third Pole, is recognized as an important partner by other organizations and creates the modalities to incorporate the Polar dimension into, for example, WIGOS and WIS. This work was assisted by on-site and remote presentations on Arctic Council, the Antarctic Treaty Consultative Meeting and the Global Framework for Climate Services. Representatives of the Finnish Ministry of Transport and Aker Arctic helped us focus on user requirements.

The Panel conveyed guidance on the implementation of the Global Cryosphere Watch (GCW) and after an in-depth presentation on the Global Integrated Polar Prediction System (GIPPS), we confirmed that to realize this goal, we recommend to develop one plan shared by WWRP and WCRP ideally led by one International Planning Office (IPO). We also spent some time discussing partnerships and resource mobilization based on the need to secure funding for these long term initiatives. We will enter into discussion with various funding organizations and consider how interested Member States might strengthen the Resource Mobilization Department in WMO.

Over the next few weeks, the Panel and partners will further scope their interests in a Long-Term Polar International Cooperative Initiative in preparation for the IPY Conference being held in Montreal April 22 – 27 2012. The Panel will articulate its requirements into the next iteration of WMO's Strategic and Operational Plans and exert influence with relevant Regional Associations to ensure Polar interests are considered fully.

The detailed report that follows this Executive Summary is further supplemented by four annexes:

- Annex one: Summary of action items
- Annex two: Presentations by Experts and Guest Speakers
- Annex three: Internal and External Engagement Opportunities for 2012
- Annex four: EC PORS 3 agenda

I thank all participants for their enthusiasm, special thanks to Barry Goodison and Miroslav Ondras for their tireless efforts in preparing the meeting and to staff of FMI for exceptional arrangements.

Sincerely,

David Grimes
Co-Chair, WMO Executive Council Panel on Polar Observations Research and Services

Detailed Report

1. ORGANIZATION OF THE SESSION (DOC 1.2.1, 1.2.2, INF 1-2-3)

Mr. David Grimes, co-chair of the EC Panel of Experts on Polar Observations, Research and Services (EC-PORS), welcomed the Panel members to the 3rd Session of the Panel for which the Finnish Meteorological Service (FMI) was host. In the absence of co-chair Mr. Greg Ayers, Prof. Petteri Taalas, Director General of FMI and local host, agreed to serve as co-chair to assist Mr. Grimes. For a complete list of participants (INF. 2) and for other documents and presentations please the website;

http://www.wmo.int/pages/prog/www/polar/index_en.html

or

http://www.wmo.int/pages/meetings/ec_bodies_sessions_en.html

and

<ftp://ftp.wmo.int/Documents/SESSIONS/EC-PORS-3/Presentations/> (for presentations)

Two days of the meeting were held in Luosto, Sodankylä municipality, Finland. The second day of the meeting was held at the Finnish Meteorological Institute's Arctic Research Centre.

The daily weather illustrated that the cold outbreak currently affecting northern Europe where overnight temperatures in Finland had fallen to -35 and as cold as -42 in northern regions was coming to a close as temperatures were expected to rise to -10 by the end of the session. This was welcome news, particularly to Panel members from the southern hemisphere.

Dr. Taalas then briefed the Panel on the science activities of FMI (est. 1838) and on long term climate records in Finland including long term negative trend in snow cover and sea ice. Yet Finland is able to demonstrate that they can still operate their society and economy in cold conditions. He highlighted the service orientation of the organization toward safety and protection of life and property and their relationships with the private sector, research agencies and their largest customers, civil aviation, winter road maintenance and marine transportation including ice services. With approximately 650 staff and 70 million euro in funding through government allocations and resources secured for innovative, research and operations from external sources, FMI covers the spectrum of observations, research and services..

2. EC-PORS: OBJECTIVES AND STRATEGIC FRAMEWORK (Doc 2.1)

The Panel was updated on the outcomes from the 16th Session of the WMO Congress (Cg-XVI) and the 63rd Session of the WMO Executive Council (EC-LXIII) held in May/June 2011, notably on the Resolutions addressing priority polar activities that will focus the EC-PORS work. EC-LXIII re-established the Panel and decided on the areas of work / Terms of Reference (ToR). EC-PORS members shall use these terms of reference and consider these priority areas in formulating their current plans and actions. David Grimes noted that Arctic responsibility crosses three Regional Associations (II, IV and VI).

3. REVIEW OF EC-PORS ACTIVITY SINCE EC-PORS-2 (Doc 3.1)

A brief overview of achievements was provided including the decisions of Congress relevant to the Panel's activities. It was emphasized that we should work to convert the various resolutions / accomplishments into a compelling story to market our activities, both internally and externally. It was noted that the Global Framework for Climate Services (GFCS) is providing new impetus on the polar climate. The Panel must determine the best method for it to interface with the GFCS Intergovernmental Board, part of which will be integrating the Global Cryosphere Watch (GCW) into the WIGOS and GFCS observation component, into the Research component and into the

operational services and user liaison. The Panel needs to keep track of what is evolving in both the climate and weather domains as they relate to GIPPS. It was emphasized that the carbon cycle must be included in the Global Integrated Polar Prediction System (GIPPS) to assist both adaptation and mitigation.

Members were asked to review and modify, if necessary, the ToR and to think about the necessary skill sets required by the Panel. Since EC PORS II, membership on the Panel has expanded to include Anette Jönsson (Sweden), Ms. M.L. Ou (Republic of Korea), Drs. K Satheesan and Ajit Tyagi (India) and Dr. Alexander Frolov (Russian Federation); unfortunately the latter two were unable to attend. The Panel's composition now covers many areas including permafrost and glacier issues in addition to weather, climate and water; areas of need include Polar Ecology and Numerical Weather Prediction (NWP).

Funding of Panel activities continues to be from extra-budgetary resources. Australia, Canada, Norway and the United States of America each contributed approximately CHF 50,000 to the EC-PORS Trust Fund in 2011. Other Members, notably Finland and Sweden have also contributed to the TF. Very significant in-kind support is provided by Members hosting EC-PORS sessions.

The presentations helped to set the stage for discussion in breakouts and in plenary, including recent initiatives related to the GFCS and external partnering, which could lead to new tasks to be undertaken by EC-PORS. Annex 2 provides a summary of the key issues and ensuing proposed actions identified in the presentations.

Over the three days, the Panel reflected on, inter alia, the:

- Panel's continued role to promote SAON and other Polar initiatives;
- Modalities for WMO and its Members to incorporate the Polar dimension in WIGOS and WIS, including further Portal development;
- Relationships with the Arctic Council and the Antarctic Treaty Consultative Mechanism;
- Consideration of GCW implementation;
- Potential for a Polar Regional Climate Centre in development of the implementation strategy, substructures and governance model of the Global Framework for Climate Services;
- Realization of GIPPS by integrating WWRP and WCRP activities with a view to improved operational weather and climate forecasting and prediction;
- Establishment of a Task Team to scope WMO interests in Long-Term Polar International Cooperative Initiatives;
- Relationship with IICWG before proposing any agreement; and
- Improvement of resource mobilization

Action: Consider converting the various resolutions / accomplishments into a compelling story to market our activities, both internally and externally.

4. FRAMEWORK REPORTS ON PROGRESS and ADVANCES

The leads/co-leads of the EC-PORS Task Teams on Observations, Research, and Services presented the outcomes of their activities over the past year, the current action plan of each Team, and advances in related polar activities by the community-at-large. The discussions initiated during the initial presentations by the task team leads were supplemented on the second day by the break-out groups under section 5 of the agenda.

4.1 Observations

The session began with an overview of the observational challenges highlighted by the need to take advantage of opportunities presented by developing a “Network of Networks” concept based on the decision of Congress XVI. The Polar Space Task Group (PSTG) met in October and the GCW implementation workshop was held in November; both very successful in terms of broad attendance and outcomes.

Action: Finalize implementation plan for GCW and action plans for the PSTG and AntON; clarify governance and engagement strategies and take action on initial quick wins (web portal, new products, Arctic HYCOS, SPICE); strengthen links with the services task team.

Polar Space Task Group (Doc 4.1.1; Presentation 4.1PSTG; INF 13)

The strategic focus is related to developing products and services based on requirements from various coordination groups (e.g. IGOS Cryosphere Theme, IASC, SCAR etc.). It needs to formulate how to position itself with GIPPS and GCW to coordinate relevant data acquisition activities. PolarView was highlighted as an example of how Europe is responding to the need for operational ice services developed within the context of the European Global Monitoring of Environment and Security (GMES) initiative. Another set of examples are various ESA cryosphere projects such as Glob(Snow – Ice – Glacier) and Permafrost monitoring. GlobSnow is now working on moving their 30-year time series of SWE from ESA to EUMETSAT SAF so they are operational – an important example for the transfer of satellite products from research to operations. CryoSat is providing a pan-Arctic view of sea-ice thickness with added value in identifying dynamic sea surface topography and large scale geostrophic currents beneath the sea ice, and their impact on freshwater storage. Understanding ice dynamics in Antarctic with “pole to coast ice sheet velocity mapping” is an exciting accomplishment for the group which will contribute to narrowing down uncertainties in ice sheet contribution to sea level rise.

We need to sustain the operational satellite core and there are new satellites coming on stream including the NOAA JPSS system and the European polar (Metop-B) and geostationary (MSG-3) satellites. Many of these efforts must find a balance between public good and downstream commercial opportunities. This has delayed the EC endorsement of ESA’s full and open data policy for the joint ESA/EC GMES endeavour. Although the PSTG will operate as an independent body, advice from WMO (EC-PORS), CEOS and CGMS will be welcomed throughout the implementation process.

Action: Tailor the PSTG plan toward GIPPS and GCW and establish the necessary organisational interfaces across which to obtain consolidated sources of requirements.

GCW Implementation Plan (Presentation 4.1; INF 15 and 16)

The Framework was presented highlighting the need for an advisory group, a management board (e.g. the evolution of the EC PORS GCW Task team), the need for a project office and working groups. The initial meeting resulted in a substantial number of volunteers to participate in the teams to develop CryoNet, Requirements and Coordination, Infrastructures and Practices, Portal, Terminology, Outreach and the Products and Services. The Portal and the website will be run separately. Some metrics of success were proposed.

Action: Decisions are required on the governance model and working group modalities of operation.

AntON (Presentation 4.1 –AntON)

Web based products for AntON and Antarctic GCOS data illustrate the performance on stations in the networks and expose the various resources available to assess the health of the networks. There is a continued expectation that we carry out our due diligence on the monitoring activities.

Action: The group requires some key inputs from the GCW, PSTG and other PORS teams for planning AntON and associated monitoring.

4.2 Research

Strategic Plan for GIPPS (Doc. 3.5.1, 4.2.1, 5.3-INF.– 14, Presentation 4.2)

The idea of a Polar Prediction System has evolved from initial discussions at EC-PORS I, a WWRP/THORPEX workshop in 2010, resulting in the GIPPS concept being further refined at EC PORS II and being then fed into the workshop on seasonal to multi-decadal predictability of Polar climate held in Bergen (Oct 2011). GIPPS encompasses the entire coupled climate system (e.g. atmosphere, terrestrial, ocean, cryosphere, water cycle) and three time-scales (days to seasons, seasons to decades, and centuries).

The THORPEX group is moving ahead, however the GIPPS White Paper is not yet available as the WCRP aspects are still under development. The WCRP will hold a second meeting in Toronto (April 2012) to refine its plan. It was noted that the Working Group on Seasonal to Interannual Prediction (WGSIP) was the most logical link in bringing WWRP and WCRP efforts together.

It is strongly recommended that there is one joint Implementation Plan for both the WWRP and WCRP initiatives as both groups (WWRP-PPP and WCRP-PPI) have overlapping membership; this would avoid divergence and duplication and be a major step in ensuring GIPPS achieves its goal of being an end-to-end operational prediction system.

Action: The implementation plan and project office for WWRP/THORPEX Polar Prediction Project will be developed by April. EC-PORS should take steps to influence the decisions to ensure there will be a joint International Polar Prediction Project, one joint Implementation Plan and one joint Project Office. The Project should think about operationalizing some outputs, even if they are not perfect, to beta test some products and services as proof of concept.

4.3 Services

Services White Paper (Doc 4.3.1, INF 10, Presentation 4.3.1)

The initial draft White Paper to define the needs and opportunities for improving weather, ice, water and climate services in relation to the concept of a Global Integrated Polar Prediction System (GIPPS) was presented. As a first step in assessing user requirements as agreed at EC-PORS II, a survey to capture the service requirements of the marine community in Polar Regions was conducted. This was based on a questionnaire that was developed in support of the 7th Framework Programme of the European Commission project entitled, Sea Ice Downstream Services for Arctic and Antarctic Users and Stakeholders (SIDARUS) to find user requirements for sea ice services. About a third of the responses to date came from the oil/gas industry and half came from research organizations. Quick findings include higher interest in short range weather and ocean forecasts, with waves and currents of primary concern. Timescales focussed on days to seasonal. User requirements from both the southern polar region and the “Third Pole” are needed to complete this White Paper.

Using a congested and erratic Baltic marine traffic scenario, the task team co-lead illustrated the need for continuously updated data and information for safety and security. Sea –ice is quite unique in the way it connects the observations, modelers and the users. The Panel was reminded there may be third parties beyond our expertise providing the service and we must see where we can capitalize on the partnership development.

Action; Need to incorporate the other TT work into the Services TT and expand the questionnaire to include more sectors (e.g. transportation, water resources, resource development, tourism, energy). The Services TT needs to move forward in an iterative fashion with an emphasis on how to proceed in gathering further user requirements, especially for Antarctica and the “Third Pole.” The Panel, especially the Services and Research TT, need to define what will be the next steps beyond the white paper and how to engage with the GIPPS.

4.4 Decadal Efforts in Polar Regions and the Third Pole (Presentation 4.4.1)

The concept of an International Polar Decade (IPD), an approximately ten-year IPY-like program, was deemed suboptimal and was not getting sufficient level of support, for example, from funding agencies. The draft Concept Note on the New Long Term Polar International Cooperative Initiative which is being prepared by representatives of agencies interested in polar activities after IPY was presented. The suggested new title is **Polar Regions Of the Globe: REsearch and Services for Sustainability (PROGRESS)**.

Drafts of the Concept Note have been recently presented to and discussed with the AMAP Heads of Delegation, the US Polar Research Board, and SAON. This Concept Note will be updated during February 2012 to reflect the outcome of continuing consultations among the members of the Steering Group. A consensus of their views and opinions will be circulated widely in advance of the Montreal IPY Conference.

Action: The Panel is asked to make suggestions for mountain organizations to be represented on the Steering Group, how to involve funders and to develop a list of initiatives that WMO and EC-PORS will consider contributing to a decadal initiative. The document is not yet at a draft zero stage and we must accelerate consultations to be prepared with a substantive paper for the IPY Conference in Montreal. The concept warrants further exploration including a more appropriate title.

5. BREAK-OUT SESSIONS

Concurrent break-out sessions took place on day 2 to allow the Task Teams to discuss their plans and activities, set priorities for action over the next 1-2 years and to update their action plans with concrete, achievable actions. The Observations Group discussed Global Cryosphere Watch, Space - based observing under the auspices of the Polar Space Task Group and AntON. Reports and recommended actions are presented under section 7 of this report

6. ENGAGING PARTNERS

The Panel considered the engagement of Partners in advancing WMO polar activities in a coordinated and collective manner. Reports and associated actions were submitted by Partners including IASC, SCAR, Arctic Council, ATCM, IAATO, AECO, etc.

ATCM (Doc 6.1.1)

Many recommendations from EC dealing with Antarctic telecommunications as far back as 1968 have not been acted upon. Now with AntON (including GAW, ABCN, ABSN, GUAN) these recommendations need to be revisited, especially in light of WIS. Several SCAR and IPY legacy recommendations on SOOS and IPD need to be reflected in updated resolutions. The Secretariat recommended that a single new resolution could replace the previous ones. WMO should respond to ATCM nominating a representative to participate in the upcoming meeting in Hobart, Australia.

Concerning sea ice, both Argentina and Chile conduct their ice services through the navy, but there is good communication with the NMHS. Australia, Republic of South Africa and New Zealand have no formal sea ice service. The ice services currently need to buy satellite data on an ad-hoc campaign basis in Antarctic. Acquisition planning could be improved and potentially optimized if the IICWG did similar work in the south as they do in the north, and their satellite data requirements could assemble.

Action: The WMO SG should be requested to send a letter to the ATCM to ensure WMO is officially represented at ATCM XXXV in June, 2012 (Hobart). It was suggested that Steve Pendlebury may represent EC PORS, with the concurrence of Greg Ayers, co-chair EC-PORS.

There is a need to reflect ATCM requirements in WIS planning.

The Secretariat, with the ATT, IICWG and JCOMM ETSI, is requested to prepare a single, updated resolution on meteorological and ice services for the Antarctic to be submitted at the upcoming ATCM for their consideration.

Concerning ice services in the Antarctic, EC-PORS and IICWG need to engage with southern hemisphere ice services to determine what needs to be done to improve ice services. The IICWG could also assist by expressing a consolidated set of data requirements in order that the PSTG can assist by optimizing satellite data acquisition planning in Antarctica as it does in the Arctic. The IICWG co-chairs will pursue this further to see what is required and determine how best to insert these requirements into their work.

SCAR (Doc 6.1.2)

SCAR activities include:

- Implementation of the Southern Ocean Observing System (SOOS)
- Ice Sheet Mass Balance and Sea Level (ISMASS and other activities)
- SCAR Research Programmes such as 'Antarctic Climate Change in the 21st Century' (AntClim21), Solid Earth Response and Cryosphere Evolution (SERCE), and Past Antarctic Ice Sheet Dynamics. (PAIS)
- The Antarctic Climate Change and the Environment Expert Group

The activities of SCAR in IPY and the SOOS implementation plan are coordinated by the SOOS secretariat in Hobart. The International Project Office (IPO) opened in late August 2011. The IPO is hosted by the Institute for Marine and Antarctic Studies (IMAS), University of Tasmania (Australia). The SSC will meet in February (18-19 February 2012 in Salt Lake City, Utah, USA); it was suggested the EC PORS support this implementation plan. EC PORS should also be represented at the ISMASS workshop, supported by the WCRP/SCAR/IASC Climate and Cryosphere Project, being planned for the 14th of July 2012. SCAR encourages and welcomes future collaborations with the Panel of Experts on Polar Observations, Research and Services.

Actions:

The Panel recognizes the importance of connecting with SOOS (the SSC, IPO and link with SCAR); currently BAS, the Australian Antarctic Division and the Russian Arctic and Antarctic Institute are represented in SOOS. It was noted that the SOOS SSC is composed mostly of research entities, but few operational agencies. There is need for EC-PORS to be engaged in some manner in SOOS, but it needs to consider how far it can go. Steve Pendlebury is following up with the IPO. JCOMM IV in Yeosu will be used to explore future EC-PORS participation.

The SOOS session organizers at the SCAR Open Science Conference in Portland - (<http://scar2012.geol.pdx.edu/>) in July have made contacts with PSTG and with BAS. Representation of SCAR on EC-PORS was seen as beneficial. As Steve Colwell chairs the SCAR Operational Antarctic Meteorology WG, he could be asked to represent SCAR's interest. This could be an efficient mechanism of representation. PSTG have proposed satellite Earth Observation representatives to be invited to the SOOS session.

IASC (6.1 – INF 8))

Action: Make a presentation to IASC on the GIPPS initiative at the ASSW just prior to the IPY conference in order to link their committees into the GIPPS plans. Peter Lemke is a member of the IASC Cryosphere WG; he will contact David Hik and/or Volker Rachold about this possibility.

UNESCO –IOC (no doc)

Action; Send the summary of this EC PORS meeting to the Executive Director of IOC so that they are up to date on EC PORS activities.

IAATO (Doc 6.1.5)

A good update report was submitted, with discussion of related activities in the Observation TT.

Action; The IAATO seems to be keen to engage and EC-PORS/ATT plan to wire them into AntON. The Secretariat will establish follow-up correspondence.

AMAP (Presentation 3.3)

AMAP sees significant opportunity to build the alliance between EC-PORS and AMAP and hence avoid duplication. AMAP would benefit from EC PORS expertise and can provide expertise that PORS does not have. It is extremely important to get the operational agencies involved with the Arctic Council. There are many groups doing similar things and often the same people working with several groups (e.g. black carbon). We can certainly find efficiencies; WMO is an observer of AMAP.

Actions: It is a benefit for EC-PORS, on behalf of WMO, to have formal links with Arctic Council and ATCM. WMO has a formal relationship with ATCM (expert observer) and should seek a formal link with Arctic Council. WMO CER will be approached to confirm WMO's current status with the ATCM and Arctic Council and to initiate appropriate action at the WMO level.

It is recommended that AMAP be asked to designate someone to be a formal member on EC-PORS.

IASC and SCAR should be asked to identify a member(s) of EC-PORS to represent their interests on the Panel.

Resource mobilization (Doc 6.1.8; Presentation 6.1.8)

Paul Egerton provided a brief of activities involving the European Science Foundation. The ESF in 2012 counts 72 Member Organizations (MOs), including research funding organizations, research performing organizations, academies and learned societies, in 30 countries. Dedicated to pan-European scientific networking and collaboration, the ESF has had a key role to play in mediating between a multitude of heterogeneous research cultures and agencies. The ESF hosts an array of instruments to accommodate various types and levels of international collaboration, within Europe and beyond. The European Polar Board (EPB) www.esf.org/polar (est. 1995) is Europe's strategic advisory body on science policy in the Polar Regions. ScienceEurope www.scienceeurope.org is a new organization established in Brussels arising from the former European Heads of Research Councils body EUROHORCS) and promotes the collective interests of the Research Funding and Research Performing Organizations of Europe. The Belmont Forum <http://igfagcr.org/index.php/belmont-forum> was inspired by recognition that the understanding of the environment and human society as an interconnected system

The international Polar initiative (IPI) will require;

- close connection with existing medium to long term priorities,
- add value at the global level,
- have clear milestones,
- have political will,
- build on the IPY legacy, and
- be able to demonstrate a return on investments in terms of decision support.

IPY encouraged ~ 500 million Euro in total investments. We would look at fundable components for a scalable IPI. WMO is encouraging new ideas about external funding. Horizon 2020 is proposing about 18 billion Euro; two compartments may be of interest including marine. NOAA is planning on signing an agreement to explore topics of mutual interest between the USA and Europe. Science Europe will be one of the main players in funding research in the future. He also noted the Belmont Forum. ESF is willing to help with gathering funding agencies together. Nevertheless, matters are different today with financial crises governing the current funding landscape at European level.

Many European countries, although not formally part of the ATCM or SCAR, have Antarctic activities. Paul noted Bulgaria, Romania, Czech Republic.

Action: EC PORS welcomed the offer to organize a meeting with European funding coordination and advisory bodies in order to expose the GIPPS and GCW. This should be aligned with the concept document under development. The September timeframe was suggested for the meeting. This would allow for feedback from the JSC meetings of WWRP and WCRP (April and July) as well as the IPY 2012 conference to calibrate the proposal. A few things need to be put in place during the ASSW and Antarctic meetings in between. Discussion with NSF, NSERC and other funders would also be advised. GFCS will also need some time to allow its maturation.

Guest Speakers

EC PORS welcomed three presentations (see Annex Two for details)

"The challenges and opportunities for the transport sector in the Arctic region in 2030"

Ms Minna Kivimäki, Director-General, Transport Policy Department, Ministry of Transport and Communications.

"Weather and ice information as a tool for arctic marine and offshore services"

Mr Tero Vauraste, Chief Executive Officer, Arctia Shipping Ltd

"Recent Developments in Arctic and Ice Management Technologies"

Mr Mikko Niini, Managing Director, Aker Arctic

7. REPORTS/RECOMMENDATIONS FROM BREAK-OUT SESSIONS

The Task Team (TT) leads/co-leads for observations and research reported to the EC-PORS plenary on the actions/activities that were identified and discussed in the break-out sessions.

a) Observations Task Team

AntON: Ships observations focussed on AVOS, to entice operators to equip ships in Polar Regions and the need to engage ship operators, especially in the Antarctic. This could be a viable option for some tour ship operators. EC-PORS needs to develop a position paper to this effect.

It is anticipated that in 2012, there will be some buoy deployments by Member states within the IPAB programme, with an expected increase in the number of deployments from the USA and Australia for the next 2 to 3 years. Nevertheless, EC PORS expressed concern that, of late, the IPAB has not been very active.

Basic observations derived from the buoy network are essential to improved understanding of sea-level pressure, surface temperature, sea-ice drift, sea-level rise, climate change and impacts of such changes on marine ecosystems. The panel encourages IPAB to be reinvigorated and consider the concerns/proposals of IPAB Members before the next DBCP meeting in 24-28 September 2012.

The challenges facing the six GAW polar stations needs to be expressed and a strong case made for their maintenance. There is sparse coverage and there is an issue of data not being submitted, for example from Tiksi (Joint Russian Federation, Finland, USA). It was suggested that the co-chair of EC-PORS could forward a letter to the PR of Russian Federation on this matter. Prof. Taalas noted that there had been some calibration problems and that the Russian national committee has to approve release of the data. Finnish scientists were seeking good data for a paper in Nature

Actions

- Buoys - IPAB needs to be better connected; there is a need to change the operating principles. It was recommended that JCOMM / DBCP should take this responsibility over from SCAR/WCRP/CliC;
- AntON should be expanded to include SOOS, IPAB (i.e. to include ocean and ice observations);
- Data monitoring - identification of station problems needs to be communicated with operators;
- There needs to be greater recognition of the challenge of transmitting data in remote areas;
- Results of the Satellite communication user meeting April 22-24 needs to be reported to EC 64; and,
- Automatic Weather Stations should be recognized for climat messages; need to work with the WMO Commission for Climatology.

PSTG: Key liaisons with ASI, CNES, CSA, DLR, ESA, EUMETSAT, INPE, NOAA, and USGS; as well as WMO (Global Atmosphere Watch, Space Programme and World Climate Research Programme) were noted. The governance of the PSTG was illustrated in the presentation linking the PSTG to the various programmes and organizations engaged in space-based operations. It was noted that by virtue of these relationships, WMO's mandated responsibilities cannot compromise those that are established by the space agencies; PSTG involves both operational and research agencies, each with very different focus and motivations.

Action: Commitment is required from the WMO Satellite Programme to support the PSTG and we must ensure the Arctic Council / ATCM are influenced to develop policies that identify sustained space observations as a priority. The Observation task team can take on the role of soliciting polar observation and data product requirements from various groups and some will go to the PSTG, others to AntON and GCW.

GCW: Advisory Board needs to be refined and should include the ICG-WIGOS. The chair of the GCW Management Board, the more hands on management of the GCW, needs to be on the Advisory Board. It would include Working groups (products, services, and observations), secretariat and polar panel including a PSTG liaison. Outside groups could include NSIDC, IPA, WGMS, HYDRA, IACS, SCAR, IASC, etc.. Services need to be articulated in the framework.

Actions: Set criteria to develop a process to form an advisory group that is action orientated and sustainable. Develop a role for the focal points that have already been established.

b) Research Task Team

The Task Team made note of the relation with the Polar Weather Prediction Research Project and WCRP Polar Predictability Initiative. The recommendation is to merge the two initiatives. EC PORS is to approach the Chair of JSC WCRP and the WCRP initiative (Ted Shepherd), WMO Secretariat (Asrar, Treblanche) after confirmation with Chair JSC – WWRP. Task team will develop an umbrella paper that argues for the integration of the two approaches and propose a joint IPO, aiming for the end of February.

In order to achieve this, the chair indicated he would take action to socialize the approach taking note of the following timeline.

- April 10 -13 JSC WWRP
- April 22-25 IPY 2012 Conference
- June 25 – July 3, WMO EC
- June 25 – 30, IOC EC
- July 16-20 JSC WCRP

Actions: The team needs to develop interesting examples of short term objectives. The team identified the need to include “process” people (e.g. Working Group on Seasonal to Interannual Prediction - WGSIP) and will approach the Chair of WGCM to create synergies. The team also suggested there is a requirement for a sea-ice modelling group that promotes atmosphere – ocean - ice coupled modelling and there needs to be increased emphasis on terrestrial processes, notably permafrost. The Task team on research needs to tease out observation requirements and to communicate these to the Observational Task team. The Joint Commission for Oceanography and Marine Meteorology as well as the International Ice Charting Working Group may be of assistance.

The Chair of EC-PORS will report their approach to GIPPS to WMO-EC.

c) Services Task Team

Discussions revolved around an assessment of service gaps, opportunities for collaboration and expansion of services and our relation with the GFCS. First and foremost, the Panel and the Services TT need to define the audience of the white paper in order to further develop its utility – to move from process toward actions. Measuring client satisfaction is an important contribution toward effective services. We therefore need to develop methodologies to retrieve constant feedback with end users on products and services. Users are seeking seamless products, in both space and time, despite moving through different jurisdictions.

Actions: Send survey out to southern ocean interests (IAATO, COMNAP)
Incorporate SIDARUS input and continue the work of the marine theme

- Further develop and focus the white paper with feedback from the Research and Observation Task teams.
- Circulate the white paper to the IICWG.
- Contact Beijing RCC with respect to RCC support for Third Pole region
- Engage on a Polar RCC implementation with associated Polar Climate Outlook Forum (PCOF)

- EC PORS TT needs to plug into the WMO Service Strategy Implementation Plan
- Define GIPPS from a service perspective
- Define end-users from a service perspective
- Outreach to indigenous groups (ICC)
- Outreach to policy makers (e.g. Arctic Council)

8. USERS/CLIENTS/SERVICES

The outcomes of the services breakout session were presented and discussion ensued on service gaps, potential opportunities for collaboration and expansion of services, links with other service oriented activities (e.g. IICWG) and the links with the GFCS, such as through development and implementation of Polar Climate Outlook Forums and Polar Regional Climate Centres. These are reflected under item 7 and the workplan will be further developed.

9. THE BROADER CONTEXT OF POLAR ACTIVITIES

WMO Strategic and Operating Plans (SOP)

Action: EC PORS needs to articulate its requirements into the next iteration of the SOP to help move, for example, the GCW away from voluntary contributions toward Regular Budget. We will need to market our activities well to attract financing.

Regional Associations

Action: Influence the relevant RA activities to reflect the needs and requirements of the Panel. The white paper on services should serve as a communication vehicle with the regional management teams.

Technical Commissions,

Action: EC PORS should advocate for our activities (JCOMM, CBS and CHy will take place in 2012). The Arctic HYCOS meeting in Halifax was noted as an opportunity to influence in two directions the monitoring requirements and insert this into the research component.

IPY 2012 Conference (Presentation 9.2):

The Panel was briefed on current plans for the IPY 2012 Conference "From Knowledge to Action"; approximately 12 members of the Panel will attend. David Grimes, the co-chair of EC PORS will moderate a panel on the first day entitled Poles and Global Linkages. A special Panel session under the IPY Legacy Series will take place on the Future of Polar Science tentatively entitled "Generating and sharing future polar knowledge" on Wednesday April 25. Participants have been contacted and the programme is under development.

Action: The Panel will be provided the draft programme for their consideration and comments. It was noted that due to the large number of parallel sessions, it will be important to coordinate Panel member participation in a tactical manner.

WIGOS/WIS (Presentation 9.3)

Developments were presented to the Panel including details on the ICG-WIGOS. (for information only)

Developing Polar Regional Climate Centre Network and Regional Climate Outlook Forums (RCOFS): The Panel decided RCC/RCOF activities in polar regions fell within the purview of EC-PORS, and that implementation of these would represent a contribution to GFCS. Rather than establishing a new task team on RCC/RCOF implementation, it was decided that the Services

TT would take on responsibility for action and interface with the relevant WMO Secretariat offices.

Action: The Services TT to liaise between the Research TT and WMO Secretariat to review the implementation approach proposed by WCAS in Doc. 3.4.1 and to collaborate setting the strategy, including to take part in an international Coordination Committee for establishment of an RCC/RCOF in the pan-Arctic region.

The Research TT plans to work with operational entities in determining research requirements with the aim of improved operational information products and services. This echoes the GFCS goals, including for Research and CSIS components of GFCS. The operational centres that will collaborate with the Research and Services TTs will largely be GFCS/CSIS operational centres and related/associated research centres/institutes.

Capacity development in Polar Regions:

Ms. Tiina Kilpeläinen conveyed her impressions of the proceedings as a young scientist and a recent member of APECS (see Doc 9.5.1). APECS has 3000 members in 35 countries. It was noted that the current APECS President is involved in developing the IPY concept. A consideration is to have APECS involved in the fall meeting of funding agencies.

Action: EC-PORS is asked to;

- engage and involve APECS in the long term polar research initiative as planning proceeds.
- EC PORS members should join the APECS mentor database (Secretariat to provide information)
- identify sources of funding or other support to sponsor APECS and/or APECS activities such as an Early Career Researcher Meteorological workshop in Svalbard

Secretariat will follow-up with IPY conference organizers on the role of APECS in the conference. It was noted their fees were dramatically reduced and their papers were reviewed by mentors; those with merit had their travel underwritten by the conference and by donor organizations.

Training Facilities (9.5-Inf 9):

FMI, Russian Federation, South Africa, USA and others have identified distant learning assets.

Action: Request the SG to write to PRs on behalf of EC PORS, especially those with interests in the three polar domains, to help update the current document.

GFCS and the Extraordinary Session of Congress (Oct 2012)

The co-chair provided an overview of the activities of the GFCS Task Team; the GFCS Implementation Plan, a comprehensive document, will be available in the April timeframe.

Action: Panel members should insert themselves in the national process and provide input. EC PORS will organize the task team leads to act as focal points in the various themes (e.g. observations, research and services). We need to collectively ensure that vulnerabilities in the Arctic need be highlighted. Perhaps the Arctic Council needs to be engaged on ensuring the social dimension is reflected in the IP.

10. REVIEW OF STRUCTURE OF EC-PORS

The Panel reviewed its current working structure to assess if its work was conducted effectively and in a timely manner, using the Task Team approach, with members as focal points and with a part-time WMO Secretariat to support the co-chairs.

The terms of reference were reviewed;

- Reference to the “Third Pole” (Himalaya and the Tibetan Plateau) was expanded to include other appropriate high (ice and snow covered) mountain regions.
- Membership is to include participants from relevant organizations and will formally ask AMAP, IASC and SCAR to identify members to represent their interests in the panel.
- International Polar Decade (IPD) initiative was adjusted to reflect current thinking on long term international cooperation.
- For the Antarctic, the Panel, representing WMO would have the mandate to present proposals to the Antarctic Treaty System (ATS)

A resolution outlining these changes will be presented to EC 64.

Funding of the Panel Task Teams and their activities, secretariat support and the EC-PORS meetings themselves were addressed. Funding is primarily through the EC-PORS Trust Fund to which countries can, and have, contributed. The PSTG will seek funding by the WMO Space Programme. The GCW has some support from the WMO Secretariat from regular budget for activities, but no funds for personnel. The Panel will request of the SG and the President of the CBS to elaborate their plans to support the GCW. Services and OBS TT have no direct support and will continue as they have to date; Xiao Cunde will join the Services TT.

Resource mobilization was raised and the Panel was requested to consider how we might strengthen the resource mobilization office of the WMO Secretariat with seconded personnel to assist with resource mobilization activities targeted on the work of the Panel.

Membership of this Expert Panel was discussed, including rotation of members, formal identification of Task Team leads, and confirmation of co-chairs.

- The Permanent Representative for Denmark should be contacted,
- Thomas Jung and Ted Shepherd will be invited as formal members.
- Discussions will take place in Halifax at the Arctic-HYCOS meeting to enlist another expert in hydrology.
- More expertise on the Third Pole would be appropriate.
- The IICWG, which is already represented by three Panel members and the leaders of GIPPS and GCW will be invited as formal members.
- Relationships with the Technical Commissions will also be considered.

Mechanisms for conducting EC-PORS activities between sessions were determined to be effective.

11. FUTURE WORK PROGRAMME

Over sixty action items were identified during this session. Task Team leads will update their workplans **by April 1, 2012** and submit them to the Panel co-chairs and Secretariat. Some immediate actions are noted by the Co-chair. Broadly speaking, Panel members are tasked with effective, continuous engagement of Partner organizations. Collectively, it will be important to engage with funding agencies; the important as EC-PORS major activities (e.g. GIPPS, GCW, IPY follow-on) cannot be overstated as these initiatives will be developed and implemented by countries, agencies and scientists. A symposium with funding agencies was proposed for the September timeframe.

12. FUTURE MEETINGS OF EC-PORS AND ITS CONSTITUTED BODIES

Future meetings of EC-PORS and its constituted bodies were noted and inserted in annex three. We will explore future sessions of the Panel; China (2nd quarter 2013) and New Zealand (2014 with ATCM/SCAR) were noted.

CLOSURE OF MEETING

The meeting closed on the afternoon on the third day. On behalf of all participants and the WMO Secretariat, our deep appreciation was conveyed to then Finnish Meteorological Institute (FMI). The excellent arrangements, friendly and professional staff contributed greatly to the success of the meeting.

Annex One Action Items

Broad themes were identified for all Panel members, teams and support to consider in their activities as follows;

- Guidance on GCW implementation;
- Realization of GIPPS by integrating WWRP and WCRP activities;
- Scope WMO interests in Long-Term Polar International Cooperative Initiatives;
- Potential for a Polar Regional Climate Centre (including for the Third Pole) in the development of the implementation strategy, substructures and governance model of the Global Framework for Climate Services;
- Consolidate new observation requirements or observational gaps which may need to be considered by the observation task team
- Determine how best to cross pollinate the work of Task Teams to integrate objectives and outcomes;
- Panel's continued role to promote SAON and other Polar initiatives including those in the Third Pole;
- Improvement of resource mobilization
- Modalities for WMO and its Members to incorporate the Polar dimension in WIGOS and WIS;
- Engaging partners and build relationships with the Arctic Council and the Antarctic Treaty Consultative Meeting; and
- Build on relationship with IICWG.

More specific tasks identified in the following table are linked to specific EC PORS including a notional timing. This is to assist with workplanning activities for 2012 – 2013.

EC Panel members and teams are requested to consider the action items noted and provide precision to the Secretariat

Co- chairs	
a) Influence the JSCs for WWRP and WCRP as well as the lead officers in the WMO Secretariat, IOC and ICSU on joint initiative and IPO for GIPPS	April 2012
b) continue engagement with AMAP to involve operational agencies as a partner in Arctic Council activities	ongoing
c) Establish formal links with Arctic Council (e.g. our status as expert observer with the ATCM) and for members to be identified with IASC and SCAR	ongoing
d) Explore with WMO CER current status of WMO with the ATCM and Arctic Council	April 2012
e) Send summary of this meeting to the Executive Director of IOC	March 2012
f) Promote a Polar focused segment into the Technical Session prior to the CG-Ext	June 2012
g) Endorse an Arctic RCC network and a PCOF-Arctic with a joint Implementation Committee (IC) amongst representatives of RA II, IV and VI	Sept 2012
h) Formally request SCAR representation on EC PORS (BAS is in a good position to represent SCAR's interest. (Note; Steve Colwell will follow-up)	March 2012
i) Ensure EC PORS is represented at ATCM XXXV (Note; engage WMO SG)	June 2012
h) Report to EC 64 on PORS approach to GIPPS	June 2012
Secretariat	
a) Determine EC PORS engagement at next SAON Board (October Potsdam) to discuss, inter alia, funding elements, operational activities, portal development and Board membership	July 2012
b) Articulate EC PORS requirements into the next iteration of the WMO SOP to help move, for example, the GCW away from voluntary contributions toward RB	March 2013
c) Influence the relevant Regional Associations and Technical Commission activities to reflect the needs and requirements of the Panel. The white paper on services should serve as a communication vehicle with the regional management teams	March 2013
d) Organize a meeting with other funding orgs to expose the GIPPS and GCW; first steps need be taken during the ASSW and Antarctic meetings; discussion with NSF, NSERC and other funders would be advised	Sept 2012
e) Consider secondment to WMO Resource Mobilization Department	ongoing
f) Update WMO Resolutions dating back to the 60's to reflect AntON	June 2012
g) Update the EC PORS resolution to reflect our current activities including those in the Third Pole	June 2012
h) The Secretariat, with the ATT, IICWG and JCOMM ETSI, is requested to prepare a single, updated resolution on meteorological and ice services for the Antarctic to be submitted at the upcoming ATCM for their consideration.	May 2012
Antarctic Task Team	
a) Finalize implementation plans for AntON	Sept 2012
b) Derive key inputs from the GCW, PSTG and other PORS elements to carry out due diligence on the monitoring activities	ongoing
c) Engage IAATO into AntON	June 2012
d) Reflect AntON needs in WIS planning	June 2012
d) Influence SCAR to recognize the importance of linking with SOOS SSC, the IPO and cross over with SCAR (Note; Steve Pendlebury to follow up with the IPO and use JCOMM IV in Yeosu to explore our participation	Ongoing
e) Liaison with IICWG co-chairs to engage with southern hemisphere ice services	Oct 2012
f) Liaison with IICWG to assist with consolidation of observation requirements and satellite data acquisition planning in Antarctica as it does in the Arctic	May 2012
g) Communicate the results of the Satellite communication user meeting April 22-24 needs to be reported to EC 64	June 2012
Note; SCAR Open Science Conference in Portland (July)	

http://scar2012.geol.pdx.edu/	
Observation Task Team	
<p>Polar Space Task Group</p> <ul style="list-style-type: none"> a) Finalize action plan for PSTG, clarify governance and engagement strategies and to take action on initial quick wins b) Tailor the PSTG plan toward GIPPS and GCW and determine where to obtain consolidated sources of requirements c) Liaison with the IICWG to request assistance with satellite data acquisition planning in Antarctica as it does in the Arctic d) Secure WMO Satellite Programme support the PSTG <p>Global Cryosphere Watch</p> <ul style="list-style-type: none"> a) Develop the GCW governance model & working group modalities of operation b) Set criteria to ensure the GCW advisory board and management board and the approval process through EC c) Develop a role for the GCW focal points that have already been established 	<p>May 2012</p> <p>ongoing</p> <p>Sept 2012</p> <p>Ongoing</p> <p>June 2012</p> <p>June 2012</p> <p>June 2012</p>
Research Task Team	
<ul style="list-style-type: none"> a) An implementation plan and project office proposal will be developed in April b) Take steps to ensure there is a joint International Polar Prediction Project Implementation Plan and Project Office c) Operationalize some outputs even if they are not perfect to entice funding agencies with examples of direct societal effect; draw the link to products and services d) Engage “process” people (e.g. Working Group on Seasonal to Interannual Prediction - WGSIP) e) Engage and involve APECS in the long term polar research initiative as planning proceeds <p>Note; April 10-13 JSC WWRP, April 22-25 IPY Conference, June 25 – July 3 WMO EC, June 25 – 30 IOC EC, July 16-20 JSC WCRP</p>	<p>April 2012</p> <p>June 2012</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>
Services Task Team	
<ul style="list-style-type: none"> a) Review the GFCS implementation plan b) Expand the questionnaire to include more sectors (e.g. transportation, water resources, energy, resource extraction etc.) c) Move forward in an iterative fashion to gather further user requirements especially for Antarctica and the “Third Pole” d) Further develop and focus the white paper and engage with other teams with focus on the GIPPS e) Send survey out to southern ocean interests (IAATO, COMNAP) f) Incorporate SIDARUS input and continue the work of the marine theme g) Circulate the white paper to the IICWG h) Contact RA II and RA VI RCC networks, including Beijing RCC (third pole), to develop the concept of RCC Networks and subsequent RCOF for these regions in collaboration with WCASP and GFCS offices i) Ensure consistency with the WMO Service Strategy Implementation Plan j) Define GIPPS from a service perspective k) Define end-users from a service perspective l) Outreach to indigenous groups (ICC) m) Outreach to policy makers (e.g. Arctic Council) 	<p>May 2012</p> <p>Sept 2012</p> <p>Oct 2012</p> <p>Ongoing</p> <p>March 2012</p> <p>Sept 2012</p> <p>Sept 2012</p> <p>June 2012</p> <p>Oct 2012</p> <p>Sept 2012</p> <p>June 2012</p> <p>May 2012</p>

Concept of long term international collaboration	
a) Ensure Concept document is readied for the IPY Conference in Montreal	March 2012
b) Determine how mountain organizations might be represented on the Steering Group for the Consultative process	Oct 2012
c) Involve funders by developing a list of initiatives that WMO and EC-PORS will consider contributing to a decadal initiative	Sept 2012

**Annex Two
Presentations by
Experts and Guest Speakers**

- a) Global Framework for Climate Services (GFCS) (Doc 3.2.1; presentation 3.2)); a general overview of the development and objectives of the GFCS was provided by David Grimes to, inter alia, accentuate the charge to the Panel focussing on PCOFs and Polar Regional Climate Centres. Comments were focussed on the current draft in circulation and the need to ensure integration of the cryosphere as a fourth domain to the terrestrial, atmospheric and oceanic. The GFCS planning and plans of other initiatives, such as SAON, need to influence the consolidation of workplans to ensure the needs and requirements for polar observational systems are identified and included.

Action:

Insert a Polar focused segment into the Technical Session prior to the Cg-Ext

- b) Polar Regional Climate Centres (PRCC) and Polar Climate Outlook Forums (PCOF) (Doc 3.4.1; presentation 3.4) were presented remotely by Rupa Kumar Kolli, Climate and Water Department, WMO. He provided an overview of the RCC concept, and the means by which a RCC or RCC-Network may be designated. To date, only two RCCs have been designated by WMO, but a number of RCCs and RCC-Networks are in designation phase. The RCC-Network for Region VI expects to request formal designation in 2012. He then provided an overview of the PCOF activities illustrating the world wide occurrences of outlook forums and some thoughts on a PCOF. Given the advanced nature of NMHSs working in polar domains, a network approach with distributed responsibility was suggested, i.e. an RCC-Network for each of the Arctic, Antarctic and Third Pole.

Action:

Endorse the approach to set up an Arctic RCC network and a PCOF-Arctic with a joint Implementation Committee amongst representatives of RA II, IV and VI. EC PORS will need to provide guidance and develop the mechanism to accomplish this. Note: the Services TT agreed to provide the guidance and liaison on this matter with WMO Secretariat.

- c) Developments under Arctic Council (SAON, ACA etc.) (presentation 3.3) were presented by Lars Otto Reiersen, AMAP Executive Secretary. He noted that one of the most pristine parts of the world is also one of the most contaminated. He noted developments under the Arctic Change Assessment (ACA) to investigate the implications on the north and its peoples from the combined impacts of multiple factors, including climate change, explosion of resource extraction and other economic activities, land use, food security, and to clarify adaptation measures.

There is a lot of material available from work over the past ten years and it has been determined that the ACA will not initiate large, new research activities. It will not be user driven per se, rather it will user "inspired". The approach will be pan – Arctic integrating studies in candidate regions such as major Arctic rivers, NW Siberia, north Atlantic and others (see presentation). The Arctic Council has not yet approved the ACA; there remains some resistance in some countries to integrated studies involving climate change. The AMAP Climate Expert Group is attempting to define and refine the key themes mapped against user and science needs and then against the required research and assessment

tools and associated monitoring to conduct the assessments. The need for improved Arctic models, including scenarios was identified.

Concerning SAON, there has been some frustration; there is need to discuss broad strategic goals and objectives for SAON. Certainly one very constructive result of SAON was the preparation of a relatively comprehensive overview of existing research and operational observing/monitoring infrastructure. It was noted there are several overlapping initiatives and that engagement is mostly by Arctic coastal states.

There is need to expand the engagement and to ensure there is synergy with respect to ACA, SAON, GFCS and avoid duplication of effort given limited resources. For the Arctic, there is a strong orientation toward resource development with active intergovernmental debate over boundaries. There is a clear need to develop relevant services.

Actions:

Next SAON Board meeting will take place in Potsdam in October, 2012 to discuss, inter alia, funding elements, operational activities, portal development and Board membership. The level of EC PORS engagement should be determined.

WMO, via EC-PORS, should continue its involvement in the development of the ACA prospectus.

- d) Polar Weather Prediction Research Project Implementation Plan (WWRP-THORPEX) was presented by Thomas Jung, Chair, Steering Group (3.5.1- INF. 6; presentation, 3.5)

This project was approved by the CAS MG in November 2011 and the first kick off meeting took place in December; it is a work in progress. The presentation focussed on two chapters of the plan, research goals and the strategy to achieve these goals within the hourly to seasonal prediction goals of the GIPPS. The influence of Polar Regions on lower latitudes, and vice versa, is an important goal as is an assessment of the data assimilation process given the challenges in the Polar Regions (e.g. paucity of data).

A special component will be the “Year of Polar Prediction”, a period of intensive observations to provide data for model development, diagnostic studies etc as was done for the Year of Tropical Cyclones - YOTC. This will need to be a joint effort between the WCRP and WWRP communities and requires the strengthening of working relationships with WGNE and CLIVAR-WGSIP, development of linkages with space operators through the PSTG and to modification of traditional funding arrangements to allow researchers to work at forecasting centres to operationalize the systems developed.

Actions:

The Implementation Plan for the WWRP component will be created by March 2012. The Panel is to provide feedback on the Project and Implementation Plan, assist with the Strategies to achieve and promote the Research Goals for the Implementation Plan and provide a focal point for information about relevant stakeholders and partners for the Polar Prediction Project.

Funding agencies would have to see some direct societal effect. It will therefore be important to draw the link to products and services. The Panel needs to influence the JSCs for WWRP and WCRP as well as the lead officers in the WMO Secretariat, IOC and

ICSU on the importance of having a joint, single, collaborative effort between WWRP and WCRP.

Guest Speakers;

“The challenges and opportunities for the transport sector in the Arctic region in 2030”

Ms Minna Kivimäki, Director-General, Transport Policy Department, Ministry of Transport and Communications, Finland.

She noted the growing significance of the Arctic region, due mainly to economic development, and the ensuing transportation needs of the future through the Northeast and Northwest passages, the former being of greater interest to Finland. The region is far from market areas. To improve business opportunities, a strategic view with neighbouring countries is needed. Other challenges include lack of a common view amongst Arctic Council nations on Arctic development, differences in the regulatory framework, plus politics. There are different authorities within each country (e.g. maritime, military, environmental) that require coordination. The IMO is developing a Polar Code for shipping; to properly monitor the Arctic, improved surveillance systems need be deployed to have an intelligent transport system. Canada’s Radarsat Constellation Mission and Polar Communication and Weather Mission were seen as important developments for the polar region.

“Weather and ice information as a tool for arctic marine and offshore services”

Mr Tero Vauraste, Chief Executive Officer, Arctia Shipping Ltd

He highlighted the need for services that assist in long, medium and short term planning. Vessels produced today will be in service for 30 years, it is therefore imperative to understand long term changes in the design of our fleet. The current ice regime ranges from 50 to 100 centimetres between the Gulf of Finland and the Bay of Bothnia; thicknesses are expected to diminish in the next 40 years, but will still require ice breaking capability, as ice rafting of thinner ice could produce significant ice navigation challenges.

For their work, mid-term planning (seasonal) is the most important, yet most difficult. For medium term planning, one might ask what will the next winter look like. For Arctia, in September-October they would like to know what ice conditions will look like in February, He stressed the need for such research to be written in a fashion that the end user, likely not versed in the scientific field, should be able to understand ... keep it simple.

In the short term (0-14 days), operations require information on weather, ice, drift (of ice and icebergs) and currents over the next few days for the preparation of the crews and vessels. Having probability curves with temperature forecasts is important for planning.

They are also partnering with FMI on the provision of weather services to Shell Oil in the Arctic Beaufort and Chukchi seas for a voyage of 40 days and an operating timeframe of 4 months. Arctia will be primarily responsible for ice management. The vessel being used is a polar 10 class, one that is able to operate in multi-year ice. But, can multi-year ice conditions be predicted for the voyage and on-site operation?

Sea Ice modellers could use information from the ice breaking community on, for example, ice pressure. Weather and ice information is important to all NMHSs and there are few observations. We must convince operators of the value of reporting weather and ice conditions. This need might be pushed through the IMO and Arctic Council in working from the top while working with shipping agents, which is the connection between the shipping companies and ports.

"Recent Developments in Arctic and Ice Management Technologies"

Mr Mikko Niini, Managing Director, Aker Arctic

Aker Arctic was established in 2005 as engineering and consulting company equipped with test facilities. They conduct field research, concept development (e.g. ship performance predictions) and basic design characteristics (e.g. naval engineering). He first noted it is now 40 years since the voyage of the Manhattan through the Northwest Passage to Prudhoe Bay. Given the expense of traditional ice operations, less expensive solutions are being sought, such as developing ships with performance similar to ice breakers with less propeller friction.

They are active in the Foxe Basin in the Canadian archipelago for the Mary River iron ore operations as well as in the Beaufort and Greenland. Overall, it is a very impressive operation of many actors. Unfortunately, some of the information and research is not publicly available, as it is of commercial importance to the company as well as its competitors. However, the group felt that as part of the risk management portfolio of operating in such harsh environments, it would be appropriate for this information to be made available.

**Annex Three
Appendix I doc 3.1 update**

EC – PORS Future Engagement Internally (WMO) and Externally 2012

Internal Engagement Opportunities

Working Group on Strategic and Operational Planning (WG-SOP), Geneva, Switzerland. March 5 – 7, 2012.

Arctic Hydrological Cycle Observing System (HYCOS) Meeting, Halifax, Canada, March 6 – 8, 2012.

EC Panel of Experts on Education and Training 25th Session (Pune), India. March 26 – 30, 2012.

WWRP/THORPEX Polar Prediction Project, Second Scientific Steering Committee Meeting, Montreal, QC.

WWRP JSC Meeting, Geneva, Switzerland, April 10 – 13, 2012.

(TBC) Polar Space Task Group, May 15-17 or June 12-14, 2012.

WMO – IOC Joint Commission for Oceanography and Marine Meteorology (JCOMM-IV), Yeosu, Korea, May 23-31, 2012.

WMO Executive Council Sixty-Fourth Session, Geneva Switzerland, June 23 – July 3, 2012.

Technical Conference on the Global Framework for Climate Services, October 26 – 27, 2012.

First Extraordinary Session of the World Meteorological Congress, Geneva, Switzerland, October 29 – 31, 2012.

External Engagement Opportunities

Community Earth System Model - Polar Climate Working Group Meeting *Boulder, Colorado February 15 – 17, 2012.*

Arctic New Frontiers: Greenland and Barents Sea: Copenhagen, March 12 – 14, 2012.

Space for the Arctic seminar: Copenhagen, March 13, 2012.

Lloyd's Arctic Shipping forum, Helsinki, March 24 – 26, 2012.

The Arctic Science Summit Week 2012, Montreal, Canada, April 20 – 22, 2012.

International Polar Year (IPY) Conference; Theme; "From Knowledge to Action", Montreal, Quebec, April 22- 27, 2012, see; <http://www.ainc-inac.gc.ca/ai/mr/nr/s-d2009/23301-eng.asp>

Senior Arctic Officials Meeting, Stockholm, Sweden, April 27 – 29, 2012.

The Arctic Forum, Washington, D.C, May 1, 2012.

International Workshop on Polar Lows, Oslo, Norway, May 21-22, 2012.

Standing International Road Weather Commission 16th International Road Weather Conference - Helsinki, Finland May 23- 25, 2012

IGS International Symposium on Seasonal Snow and Ice, *Lahti, Finland May 28 – June 1, 2012.*

35th Antarctic Treaty Consultative Meeting (ATCM XXXV) and 15th Meeting of the Committee for Environmental Protection (CEP XV), Hobart, Australia, June 11 – 20, 2012.

26th International Forum for Research into Ice Shelf Processes (FRISP), *Uto, Stockholm Archipelago, Sweden, June 12 – 14, 2012.*

Intergovernmental Oceanographic Commission Executive Council, Paris, France, June 19 – 27, 2012.

Rio + 20, UN Conference on Sustainable Development, Rio de Janeiro, Brazil, June 20 – 22, 2012 (<http://www.uncsd2012.org/rio20/>).

International Symposium on Glaciers and Ice Sheets in a Warming Climate, *Fairbanks, Alaska June 24 – 29, 2012.*

Tenth International Conference on Permafrost, *Tyumen, Russia, June 25 – 29, 2012.*

Thirty Second meeting of the Scientific Committee on Antarctic Research (SCAR) Portland, Oregon, July 13 – 25, 2012.

Ice Sheet Mass Balance and Sea Level (ISMASS) workshop, supported by the WCRP/SCAR/IASC Climate and Cryosphere Project, July 14, 2012

7th Antarctic Meteorological Operations, Modelling and Forecast Workshop, July 9 – 12, 2012, USA

SCAR 2012: Antarctic Science and Policy Advice in a Changing World, *Portland, Oregon July 13 – 25, 2012.*

The Arctic Imperative Summit, *Girdwood, Alaska, July 29 – August 1, 2012.*

European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Council meeting, Darmstadt, Germany, July 5 – 6, 2012.

International Ice Charting Working Group: Tromso, Norway, October 15 – 19, 2012.

**Annex Four
Agenda**

AGENDA and WORK PLAN

Monday, 6 February

VENUE: Lapland Hotel Luostotunturi

1. ORGANIZATION OF THE SESSION (FMI)

- 1.1 Welcome by FMI – Prof. Petteri Taalas, Director-General, Finnish Meteorological Institute
- 1.2 Adoption of the Agenda
- 1.3 Working arrangements

2. EC-PORS: OBJECTIVES AND STRATEGIC FRAMEWORK (Co-Chairs)

- 2.1 Review Terms of Reference & priority areas

3. REVIEW OF EC-PORS ACTIVITY SINCE EC-PORS-II (Angle, Ondras)

A brief overview of achievements including decisions of WMO Congress and Executive Council. Introductory remarks on the activities of the Task Teams & related institutions will help set the stage for the afternoon discussions.

Presentation: Global Framework for Climate Services (GFCS)

David Grimes, President, WMO

Presentation: Developments under Arctic Council (SAON, ACA etc.)

Lars Otto Reiersen, AMAP Executive Secretary

Presentation: Polar Regional Climate Centres (PRCC) and Polar Climate Outlook Forums (PCOF)

Rupa Kumar Kolli, Climate and Water Department, WMO

Presentation: Polar Weather Prediction Research Project Implementation Plan (WWRP-THORPEX)

Thomas Jung, Chair, Steering Group

GUEST SPEAKER – “The challenges and opportunities for the transport sector in the Arctic region in 2030” - Ms Minna Kivimäki, Director-General, Transport Policy Department, Ministry of Transport and Communications

4. FRAMEWORK REPORTS ON PROGRESS and ADVANCES

4.1 Observations (Abraham/Drinkwater)

- 4.1.1 Polar Space Task Group report
- 4.1.2 GCW Implementation Plan update
- 4.1.3 AntON

4.2 Research (Lemke)

- 4.2.1 Strategic plan for GIPPS update
- 4.2.2 GIPPS White Paper update

4.3 Services (Damski)

Presentation: Draft Concept Note on New Long Term Polar International Cooperative Initiative
O. Hov (Representative of the Steering Group for the Consultative Process for
a Long Term Polar International Cooperative Initiative)

WRAP-UP DAY 1 (Co-chairs)

19:00 Social Event

Tuesday, 7 February

VENUE: Finnish Meteorological Institute's Arctic Research Centre

5. BREAK-OUT SESSION

Three break-out groups to discuss topics based on the Task Team structure (Observations, Research, Services) and recommend activities or resolutions for EC-PORS consideration.

Tour of the FMI Arctic Research Centre – Presentation and guided tour by Research Professor Jouni Pulliainen, Head of Arctic Research, Finnish Meteorological Institute

6. ENGAGING PARTNERS (Co-chairs)

6.1 Consideration of reports and suggested actions submitted by Partners

- IICWG, IASC, SCAR, Arctic Council, ATCM, IOC/UNESCO, IAATO, AECO, Funding Agencies

6.2 Partnership Panel Discussion

Representatives of partnering programmes discussed how EC-PORS can help them advance their missions and interests and how they can help EC-PORS to achieve their goals and objectives

Presentation: Resource Mobilization and Funding Agency engagement for the Implementation of Future Polar activities
Paul Egerton, European Science Foundation

7. REPORTS/RECOMMENDATIONS FROM BREAK-OUT SESSIONS

7.1 Observations

- Global Cryosphere Watch
- Space - based observing
- AntON
- Open discussion

7.2 Research

- Relation with the Polar Weather Prediction Research Project and WCRP Polar Predictability Initiative
- Open discussion

Open Discussion:

- Realizing the Concept of a New Long Term Polar International Cooperative Initiative. Other Cross-cutting Issues and Priorities

WRAP – UP DAY 2 Social Event

Wednesday, 8 February

8. USERS/CLIENTS/SERVICES

8.1 Services Break-out Report

- Assessment of service gaps
- Opportunities for collaboration and expansion of services
- Relation with the GFCS
- Open Discussion

8.2 Engaging Sectoral Clients: Panel discussion with Finland's sectoral 'clients' e.g. businesses operating in the arctic region, polar researchers, tourism operators with a few introductory presentations:

- "Weather and ice information as a tool for arctic marine and offshore services" – Mr Tero Vauraste, Chief Executive Officer, Arctia Shipping Ltd
- "Recent Developments in Arctic and Ice Management Technologies" – Mr Mikko Niini, Managing Director, Aker Arctic

9. THE BROADER CONTEXT OF POLAR ACTIVITIES (Co-chairs)

9.1 Strategic and Operational Plans: the Interface with Regional Associations & Technical Commission

9.2 IPY 2012 Conference "*From Knowledge to Action*": Panel preparations

9.3 WIGOS/WIS Developments

9.4 Polar Region Climate Centre and Outlook Forums

9.5 Capacity Development in Polar Regions
9.6 GFCS and the Extraordinary Session of Congress (Oct 2012)

10. REVIEW OF STRUCTURE OF EC-PORS

10.1 Terms of Reference

10.2 Defining the Structure of EC-PORS

10.3 Funding of Panel sub-groups and activities

10.4 Panel membership, Task Team leads and Co-chairs

10.5 Working mechanisms

10.6 Intersessional arrangements

11. FUTURE WORK PROGRAMME

11.1 Continuing engagement of Partner organizations

11.2 Summary of Proposed tasks, actions and responsibilities

11.3 Symposium on Engaging Funding Agencies

12. FUTURE MEETINGS OF EC-PORS AND ITS CONSTITUENT BODIES

WRAP-UP DAY 3: Closure and Farewell
