Atmosphere Working Group
Of
The International Arctic Science Committee
Mini-workshop on
Polar Predictability

23 October 2011
Sheraton Denver Downtown
Room: Governor's Square 17
Denver, Colorado
AGENDA

I. Welcome and Opening Remarks (Overland)

James Overland, the Chair of the AWG, opened the workshop by welcoming all the participants. (List of attendees attached at Tab A).

He noted that the AWG agreed at its initial meeting in Potsdam in January to focus on two main tasks:

1. Full support for the developing WCRP program on Polar Predictability. (He suggested that the name may need to be changed to better define the activity as one related to predictability of climate change.) ie Polar Climate Predictability
2. Support consideration of an international program to develop a long-term observational ice camp. (An inaugural workshop on this was held month in Potsdam.)

Overland then noted that the AWG also agreed to provide support for old data retrieval and reanalysis and to develop a program with the Social WG of IASC on public perception of Arctic change.

II. Setting the Context (Shepherd)

Ted Shepherd (Chair of the SPARC) informed the group that an initial workshop on polar predictability on seasonal to multi-decadal timescales was held in Bergen on 25-29 October, 2011. The focus of this effort is process-oriented studies as opposed to more programmatic support.

A workshop Report was issued in the January 2011 issue of SPARC Newsletter. (Attached Tab B)

Shepherd provided a synthesis of what we do know, stating that we understand many of the physical sources of predictability in the polar climate system. What we lack is a good understanding of many of the feedbacks between the different components of the climate system and the physical causality of the large scale modes of polar variability. We also lack many of the key observations needed to constrain the presumed sources of polar predictability. However, there has been an explosion of subsea surface observations.

He then explained the role of WCRP. WCRP aims to identify those aspects of climate science that benefit from international coordination. That means identifying gaps, typically where efforts by individual scientists or groups have run into a wall because of the lack of a wider effort.

Some examples of possible research foci for this effort might be:

- Seasonal predictability and seasonality of long-term changes
- Forced and unforced components of decadal predictability
- Initial state estimates
- Extent of potential predictability.

Shepherd noted that the next step is to hold a focused meeting to develop a detailed implementation plan. In developing such a plan, it will be necessary to engage and partner with other relevant research bodies, e.g. IASC and SCAR as well as within the WCRP and with THORPEX.

Some points that need further consideration are:

- Need to avoid making unsolicited research recommendations. Need to engage the best scientists in the world. Need to keep the scientific excitement while making appropriate programmatic linkages.
- Danger of a northern hemisphere imbalance
- What would be the terms of reference for such a group. Its scope cuts across the entirety of the WCRP.
- What would be the nature of the partnership with outside bodies such as IASC and SCAR?
- How would it be led?
- Who would provide infrastructure support?

With regard to support, Shepherd noted that this effort needs a SG which engages with many groups. The SG should be made up of individuals committed for around 5 years as well as some core support.

In the subsequent discussion, the point was made that there needs to be a clear explanation of what the WCRP role is in this effort. A lot of what is being discussed is already being done by PIs. How can WCRP and IASC provide value added?

III. A CliC and CWG perspective (Meier)

Walt Meier provided a summary of the CWG effort to develop a workshop for the spring of 2012 to look at sea ice at the interface between the atmosphere, ice, ocean boundary layer. The proposed workshop would bring together modelers and observationalists to eliminate the frequent disconnect between the two. The proposed date for the workshop is May 15-17, 2012 in Boulder.

Meier also informed this group that the Sea Ice WG of CliC will be holding a workshop on 31 October to 1 November following the WCRP OSC. The focus will be on coordinating sea ice field campaigns and ship cruises.

IV. A WCRP Perspective (Ryabinin)

Vladimir Ryabinin explained that WCRP tries to bring different communities together to forge new partnerships. However, he noted that we have a proliferation of polar predictability initiatives and there is a need to coordinate these activities. One such activity is the GIPPS (WMO Initiative). Proposed by EC PORS-2 and adopted by WMO at its conference in May, it is an IPY legacy, service-driven program.

However, it proposes to cover short to long time scales and thus has an overlap with the work of this group. GIPPS is still in the development stage but they are writing a detailed strategic plan to lay out a path for the future.

Overland stated that we need to coordinate with GIPPS. GIPPS may be the framework for polar prediction, but the focus of this group could be on long-term decadal to multi-decadal timescales which could be fed into the GIPPS process.

VI. Discussion and focusing of the science priorities surrounding polar predictability (Overland)

Overland suggested that there are several themes that on which we could initially focus:

- Arctic Amplification
- Loss of sea ice (causes and impacts)
- Anthropogenic or natural variability
- Arctic-mid-latitude linkages
- Antarctic Influence
- Seasonal to Decadal Prediction

Shepherd suggested that we need to focus on "imperatives." We don't normally organize along these lines, but we do need to distinguish a couple of big themes and focus around those. We also need to be focused on activities which would benefit from international collaboration, not things that individual PIs will do on their own. We can provide the energy to connect the right people.

Many of the workshop participants articulated a need for better model development. There is a very real need for process teams to work with climate model teams to get process information into climate model. The focus should not be on seasonal predictions, other groups, such as CLIVAR, are already doing this. But an emphasis on sea ice may be useful.

Some participants supported the concept of working on model development for long-term prediction which is focused on an ensemble framework.

Hajo Eiken noted that there is some thought going into how the sea ice outlook will evolve. He suggested that this group might be able to provide some guidance on this. For example, can the sea ice outlook be used to guide observations? Where do observations add value from a predictive value?

The group discussed the need to better define the word "predictability" for this effort. What are the time scales and variables which will be used? This will help define what observations and what process studies are needed. There seemed to be agreement that this group will focus on decadal and longer.

VII. Next Step (Shepherd)

Overland summarized the group discussion saying that the emerging organizing theme might be changes in sea ice, both causes and impacts. Sea ice is already understood as a grand challenge. Causes relate to ocean and atmospheric forcing and Arctic feedbacks. Impacts are potential linkages of Arctic changes to subarctic weather and climate. It was noted that there was no Antarctic representatives at the meeting. Another issue is going to be the need for the group to define what it means by predictability. He

suggested there may be a need for a subgroup to get together to pull together the terminology. Finally, he noted that there is clearly a need for a sub group to get together and discuss model improvements focused on bringing different communities together.

Hiroshi Tanaka offered a brief discussion on anthropogenic or natural variability (ice-albedo feedback or arctic oscillation.) He suggested that consideration of both anthropogenic forcing and natural variability need to be part of any discussion on polar predictability.

John Walsh suggested that the group first needs to come to grips with the word predictability and the needs to come up with a few compelling predictability related objectives so that PIs can take these to their funding agencies. The second thing that needs defining is what value added does WCRP and IASC bring to the process.

Shepherd thanked everyone for attending and for their comments. He noted that there are some good suggestions to get going in preparation for the next meeting the first-half of the first week of April in Toronto.

NEXT STEPS:

- Prepare for the meeting in Toronto in April
- Coordinate with CliC Sea Ice Group and IASC CWG
- Prior to the April meeting, develop the sea ice theme further
- Prior to April form a virtual subgroup to consider the definition of predictability and prepare a white paper for the April meeting.