

Atmosphere Working Group
Of
The International Arctic Science Committee

**Mini-workshop on
New Arctic Field Experiment and Model Parameterization**

23 October 2011

Sheraton Denver Downtown

Room: Governor's Square 17

Denver, Colorado

Meeting Minutes

I. Summary of the Potsdam Workshop on a new Arctic field experiment and model parameterizations (Klaus Dethloff)

Klaus Dethloff gave a thorough summary of the AIDA workshop held in late September in Potsdam. He noted that an overarching science question driving research is why the sea ice is disappearing. We have climate models and observations but we need better observations to enable better predictions. He noted that policy makers and the public want answers, but there is a large disconnection between expectations and current deliverables.

The workshop looked at defining the necessary measurements. They also discussed observatory design for AIDA. For comprehensive measurements, a substantial platform will be required as an ice-floe based station will be insufficient to supply the power, security and data quality. Ship supported deployments have provided the best data quality. Options are an icebreaker-supported ice camp or an ice camp accompanied by a vessel. They also had extensive discussions on the deployment of such an ice camp.

II. Summary of the main issues and question related to the experimental design of such an undertaking (Michael Tjernström)

Michael Tjernström also summarized the workshop and focused on some of the questions related to the experimental design.

He noted, like Dethloff, that we need this experiment in order to acquire some long-term data. He suggested that we have a lot of satellite data but we don't know the quality of it. There is a severe summer bias in existing process-level data. There is interest in specific periods, i.e. melt and freeze onsets. But there are other factors like the effects vertical structure of the Arctic Ocean that are not well

known.

He pointed out that we do have previous experience:

- Soviet/Russian drifting stations which are good, but they lack many important sophisticated instruments;
- SHEBA was good but it was only one year and it was some time ago;
- ASCOS or other examples of summer observations which only provide seasonal data.

But what we have done before was not comprehensive or long enough and not representative.

Tjernström noted that the observations will focus first on atmospheric measurements and secondly on sea-ice and ocean observations.

To do this he suggested an experiment that:

- Is a minimum of one year deployment.
- Has a floating platform.
- Has an accompanying ice camp.
- Has near-field areal coverage.
- Has far-field additional areal cover.
- Allows for intensive campaigns (airborne or additional RVs)

There was a lot of discussion about where to do the experiment. Tjernström noted that:

- Science will drive the decision. (Understanding the new arctic and the first year ice.)
- Length and mode.
- Ice quality.
- Maintenance, resupply and some of the sciences requires that it needs to be within flight range.
- Satellite coverage.

Alternative locations were discussed such as:

1. Tans-Arctic Drift
2. Beaufort Gyre
- 3.

III. Next steps

There has been good work as the result of the workshop in Potsdam. The next step is to develop a science plan. There also needs to be consideration of possible collaborators. One such possibility is the CWG which is very interested in this activity.

Participants noted that modeling needs to take a high profile right at the start. It can't be brought in later.

There needs to be an organizational home at which this can be coordinated and funding sought. There are many possibilities, but this will be an important consideration.

Participants of the workshop in Potsdam have begun:

- Writing a white paper from the Potsdam workshop.
- Planning a more in-depth workshop in the spring of 2012.
- Thinking about the development of a science plan
- Talking to NSF and ESF.

The discussion that followed noted:

- It is necessary to get input from modeling groups, IASC and CliC.
- It is necessary to write a proposal to NSF for a workshop proposal. (Matt and Ole).
- Need to coordinate with Russian ice stations.
- Begin broadly and include other disciplines.
- Include Russian participation in science planning meetings.

Overland added a few points to the end of the discussion. He noted that this is a very good start to an ambitious project and thanked Dethloff, Tjernström and others for their excellent efforts to date. He also noted that:

- We want AWG to be a main driver on this initiative for the next year or so. Recommend that we talk to the sea ice part of the CWG to include them in the next workshop.
- US committee is meeting at the end of November and Overland will make a 15 minute pitch to the PRB and NSF on the importance of this. (Ole and Jim will work to prepare this presentation.)
- The core idea and focus needs to stay on the upper ocean, ice, atmosphere fluxes and providing the right information for climate predictions.
- An Arctic Observing Summit will take place in January 2013 which will bring funders and PIs together which might make it easier to collaborate internationally.

ACTION ITEMS:

- Draft a white paper for the April meeting of the AWG
- Prepare for a workshop in May in the United States, perhaps linked to the CWG Boundary Layer workshop in Boulder.
- Prepare for Overland to present concept to NSF and PRB in November.
- Discuss with APECS how to involve early career scientists.
- Coordinate with the CWG and CliC Sea Ice Group on their input to the process.
- Consider how to involve Russian scientists.