

2013 Themes



- **Status** of the Current Observing system.
- Observing System **Design and Coordination**.
- **Stakeholder Perspectives** and Integration in Observing System Design.
- **Support and Funding** of an international Arctic observing network.
- **Data Management**

Observing System Status



- **Disciplinary & sectoral breadth:** WPs reflect mostly focused programs; gap between community-based and science question-driven networks can be closed (activities such as PPP, GCW as testbeds?); private sector activities not well captured with little joint planning (partner with industry consortia such as WOC?)
- **Prioritization and focus:** Consensus science questions (ISAC), hazards & emergency response (e.g., Arctic Council EPPR), adaptation (e.g., SWIPA)
- **Coordination:** Several approaches such as flagship observatories and intensive observation periods (e.g., YOOP) to foster coordination and enable synthesis

Observing System Status



- **Regional distribution:** Tools to map activities emerging; no quantitative tools to guide design/optimization; next summit needs to engage Russian participation
- **Remote sensing & surface based observations:** Explicit links need to be made
- **Global context:** Links to global programs such as GEOSS need to be evaluated & where needed strengthened
- **Network inventory, data management & access:** Support existing programs to foster data discovery by all users, ensure interoperability, promote/institute common data (access) policy, establish master directory → data co-management

Observing System Design and Coordination 28 papers



- **Key findings:** Heavy bias towards North America and western part of the Eurasian shelf region (Barents Sea/Svalbard).
- **Challenge:** How do we get a Circum-Polar observing system?
- **Key findings:** Acquisition of observations within countries EEZ are sometimes problematic. What will then happen when UNCLOS/Article 76 claims are finally established?
- **Challenge:** Overcome access problems. Establish the extended Article 76 continental shelf as an area “open” and permit free for research and establishment of an observing system
- **Key findings:** Considerable overlaps in efforts exist, specifically regarding data management and coordination systems (*hardly even possible today to get full overview of what exist*)
- **Challenge:** Closer interaction between data archives and observing systems

Observing System Design and Coordination 28 papers



- **Key findings:** The mapping of “a spatial frame work” (coastline, bathymetry/topography etc.) is not much discussed in White papers.
- **Challenge:** Establish collaboration between scientific community and industry on the mapping of a spatial framework, the critical context for all observations. Should be included in an Arctic observing system!
- **Key findings:** Platforms for observations in the most difficult Arctic environments not much discuss (exception, paper on ARICE).
- **Challenge:** How do we make temporary platforms for observations sustainable, and how do we coordinate them (for example ships)?
- **Key findings:** Potential for beneficial coordination/collaboration between programs identified from the White Papers (e.g. GLAC-HYDRECO-NET and CAFF-CBMP development plan?)
- **Challenge:** Avoiding funding competition, instead establish mutual beneficial collaborations

Observing System Design and Coordination 28 papers



- **Key findings:** Overarching need for objective, quantitative approaches to network design and optimization.
- **Challenge:** Quantitative network specification needed. Difficult with broad, diverse network. Readiness and suitability varies widely by discipline. Balance across diverse components and network needs.
- **Recommendations:** Develop hybrid approaches tailored to different design stages and scales.

Observing System Design and Coordination 28 papers



- **Key findings:** Scalable, sustainable, agile networks needed. Magnitude of task requires broad coordination
- **Challenge:** Maintain persistent presence, distributed observing, at acceptable levels of cost and risk.
- **Recommendations:** Develop partnerships with existing international programs. Living database of user requirements. Autonomous approaches and technologies. Drifting observatories for measurements in central Arctic, testbed for autonomous approaches.

Stakeholder Engagement and Community Based Monitoring



- 8 white papers
- 2 short statements
- community-based monitoring, health surveillance, from indigenous science to psychology,
- from specific efforts to general principles
- common element is a tie to Arctic communities

Stakeholder Engagement and Community Based Monitoring - Overview



- topics and findings are often complementary rather than overlapping or reinforcing
- a few apparently contradictory messages, such as the promise or drawbacks of electronic technology and social media,

Stakeholder Engagement Community Based Monitoring – Key Points



- Future efforts should be to put into practice the various ideas that have been put forward, to try them out and see what works;
- Proponents of an Arctic observation network should recognize that “stakeholder perspectives” covers many important topics and cannot be distilled into a single activity that accomplishes everything; and
- Effective, lasting monitoring and observations will not take place without strong and meaningful involvement by the “community” or “stakeholders” in question **throughout the design, implementation, analysis, and application** of the activities undertaken.

Stakeholder Engagement and Community Based Monitoring – Challenges



- Deficiencies in current monitoring efforts, baseline data, or even basic understanding of various aspects of the Arctic System (including humans).
- Existing data collection efforts may be in part the result of years of adding on ideas and topics, or be based on what was important in the past.
- Monitoring priorities depend greatly on the interests of the individual, community, agency, institution, or other stakeholder; the broader the participation, the more likely there will be a number of monitoring topics all gathered together into one program.
 - May pose challenges for explaining why certain things need to be included, or for motivating observers to pay due attention to tasks that are not obviously important from all points of view.

Stakeholder Engagement and Community Based Monitoring – Recommendations



- Observations and monitoring at the community scale **should not be done in isolation** from one another or from other monitoring efforts
- **Data management is an essential component** of a successful observation or monitoring effort, no less in the “stakeholder perspectives” category than for any other component of an Arctic Observing Network
- **Reliable and sufficient funding is necessary** for any observation or monitoring project, especially those that require coordination with and a strong participatory (if not leadership) role for communities or other stakeholders.

Stakeholder Engagement and Community Based Monitoring – Conclusions



- Put ideas into practice: to engage fully with the communities and stakeholders relevant to specific topics, to see what works so that successes can be adapted
- Use the resulting information and insights to better look after the Arctic System and all those who are part of it.

Support and Funding



- ❑ Mismatch between time scales of required time series and funding cycles
- ❑ Resources for operational observing not sufficient
- ❑ Uncertainty of funding for established components can create problems for spatial and temporal coverage of key variables
- ❑ Lack of international funding agreements
- ❑ Priorities of system components required to address main science questions and stakeholder needs have to be set
- ❑ Observing system optimization required to set priorities
- ❑ Estimate of total cost for long-term Arctic Observing System needed
- ❑ Mechanism for international cost sharing for Arctic Observing System needed

Data Management



- The Arctic Observing System requires an overarching approach to data management.
- Existing systems service individual networks...
 - What are the barriers to interoperability?
 - What degree of standardization be achieved?
- Should the Arctic observing system have an overarching data management body?
 - Responsibilities and tasks?
 - Support?
- Develop uniform data policy needed to promote access.
 - At what level should this be formulated?
 - What factors (e.g. funding source) influence access?
 - Respect inherent restrictions while requiring open access after well-defined embargo period.
 - Establish methodology for data tracking and attribution.
 - Develop approaches by beginning with subset of data- high-use, high priority. Demonstrate usefulness, success.

Workflow- 5 Working Sessions



1. Prioritize findings, questions and recommendations. Identify tractable issues that the 2013 AOS will develop into recommendations.
2. Identify issues facing international collaboration and coordination of Arctic observing. Offer approaches for addressing these challenges.
3. Assess the fit of current arctic observing activities with stakeholder needs and scientific research questions. Assess fit between research questions and stakeholder needs.
4. Revise and expand synthesis documents to incorporate results from Sessions 1-3 to produce draft outline of findings & recommendations.
5. (a) Identify near-term opportunities to implement AOS 2013 recommendations, develop goals and paths for achieving them.
(b) Develop ideas for network specification, design and optimization.