ARCTIC OBSERVING SUMMIT 2016

University of Alaska Fairbanks, Alaska, USA
15 - 18 March 2016

www.arcticobservingsummit.org

CALL FOR COMMUNITY WHITE PAPERS AND PERSPECTIVES

The Arctic Observing Summit (AOS) is a biennial forum to develop community-driven, science-based guidance for the design, implementation and coordination of a sustained, comprehensive and international Arctic observing system of systems. The Summit is a project of the Sustaining Arctic Observing Networks initiative (SAON, **http://www.arcticobserving.org/**) of the Arctic Council and the International Arctic Science Committee (IASC). The AOS serves as a platform to identify and address societal and scientific needs and priorities, minimize gaps in data and information, reduce duplication, improve coverage and breadth, and contribute to solution-based applications and knowledge sharing. Rapid and unprecedented system-scale environmental change in polar regions, and other sensitive areas globally, requires adaptation, forecasting, planning and the development of mitigation strategies, all dependent on a timely, accurate, and integrated network of Arctic observing systems. The AOS provides opportunities to make tangible contributions and progress towards the development and operation of such a system of systems spanning all Arctic components, and community needs, international cooperation, opportunities, and challenges are considered. The AOS includes the participation of all sectors: scientists, decision-makers, community members, managers, and the private sector.

The inaugural AOS was held in Vancouver, Canada in 2013, followed by AOS 2014 in Helsinki, Finland, held in conjunction with the Arctic Science Summit Week 2014 for the first time (ASSW: **http://www.assw2014.fi**).

ARCTIC OBSERVING SUMMIT 2016

The 3rd AOS will be held in 2016 at the University of Alaska Fairbanks (March 15 - 18: **http://www.arcticobservingsummit.org/aos-2016-and-themes**), in conjunction with ASSW 2016 (March 12 - 15: **https://assw2016.org/**). Based on recommendations and identified priorities from previous Summits, the AOS 2016 will be structured along the following themes. Expanded descriptions of these themes are available at the end of this document, and detailed guidance on theme focus and relevant information can be obtained at **http://www.arcticobservingsummit.org/aos-2016-and-themes**):

- **Theme 1:** International and national strategies for sustained support of long-term Arctic observing
- **Theme 2:** Technology and Innovation for sustained Arctic observations
- **Theme 3:** Contributions of the Private Sector and Industry to sustained Arctic observations
- **Theme 4:** Actor and stakeholder engagement and needs in sustained Arctic observations
- **Theme 5:** Arctic Observations in the context of Global Observing initiatives
- **Theme 6:** Interfacing Traditional Knowledge, community-based monitoring and scientific methods for sustained Arctic observations

Call for Community White Papers and Short Statements

The design, development, implementation and sustained operation of an adaptive, relevant and responsive Arctic observing system requires the expertise and input from everyone affected by, engaged or interested in observing activities, applications and derived products. Diverse and inclusive representation from all sectors is fundamental for the success of an international Arctic observing system of systems to integrate a broad range of perspectives.

Invitation for community white papers and short statements for AOS 2016. Community input and perspectives are invited in the form of white papers and short statements for AOS 2016. The community white papers and statements can serve to highlight important data, management, or logistical needs or gaps, explore emerging opportunities, address a current challenge, present new initiatives or technology that can contribute to Arctic observing (including global programs), or review on-going observing activities or issues that are relevant for the development, application, operation, or support of an Arctic observing network. Community white papers and short statements should link to the six themes identified for AOS 2016 (see above). However, other input on important and relevant topics related to AOS are welcome also under the category of '***Other high-priority issues for Arctic observing***', but we ask that authors contact the AOS Executive Organizing Committee by email (see below) and send a proposed title and abstract to discuss the topic prior to preparing the white paper for inclusion in AOS 2016.

Synthesis process, products, anticipated use and publication. Community white papers and statements will be received by the AOS Committees and the Thematic Working Groups and the AOS Committees, and a synthesis by theme will be prepared by the Thematic Working Groups to identify priorities, develop an agenda for the Summit and prepare recommendations and implementation documents for discussion at the Summit in Fairbanks in 2016. Coauthors of white papers and statements will be invited to revise their contributions based on Working Group feedback provided for optional publication and/or open access following AOS 2016 (planning is underway and details will be announced on the AOS website).

The white papers and statements from the AOS 2013 and 2014 helped guide the development of recommendations and inform the planning of AOS 2016. The community white papers and statements from the AOS 2013 (Vancouver, B.C.) are available on the AOS website (e.g. see links under AOS 2013 and **http://www.arcticobservingsummit.org/resources**). White papers from the 2013 Summit that were submitted for publication in a special issue of the journal *Arctic* are also available online (**http://arctic.journalhosting.ucalgary.ca/arctic/index.php/arctic/issue/view/281**).

Format guidelines for white papers and short statements. White papers should be 5000 words or less (~ approximately 10 pages of text), list all coauthors and their institutions and contact information for the lead author, and should include 3 figures or less, a descriptive title, an abstract or executive summary (300 words maximum), and references as appropriate. Formatting of the document and references should follow the style guidelines of the journal *Arctic* (**http://arctic.ucalgary.ca/guide-authors**). Short statements should be less than 800 words in length and may include up to one figure and references as appropriate, listing all coauthors and their institutions, and contact information for the lead author. A short abstract is recommended if the first paragraph of the text is not descriptive enough to indicate the objective or key topic of the short statement. Submissions should be in MS Word or pdf format with figures and/or tables either embedded within or at the end of the text with clear titles and captions. White papers and short statements can be submitted online: **http://www.arcticobservingsummit.org/community-white-paper-and-short-statements-submission**
The deadline for submitting community white papers is **October 18, 2015, at midnight, Pacific Time.**

For information on AOS paper submissions please send a message to:

aos@arcticobserving.com
Kindly include the title of the relevant AOS 2016 Theme in all email correspondence.

For all other inquiries, please contact:

Gabriela Ibarguchi, ISAC Associate Director (**gabriela.ibarguchi@ucalgary.ca**)

The AOS Executive Organizing Committee gratefully acknowledges all contributions and welcomes your participation at the AOS 2016 in Fairbanks. Please visit our websites for more information.

- Arctic Observing Summit 2016 - **http://www.arcticobservingsummit.org/aos-2016-and-themes**
- Arctic Science Summit Week 2016 - **https://assw2016.org/**
- International Study of Arctic Change - **http://www.arcticchange.org/**

Please visit the AOS 2016 website (**http://www.arcticobservingsummit.org/aos-2016-theme-descriptions**) for updates and further guidance on themes.

AOS 2016: THEMES AND DESCRIPTIONS

Theme 1: International and national strategies for sustained support of long-term Arctic observing

A successful Arctic Observing System that will deliver significant and long-lived benefits for the Arctic environment and communities has to be based on a solid innovative design and implementation plan developed with active participation of relevant stakeholders and indigenous representatives. Such a system can only be built around a commitment to long-term support at national and international scales, by Arctic and non-Arctic nations, where the role of institutional (e.g. funding agencies, public administrations) and non-institutional (e.g. private sector) actors is clearly identified and coordinated. We invite discussion at AOS 2016 on sustained support and funding strategies that will enable the development of an integrated plan for Arctic observation. White papers may address questions such as: Which elements of an Arctic Observing System require sustained and stable support? How can research-oriented observations move to operational ones? How can non-institutional funds be secured? How to build a plan in which both national and international initiatives can efficiently share resources, which is supported by innovative funding mechanisms that deliver sustainability, integration and excellence?

Theme 2: Technology and Innovation for sustained Arctic observations

A modern pan-Arctic Observing System relies on technical innovation to achieve the appropriate spatial and temporal resolution. Key needs include improved interoperability and sensor development and the ability to generate accurate and continuous data records. These needs have already been discussed during previous Summits but further enhancement and discussion of the topic is needed. During the AOS 2016, topics for discussion include the utility of drones (UAVs, Unmanned Aircraft Systems or Remotely Piloted Aircraft

Systems) and their role in remotely sensing the atmosphere, operation across national borders, and exploration of the use of modern technology for community-based observations. Advances in other technologies that may support sustained Arctic observations (such as unmanned underwater vehicles, AUVs and unmanned surface vehicles, USVs) may also be discussed.

Theme 3: Contributions of the Private Sector and Industry to sustained Arctic observations

Decreasing sea ice extent coupled with an increasing interest in natural resource development are driving increased private sector activity in the Arctic, including oil and gas, shipping, fishing, tourism, and mining - along with associated port and coastal infrastructure development. There is a need for better Arctic information to support safe, responsible and effective industry operations. This information could be provided by an Arctic observing system involving the research community, governments, and industry. In particular, there is a need and opportunity for industry data collection and sharing, e.g. in relation to the World Ocean Council program on "Smart Ocean-Smart Industries". This AOS 2016 theme will address the following questions: What information does industry need? What data does, and can, industry collect and share? What assets and resources can industry offer to help sustain Arctic observations by industry and others? What is the value proposition for industry? How can cooperation between industry and the research community be best coordinated? What are the impediments to cooperation?

Theme 4: Actor and Stakeholder engagement and needs in sustained Arctic observations

Rapid Arctic change is impacting a range of stakeholders at regional and global scales. Arctic observing systems hence need to serve a dual function, providing critical information to actors and stakeholders (interested in or impacted by Arctic change, or interested in learning about change and taking action), and supporting scientific research. Such hybrid observing system approaches require the empowerment and involvement of actors and stakeholders at all stages of system design and operation, including capacity-building and taking action. The role of knowledge and observing needs is critical as an integral part and prerequisite of all of the stages. White papers that address capacity building or development of observing systems that can support community emergency response plans and adaptation are particularly encouraged. These may address different models of community engagement, and data and information transfer approaches meant to serve the knowledge needs for communities faced with threats from climate change, coastal erosion and other emergencies. Adaptation and long-range planning are critical components in community survival, especially when faced with short or long-term natural disasters or natural changes that are difficult to deal with. The long-term well-being and sustainability of Arctic communities and the resilience of the environment depend on dialogue and solutions-based approaches which pivot on strong partnerships, trust, respect and open communication.

Theme 5: Arctic Observations in the Context of Global Observing Initiatives

The Arctic is an integral part of the global system. Thus, observations conducted in the Arctic have to be synchronized with existing and emerging global observing systems such as the Global Earth Observing System of Systems (GEOSS). During AOS 2016, this theme will include consideration of physical, natural, environmental, social, economic, and cultural relationships between Arctic and non-Arctic regions with special

focus on the link of Arctic and global observations in the areas of sensor technologies, observing platforms, observation frequency and spatial resolution, and data repositories. In addition, as the Arctic is part of global feedbacks and linkages which in turn influence many facets of ecosystem health, Arctic economies and livelihoods, and community well-being, consideration and discussion of observing systems within and beyond the Arctic must include some tracking of ecosystem components, drivers and stressors related to these linkages.

Theme 6: Interfacing Traditional Knowledge, community-based monitoring and scientific methods for sustained Arctic observations

Traditional and local knowledge play a key role in identifying the scope, interconnectedness and impacts of rapid Arctic environmental change. It is now broadly recognized that community-based observations and Traditional Knowledge are important elements of scientific observing systems. Nevertheless, we are still lacking interfaces, methodologies and frameworks that allow for effective and culturally appropriate exchange and analysis of ideas, expertise and information between the environmental sciences and Traditional Knowledge. AOS 2016 will review current best practices and explore different models of how to better utilize Traditional Knowledge and community-based observations in Arctic observing systems. These efforts will inform specific next steps towards overarching efforts and demonstration projects that will be discussed and developed as part of the AOS 2016 process.