



IASC INTERNATIONAL ARCTIC
SCIENCE COMMITTEE



IASC PROGRESS

IASC Working Groups - Overview of the 2012 Activities

The International Arctic Science Committee (IASC) is engaged in all fields of Arctic research. Its main scientific working bodies are five Working Groups (WGs): Marine, Terrestrial, Cryosphere, Social & Human and Atmosphere. The main function of the WGs is to encourage and

support science-led international programs by offering opportunities for planning and coordination, and by facilitating communication and access to facilities. Each WG is composed of up to two scientists from each IASC member country, appointed by the national adhering

bodies. Though the WGs are disciplinary, they also address cross-cutting science questions by initiating activities which involve at least three WGs. This IASC Progress summarizes the current WG activities, including the cross-cutting initiatives.



Cryosphere Working Group

The CWG has undertaken a number of activities in 2012 agreed to at its October 2011 meeting in Utrecht and its April 2012 meeting in Montreal.

The CWG sponsored a workshop entitled **Ice at the Interface: Atmosphere-Ice-Ocean Boundary Layer Processes and Their Role in Polar Change** in Boulder, Colorado on 25-27 June 2012, which was additionally funded as an IASC cross-cutting initiative.

The **Ice Sheet Mass Balance and Sea Level (ISMASS) 2012 workshop** was held in Portland, OR on 14 July, focusing on the mass balance of ice-sheets and their contribution to sea level changes and was co-sponsored by IASC, SCAR and various partner organizations. <http://www.climate-cryosphere.org/en/events/2012/ISMASS/Home.html>.

In May, the CWG supported the **Vulnerability of Permafrost Carbon Workshop** sponsored by the Carbon Research Coordination Network www.biology.ufl.edu/permafrostcarbon/. The purpose of the meeting of the leadership team was to review initial drafts of synthesis products and to identify remaining gaps for future cross-group synthesis opportunities. Following this workshop, leads/co-leads will up-

date working group scoping documents and initiate new synthesis activities/opportunities by engaging additional RCN members. These new opportunities will be key aspects at the next annual RCN meeting at AGU in December 2012.

The CWG is a partner to the AWG-led **Multi-disciplinary drifting Observatory for the Study of the Arctic Climate (MOSAIC)** activity. MOSAIC held a workshop for organizing and defining the scientific needs and to begin producing science and implementation plans in Boulder, Colorado on 27-29 June 2012.

A major accomplishment of 2012 for the CWG was the successful implementation of a **Workshop on Studies of Tidewater Glaciers** held aboard the Polish R/V Horyzont II from August 26-31, 2012. Understanding of glacier calving processes are important for glacier mass balance estimates and thus for global sea level rise and for deglaciation of large areas in the Arctic. Proper use of remote sensing data and modeling of tidewater glaciers need in situ validation and continuous monitoring of tidewater glaciers. The purpose of the workshop was to train early career scientists in field and remote sensing studies of tidewater glaciers. The workshop met its three major goals: (a) to present recent results from studies of Svalbard

(and other) tidewater glaciers during scientific sessions; (b) to share experience, application of new techniques and obtained results directly in the field by visiting key tidewater glaciers in Spitsbergen; and (c) to discuss a potential international program of coordinated field and remote sensing observations of calving glaciers in the Arctic.

In November, the CWG will again partner with the International Permafrost Association in support of the **Global Terrestrial Network on Permafrost (GTN-P)**. IPA hosted a meeting in Hamburg, Germany which was a follow-up to the joint IASC-SCAR-IPA GTN-P workshop held in November 2011 in Potsdam, Germany. The meeting will serve as a kick-off for the newly assigned Executive Committee of GTN-P to initiate the next important steps to establish a completely functional governing and working body of GTN-P. Additionally the workshop aimed to: 1) develop a clear timeline of GTN-P activities and deliverables for the next two years; 2) reach a final decision on the GTN-P data structure as well as metadata format, to guarantee quick and consistent proceeding in data management work; and 3) plan and organize a bigger workshop in spring 2013 in which the CWG and TWG will be highly involved.

Atmosphere Working Group

The AWG is working to develop a science plan for multi-year comprehensive measurements, extending from the ocean through the sea-ice and into the atmosphere, in the central Arctic Basin, to improve modeling of Arctic climate and weather conditions, and for prediction of future Arctic sea-ice cover. Following up on a September 2011 workshop entitled [Drifting Observatory on the Arctic Sea and Regional and Global Climate Model Simulations \(AIDA-RCM\)](#) the AWG, with support from the CWG and MWG, sponsored a second workshop to develop further the underlying scientific justification for a long-term, internationally supported drifting sea ice observatory.

The workshop, entitled [Multidisciplinary drifting Observatory for the Study of Arctic Climate \(MOSAIC\)](#) was held in Boulder, CO on June 27-29, 2012. Prior to the workshop a white paper to outline the objectives and timeline for such an observatory was developed. Participants agreed to begin the drafting of a science and implementation plan for an observatory, develop a website to support their efforts and



hold a follow-up workshop in 2013.

Secondly, The AWG with support from WCRP, sponsored a workshop in April 2012 entitled [IASC/WCRP Polar Climate Predictability Workshop](#). The following issues were identified as priority frontier questions to be addressed in any future initiative:

- Why are the climates at the two poles changing so differently to each other (with the Arctic changing rapidly, and the Antarctic unevenly), and to global climate?
- Why is the rate of Arctic change at the edge (or beyond) the distribution of model estimates, with observations on average exceeding the model rate of change? And why is the situation essentially the opposite in the Antarctic?
- Do the ongoing amplified changes in the Arctic have an influence on extremes in the

Arctic?

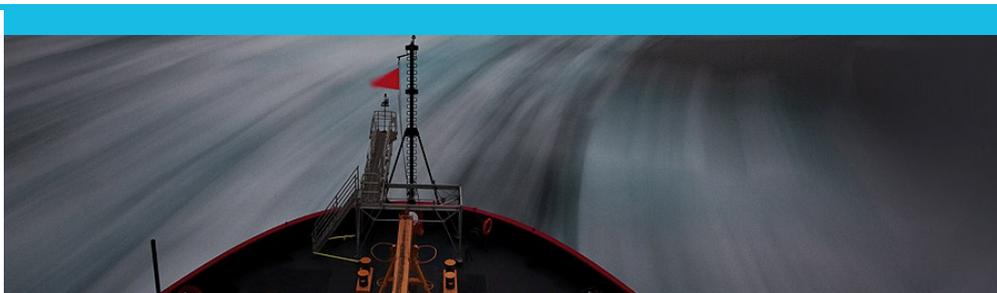
- How predictable is Arctic climate?

A second workshop was held in Seattle in October on [Arctic Climate Predictability](#) co-sponsored by AMAP and a third workshop will be held in Tokyo, Japan just prior to the ISAR 3. The AWG, in close cooperation with the Human and Social WG, hosted a session at the IPY Montreal Science Conference on [Public Perception of Arctic Change](#), specifically focusing on the question of “why is the public becoming more skeptical about climate change even as evidence to the contrary mounts?”

In addition, the AWG is supporting the development of an international Arctic historical data retrieval and reanalysis effort and has endorsed the activities of the International Arctic System for Observing the Arctic (IASOA) program.

Marine Working Group

The MWG has been active in 2012 implementing existing activities and initiating new ones. The most important activity for the AOSB/MWG in 2012 has been the further development of the [Arctic in Rapid Transitions](#) program. During 2012, the ART SG held two workshops to develop a science proposal and also hosted its first science conference in Sopot, Poland. The first workshop was held in [Bremerhaven, Germany on 29 February to 1 March](#) at the AWI. The main objective of the meeting were to design a focused collaboration for a full expedition proposal for the German RV “Polarstern” in 2015 dedicated to “Transitions in the Seasonal Sea Ice Zone (TRANSSIZ)” in the European Arctic Ocean within the framework of ART. The draft proposal suggests three legs focusing on ecological and biogeochemical studies on seasonal transitions (winter-spring, fall-winter) in the Eurasian Arctic Ocean. The main objectives are to complement summer data sets and advance biological/biogeochemical process studies and modeling, calibrate algorithms used in remote sensing and proxies used to interpret sea ice and ocean circulation changes in the geologic past. The North-American members of the ART Executive Committee plan a complementary US-led expedition in



the North-American Arctic (Beaufort, Chukchi and towards the deep Canada Basin).

The second ART meeting was held in [Copenhagen, Denmark](#) and brought together the ART Executive Committee to finalize the TRANSSIZ proposal. This meeting was co-sponsored by GEUS, Denmark, University of Tromsø, Norway, AWI (Germany).

The final ART activity for 2012 was the very successful [4-day science workshop](#) co-sponsored by the MWG, IASC and APECS. The workshop addressed the challenge of integrating modeling and observations in order to identify linkages and feedbacks between atmosphere-ice-ocean forcings and biogeochemical processes that are key to ecosystem function, land-ocean interactions and to the productive capacity of the Arctic Ocean.

The MWG supported the creation of the [Arctic System Climate Network \(ACSNet\)](#) which

grew out of the iAOOS project of AOSB/MWG. The ACSNet, established in June 2011, aims through the coordination and networking of existing or emerging fieldwork to implement an intensive cross-disciplinary study of the role of the polar seas in climate. In particular special reference is made to the Western Arctic as a site of demonstrable global importance and to the research questions identified as of key importance by the 2011 iAOOS plan of the IASC Marine Working Group. The essential aim of ACSNet is to devise a common space-time framework for individual research projects arguing for the combining of disparate efforts to form an intensive, international and multidisciplinary research effort initially with its focus on the Greater Canada Basin and its marginal ice zone, later on a pan-Arctic scale. The introductory meeting of ACSNet was held during the IPY2012 Conference in Montreal, Quebec on 23 April 2012. The meeting was attended by



Marine Working Group continued...

Arctic researchers and program managers with interest in the ACSNet goal of fostering interdisciplinary and international collaborations in field research in the Western Arctic in the coming years. A broad overview was given of the potential participating field programs, and an activity timeline for ACSNet was discussed. Approximately 20 field programs spanning a range of observational efforts to understand the Arctic atmosphere, ice, ocean system were presented and discussed. The broad time line for ACSNet activities includes a main field effort in 2014 - 2015 and a synthesis effort in 2015 - 2016.

In 2011, ICES and IASC signed a Letter of Agreement to cooperate. In November 2012, ICES held its annual Science Conference on September 17-21 in Bergen, Norway and AOSB/MWG was invited to co-host two of the sessions, both dealing with the Arctic. The first

session, co-chaired by Dr. Loeng and Dr. Bogi Hansen, focused on the Arctic and North Atlantic from a climate change perspective. The second session, co-chaired by ICES/PICES/ES-SAS and AOSB/MWG examined the influence of subarctic inflows on the physical conditions and biology in the Arctic basin and shelves, as well as the role of fluxes of water from the Arctic basin onto the surrounding shallow shelves and into the subarctic.

The MWG continues its participation in the **PAG-led Distributed Biological Observatory (DBO)**. Plans are underway to host a workshop in Seattle in February to discuss and explore international data-sharing issues. The DBO now has three years of field data which can make a valuable contribution to a better understanding of how ecosystems are changing in the study areas.

Two new activities are getting under way. The MWG, recognizing the need to better coordinate international data efforts is forming a small sub-group to investigate how the MWG might add to the **international dialogue on data access and accessibility issues**. The sub-group will meet first by teleconference to define its objectives and goals and will meet again prior to the ASSW 2013.

A second activity relates to gas hydrates. This initiative will get underway with a **Gas Hydrates workshop in the first week of March 2013**. The workshop will focus on the occurrence and stability of gas hydrates in the marine Arctic realm – particularly seen in the perspective of a global warming scenario. The workshop will gather specialists and research groups for a three-day workshop and the overall goal of the workshop is to formulate a draft of a Pan Arctic gas hydrate drilling proposal.

Social and Human Sciences Working Group

At its annual meeting at the ASSW 2012, the SHWG discussed joint initiatives and interactions with representatives of the Arctic Council Sustainable Development Working Group (SDWG), the International Arctic Social Sciences Association (IASSA) and the International Network for Circumpolar Health Research (IN-CHR).

The SHWG contributed to the workshop on **“Responding to Arctic Environmental Change”** which was organized by the International Study of Arctic Change (ISAC) on 30 January - 1 February in Kingston (Canada). The workshop was held in the run-up to the IPY 2012 Montreal Conference “From Knowledge to Action” and focused on translating scientific knowledge into a research agenda for action. At the IPY 2012 Montreal Conference, the SHWG organized and supported a session on **“Public Perception of Arctic Change”** joint-



ly with the Atmosphere WG. The session was chaired by Peter Schweitzer and Jim Overland. Polar science faces a strange conundrum: while recent years (and the Fourth IPY in particular) have brought massive advances in understanding the polar systems, popular understanding of these processes seems to be diminishing. In light of tremendous changes threatening the state of the system in the Arctic and elsewhere, misperceptions and representations of polar climate science become a matter of concern for society at large. Given the critical role media and politics play in that field, representatives from these arenas were part of the session as well as academics. The latter groups included climate scientists, histo-

rians of science, as well as social scientists trying to understand the current situation.

The SHWG reconfirmed its commitment to support the **“Arctic Human Development Report (AHDR II)”** and earmarked funds for WG members to participate in AHDR author meetings. An update of the ongoing work, including IASC and IASSA reports, was presented at the meeting of the Arctic Council SDWG in Reykjavik (Iceland) on September 17-19.

A community-based workshop focused on local ecosystem changes and adaptations is in preparation. The SHWG will collaborate with the community and local industry in planning

and conducting this workshop.

The SHWG is also supporting a **“CircumArctic Rangifer Monitoring and Assessment (CARMA)” workshop** on the global status of migratory tundra Rangifer to be held in Vancouver (Canada) on 4-6 December. The CARMA workshop is one of IASC’s cross-cutting activities.

A major 2012 activity of the SHWG will be the workshop **“Between Discourses and Modernities: Histories and Methodologies of Arctic Social Sciences, Humanities and Arts”** which will be held in Umeå (Sweden) on 13-14 December. This workshop is in conjunction with the opening of an Arctic Research Centre at



Umeå University. The objective of this workshop is to highlight one of the prioritized research items of the SHWG and to identify the challenges and problems of the research field outside natural sciences and technology. With a self-reflexive approach, the intent is to address questions that are needed for an

improved understanding of the position and direction of this research. Furthermore, informal discussions are intended to build a firmer foundation for future interdisciplinary, community-based collaboration, and international research collaborations.



Terrestrial Working Group

Jointly with the Cryosphere WG, the TWG supported the lead/co-lead meeting of the **“Vulnerability of Permafrost Carbon Research Coordination Network”** which took place in St. Pete Beach, Florida (USA) on May 17-18, 2012. The purpose of the meeting of the leadership was to review initial drafts of synthesis products and to identify remaining gaps for future cross-group synthesis opportunities. Short presentations by working group leads/co-leads on current progress were followed by feedback and discussion with the whole group. Remaining gaps were identified and a plan was developed to communicate these to the broader science community, both within and outside of the network, in order to inform members and to get new scientists involved in synthesis activities. Following this workshop, leads/co-leads will update working group scoping documents and initiate new synthesis activities/opportunities by engaging additional RCN members. These new opportunities will be key aspects at the next annual RCN meeting at AGU in December 2, 2012.

The TWG is also supporting a **“CircumArctic Rangifer Monitoring and Assessment (CARMA)” workshop** on the global status of migratory tundra Rangifer to be held in Vancouver (Canada) on 4-6 December. The CARMA workshop is one of IASC’s cross-cutting activities.

Following its meeting in Montreal, the TWG agreed to organize and support the following three workshops which will be held early 2013:

Global Change, Arctic Hydrology and Earth System Processes Workshop during January/February 2013 in Sheffield (UK):

The workshop will address the role of changing hydrology and active layer moisture regimes for ecosystems, biogeochemical and biophysical processes in the arctic terrestrial realm (including surface waters), which so far has been overlooked relative to the much clearer emphasis on climate warming as a key driver of change.

This scoping exercise will bring together a small group of experts in a two-stage workshop to review the current state of knowledge on arctic hydrological change, to identify research gaps, and to horizon-scan based on

best available predictions of change in the arctic terrestrial realm.

Shaping Forces of Biodiversity in the Arctic Workshop during January 2013 in Reykjavik (Iceland):

The aim of the initiative is to explore the feasibility of designing a coherent framework for addressing the shaping forces of biodiversity in the Arctic. Such a framework would contribute to an Arctic biodiversity coalition by building on existing Arctic biodiversity documentation and monitoring initiatives. The first step of the initiative is to bring together a few people, representing a broad organismal and theoretical expertise, to draft the framework. On the basis of the outcome, the group will suggest the next steps in designing a final framework.

International Arctic Vegetation Database Workshop during April 2013 in Krakow (Poland):

This workshop will bring a few key members of the international community of Arctic vegetation scientists together for the First International Arctic Vegetation Database Workshop.

Cross-Cutting Initiatives

IASC Council, at its meeting at the Arctic Science Summit 2011, decided to allocate funds for cross-cutting activities, that are supported by at least three of the five IASC Working Groups. The objective of this WG-spanning program is to promote system-scale activities within IASC and to encourage the WGs to explore activities, which should be of interest to three or more of the WGs. Because the IASC WGs are set up along disciplinary lines, it is possible that their activities will be focused only on one or two disciplines. While this is to be expected, IASC wishes to promote cross-cutting themes and encourage interaction between the working groups.

Workshop on Ice at the Interface: „Atmosphere-Ice-Ocean Boundary Layer Processes and Their Role in Polar Change“ Boulder (USA), 25-27 June

The atmosphere-ocean boundary layer in which sea ice resides includes many complex processes that require a more realistic treatment in GCMs, particularly as models move toward full earth system descriptions. The primary purpose of the workshop was to define and discuss such coupled processes from observational and modeling points of view, including insight from both the Arctic and Antarctic systems. The workshop met each of its overarching goals, including fostering collaboration among experimentalists, theorists and modelers, proposing modeling strategies, and ascertaining data availability and needs.



Several scientific themes emerged from the workshop, such as the importance of episodic or extreme event, precipitation, stratification above and below the ice, and the marginal ice zone, whose seasonal Arctic migrations now traverse more territory than in the past.

The Workshop received additional support from the Cryosphere WG.

Joint ART (Arctic in Rapid Transitions)-APECS (Association of Polar Early Career Scientists) Science Workshop “Overcoming challenges of observation to model integration in marine ecosystem response to sea ice transitions” Sopot (Poland), 23-26 October:

The 4-day science workshop was co-sponsored by the MWG, IASC and APECS. The workshop addressed the challenge of integrating modelling and observations in order to identify linkages and feedbacks between atmosphere-ice-ocean forcings and biogeochemical processes that are key to ecosystem function, land-ocean interactions and to the productive capacity of the Arctic Ocean. The workshop revolved around the “past-present-future” axis of ART, meaning that key themes will include geographic integration and comparative assessments of driving forces in contras-

ting ecosystems, how to advance present day scenarios and projecting tools based on the knowledge of paleo-records, and the development of ecosystem indicators and models. The major outcome of the workshop is a suite of inter-disciplinary scientific papers lead by early- and mid- career scientists with the support of senior scientists.

„CircumArctic Rangifer Monitoring and Assessment“ (CARMA) Workshop, Vancouver (Canada), 4-6 December:

The CARMA workshop on the global status of migratory tundra Rangifer will include academics, aboriginal representatives, co-management group members, climate specialists and agency biologists and managers. The objectives of the meeting will be 1) to better assess the mechanisms behind the recent declines in Rangifer, 2) to share management experiences over the last decade to deal with these declines and 3) based on these discussions, to recommend monitoring indicators and management actions that should be employed through future cycles of abundance of migratory tundra Rangifer.

The workshop is consistent with the scope and foci of IASC’s Social & Human and Terrestrial Working Groups, which are both providing additional support.

IASC Working Group Members



Atmosphere WG

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Thorsteinn Thorsteinsson

Next Meeting of the IASC Working Groups

will be held in conjunction with the Arctic Science Summit Week 2013 in Krakow (Poland) on 13-19 April 2013.

<http://www.assw2013.us.edu.pl>

New WG Members from the Czech Republic

IASC is pleased to welcome the new Working Group Members from the Czech Republic:

Terrestrial WG: Josef Elster

Cryosphere WG: Jan Kavan

Marine WG: Oleg Ditrich

Atmosphere WG: Kamil Laska

Social & Human WG: Ludek Broz

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