

**Report of the Meeting of the
IASC Action Group on Geosciences (AGG)
22 February 2013
IASC Secretariat, Potsdam, Germany**

Participants

Carlo Barbante

Benoit Beauchamp (not available)

Bernie Coakley (Skype 16.00-17.00 CET)

Mikhail Grigoriev

Naja Mikkelsen

Victoria Pease

Karsten Piepjohn

Volker Rachold



From left to right: Carlo Barbante, Karsten Piepjohn, Victoria Pease, Mikhail Grigoriev, Naja Mikkelsen, Volker Rachold

Meeting Report and Recommendations

The Chair Carlo Barbante opened the meeting and the participants introduced themselves in a tour de table.

Terms of Reference

Participants reviewed and approved the Terms of Reference of the Action Group:

“The IASC Action Group on Geosciences (AGG) provides strategic advice to the Council and Working Groups on both long-term opportunities and priorities in the field of Arctic Geoscience research in a broader sense. Since geosciences embrace a wide variety of scientific disciplines, emphasis is given to the overarching aspects of research.

AGG will particularly address emerging research questions such as: (i) Arctic solid-earth geoscience, including Arctic tectonic evolution and the exploration of the ridge systems; (ii) sedimentary records and climatic and environmental history obtained from marine and lake sediments, ice cores and permafrost deposits (iii) geologic and geochemical processes especially related to the stability of permafrost and of gas hydrate deposits; (iv) seismic risk of the Arctic regions.

The Action Group will report to the Council and to the WGs on the emerging scientific fields in geosciences, in order to better address, coordinate and prioritize the research efforts at national and international level. An initial report will be presented to the IASC Executive Committee in March 2013, the final report will be delivered to Council at ASSW 2013.

Review of IASC’s ongoing activities related to geosciences

The Executive Secretary provided an overview of IASC’s ongoing activities related to geosciences and the participants discussed possible gaps and mechanisms for IASC to fill these gaps in order to better address geoscience research.

(a) IASC Working Groups’ activities related to geosciences

Terrestrial WG: Current geosciences related activities include the support of permafrost research (e.g. Vulnerability of Permafrost, Carbon Research Coordination Network) and a new initiative on Arctic hydrology (Global Change, Arctic Hydrology and Earth System Processes).

Cryosphere WG: The WG is supporting permafrost research activities (Global Terrestrial Network on Permafrost Vulnerability of Permafrost Carbon Research Coordination Network) and the work of the SCAR/IASC Expert Group on Ice Sheet Mass Balance and Sea Level (ISMSS).

Marine WG: The geosciences related activities of the MWG include the planning of Arctic Ocean Drilling and the support of the Arctic in Rapid Transition (ART) initiative.

Social and Human WG: no activities

Atmosphere WG: no activities

(b) IASC Networks

Participants noted that some of the ongoing IASC Networks are addressing geosciences:

- Network on Arctic Glaciology (NAG)
- Arctic Coastal Dynamics (ACD)
- Circum-Arctic Lithosphere Evolution (CALE)
- Palaeo-Arctic Spatial and Temporal Gateways (PAST Gateways)

(c) Cross-cutting initiatives

The Action Group noted that the current cross-cutting initiatives are not addressing geosciences.

Recommendation 1: that IASC encourages a better representation of geoscientists in its WGs. For each of its WGs, IASC should maintain a list of expertise covered by the current membership and potential gaps. Member organizations that are appointing new members should be asked to consider this list.

Recommendation 2: that IASC strengthens system-oriented research by (a) improving the visibility of its Networks and the flow of information between the organization and the Networks and by (b) making more use of the cross-cutting funding, in particular to address geosciences research. It is recommended that the next cross-cutting funding call prioritizes geoscientific projects.

Brainstorming Session

In a brainstorming session, the Action Group agreed on the following recommendations:

Recommendation 3: that IASC initiates an assessment on the “Geodynamic Evolution of the Arctic” as a major geoscience contribution to the 3rd International Conference on Arctic Research Planning (ICARP III). This would allow (a) IASC’s Terrestrial and Marine WGs to build stronger onshore-offshore connections, (b) the Marine, Cryosphere and Terrestrial WGs to develop mechanisms to better connect marine, terrestrial and ice core records and (c) the Marine WG to addresses the disconnect between the basement and subsea.

The Action Group on Geosciences would be willing to help planning such as assessment and interested in guiding the initiative. A possible outline could be:

Geodynamic Evolution of the Arctic

Part I: Evolution of Arctic Ocean basins and ridges

Correlation of Circum-Arctic orogens, foldbelts and fault zones

History of Arctic Gateways

Hydrothermal activities

Part II: Arctic climate evolution

Pre-Quaternary (Pre-Icehouse)

Long term variability during Mesozoic-Cenozoic times

Millennial-scale climate changes

The Cenozoic climate change: greenhouse vs. icehouse climate
Quaternary (Icehouse)
Milankovitch- to millennial-scale variability during the Quaternary-Neogene time
The Mid-Pleistocene climate transition
Anthropocene (back to Greenhouse?)
The Arctic environment during global warmth

Part III: System response to changes

Permafrost and gas hydrates
Ice sheets
Sea ice
Sea level
Ocean dynamics

Recommendation 4: that IASC promotes the following scientific activities and encourages its members to contribute:

- Arctic Ocean drilling, e.g. Alpha Mendeleev and Chukchi Borderland
- Process studies and mapping of subsea permafrost and the stability of gas hydrates
- Key studies on specific timeframes, e.g. high-resolution studies on short-term climate variability and a comparison between the Eemian and Holocene
- Validation of models using paleo-records
- Synchronization of marine and terrestrial climate records
- Geohazards and climate driven threats in the Arctic

Finally, the Action Group agreed that the scientific part of the outcome of the meeting would be published in an “EOS Future” article.