

Arctic Monitoring and Assessment Programme (AMAP) - Progress Report

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Summary of achievements 2015-17

Under the United States Chairmanship, AMAP has conducted work under various priority areas, as described below. This includes work connected to the US Chairmanship priorities: *Addressing the Impacts of Climate Change* (targeting short-lived climate pollutants through reductions in black carbon and methane emissions; and supporting Arctic climate adaptation and resilience efforts) and *Arctic Ocean Safety, Security and Stewardship* (creating a better understanding of Arctic Ocean acidification and its effects on Arctic organisms and the economies that rely on them). It also includes work supporting international conventions and processes related to environmental and climate issues.

Climate Issues: Three major pieces of work address priority issues associated with Arctic climate change:

The 2017 assessment of *Snow, Water, Ice and Permafrost in the Arctic (SWIPA)* updates the information reported in the SWIPA 2011 assessment, documenting recent changes in the cryosphere and effects of these changes on Arctic environments, exploring possible climate linkages between the Arctic and other parts of the world, and presenting new projections for future scenarios (with improvements with respect to uncertainty). This assessment also has a special focus on freshwater systems, with recent information based on work of the 2015 Arctic Freshwater Synthesis project co-led by AMAP. SWIPA 2017 shows that the Arctic as we know it is being replaced with a warmer, wetter and more variable environment. The assessment shows that the Arctic Ocean could be largely free of sea-ice in summer as early as 2030, with a continuous decline in snow-cover and permafrost extent until at least 2050, and further melting of Arctic land based ice resulting in a greater Arctic contribution to global sea level rise than previously anticipated. The transformations under way have profound implications for people, resources, and ecosystems in the Arctic and beyond. Urgent efforts to reduce global greenhouse gas emissions are needed, and will have an impact on this development; yet, even with full implementation of the Paris Agreement, the Arctic climate and environment will be substantially different from that of today.

The *Adaptation Actions for a Changing Arctic (AACA)* project has its origins in a request by the Arctic Council “to produce information to assist local decision-makers and stakeholders in three pilot regions in developing adaptation tools and strategies to better deal with climate

change and other pertinent environmental stressors”. The AACCA focuses on the diverse challenges that residents in three different Arctic regions (the Bering-Chukchi-Beaufort region; the Baffin Bay-Davis Strait region, and the Barents area) have experienced and the adaptations they have begun to plan and implement in response to the rapid changes in climate, landscape, wildlife, and social and economic systems that have occurred in recent decades and are expected in future. It considers the environmental and socio-economic changes to which inhabitants are and will be adapting, and provides a number of observations intended to help inform decision-makers about how they might help their communities adapt to future changes. For each of these regions, AMAP has produced a report providing a technical description of changes within the region, and a discussion of current rates of change and related impacts, considering consequences of these changes, past, present and future. The reports describe how new approaches to adaptation planning, governance, and community engagement can improve the prospects for successful adaptation to Arctic change by individuals and communities.

Arctic Ocean Acidification (AOA) is highlighted under the US Chairmanship priority to create a better understanding of Arctic Ocean acidification and its effects on Arctic organisms and the economies that rely on them. AMAP has initiated the preparation of an update to its 2013 assessment of AOA based around 5 case studies.

Pollution Issues: As a result of global regulations and other national and regional controls, levels of many previously identified (so-called ‘legacy’ or ‘already regulated’) persistent organic pollutants (POPs) are now declining in the Arctic and elsewhere (as documented in the AMAP POPs and human health assessments reported to the Arctic Council in 2015). Yet Arctic environmental contamination is a continually evolving problem. The current 2016 AMAP Assessment of Chemicals of Emerging Arctic Concern (CEAC) documents that a broad range of new chemicals, as well as substances such as micro-plastics, are now found in the Arctic. Many of these reached the Arctic through long-range transport, but some are now associated with sources in the Arctic. Most are, however, not subject to international regulation. Moreover, an even larger number of chemicals with potential to reach the Arctic are presently in use, with new chemicals continuing to enter commerce each year. The assessment shows that there is a need to strengthen the cooperation with existing global regulations such as the Stockholm Convention and LRTAP. In addition, new approaches to

chemical management are needed to address the potential risks to Arctic ecosystems and human populations, including chemical screening approaches and improved access to information from industry. Recommendations to improve engagement with organizations such as with UNEP and the Strategic Approach to International Chemicals Management (SAICM) to address CEAC are relevant to the Sustainable Development Goals on ‘environmentally sound management of chemicals and minimizing adverse impacts [of chemicals] on human health and the environment’.

Other Areas of Work: AMAP has, together with IASC, continued to provide Secretariat support to the *Sustaining Arctic Observing Networks (SAON)* initiative, including work in 2016 to propose recommendations for future SAON direction.

Following discussions between the Arctic Council, AMAP and the Arctic Resilience Report (ARR), AMAP agreed to serve as the Working Group reporting channel for the ARR since it sits outside the Arctic Council Working Group structure. The AMAP Working Group reviewed the ARR Synthesis for Arctic Leaders and found them to be consistent with AMAP’s published work on Arctic climate change and other work. The views expressed in the ARR and its Synthesis for Arctic Leaders are the responsibility of the lead authors of the ARR and do not necessarily reflect the views of the AMAP Working Group.

AMAP engagement with international organizations has focused on enhanced cooperation with LRTAP bodies connected with planned future work on (integrated) air pollution monitoring and assessments, with a special focus on improving scientific knowledge relevant to SLCFs and their impacts on the Arctic. AMAP is also supporting work on the development and implementation of the *UNEP Minamata Convention* and joint technical work associated with the update of the *UNEP Global Mercury Assessment* in 2018, and has delivered Arctic information and data as input to the *Stockholm Convention* effectiveness evaluation and consideration of chemicals for listing for regulation under this international agreement.

AMAP is also a partner in the *EU Horizon2020* coordination and support action *EU-PolarNet* that has as its goal to improve coordination between EU polar research institutions and develop an Integrated European Polar Research Programme.

These collaborations have been favorably received within the international organizations concerned and have enhanced the Arctic Council’s profile in these activities and ensured that Arctic perspectives, information and data are recognized in these international fora.

AMAP has supported the following work in projects led by other AC WGs and TFs: Integrated ecosystem assessment (PAME), marine biodiversity trends updates (CAFF); Arctic marine strategic plan and AMSA follow-up (PAME); One Health (SDWG)

AMAP Deliverables for the Fairbanks Ministerial

AMAP is preparing the following deliverables for the Fairbanks Ministerial:

- *Arctic Cryosphere Change (Snow, Water, Ice and Permafrost in the Arctic, SWIPA 2017) Update Assessment: Summary for Policy-makers*
- *Adaptation Actions for a Changing Arctic (AACCA) Barents Area : Summary report*
- *Adaptation Actions for a Changing Arctic (AACCA) Bering-Chukchi-Beaufort Region : Summary report*
- *Adaptation Actions for a Changing Arctic (AACCA) Baffin Bay-Davis Strait : Summary report*
- *Contaminants of Emerging Arctic Concern Assessment: Summary for Policy-makers*
- The AMAP Work Plan 2017-19