Arctic Ocean Acidification (AOA)

Approx. 25% of atmospheric CO2 emissions are absorbed by the oceans. The Arctic is particularly vulnerable. This can cause harmful effects to marine life.

OA is a Direct Result of CO2 Emissions

Why Is the Arctic Ocean More Vulnerable to OA?

Feely et al. (2004)

- The waters of the Arctic Ocean are preconditioned to have high CO2 concentrations and low pH.
- Colder waters can absorb more CO2, which leads to lower pH.
- Reduced sea ice increases CO2 levels in the Arctic Ocean which lowers the pH and increases acidification.

AOA Science Report Chapters – March 1st

- Chapter 1 - Introduction
- Chapter 2 – Acidification in the Arctic Ocean – processes, sensitivities, regional differences
- Chapter 3 – Marine ecosystem impacts
- Chapter 4 – Potential Economic and Social Affects of Ocean Acidification on Arctic Fisheries
- Chapter 5 – Conclusions and Future Work

Based on the conclusions from the AMAP AOA scientific assessment, the following recommendations are provided:

**Why are higher CO2 levels over the World’s Oceans a global Problem?**

The current accelerating global use of fossil fuels leads to higher levels of CO2 in the atmosphere and over the world’s oceans. Greater amounts of CO2 are being absorbed in marine waters making them more acidic.

**Why does it matter to the Arctic Nations and it Peoples?**

By affecting the capacity for key marine organisms to form calcium-based shells and skeletons, increasing ocean acidification will affect marine ecosystems, from plankton to fish, including globally important northern commercial fisheries such as crab, cod and salmon.
The Arctic is particularly vulnerable due to the higher capacity of cold waters to absorb CO2. Other factors such as loss of sea ice resulting from a changing climate are also contributing to increased absorption of CO2 at high latitudes. Regions of the Arctic Ocean are already showing the effects of acidification.

What can the Arctic Council and the nations do to address this serious challenge to our future?

Since more than [one third] two thirds of global CO2 emissions from fossil fuels come from the Arctic Council member countries including observer countries, the Arctic Council has an opportunity to provide global leadership by addressing the global ocean acidification issue. It is increasingly clear from the scientific evidence that immediate cuts in CO2 emissions are essential to slow the acidification of the Arctic Ocean.

The biological, social and economic effects of ocean acidification are potentially very significant for Arctic nations and global society. Effects on marine ecosystems and northern societies due to acidification are [very] likely to have significant impacts, particularly on future fisheries and harvesting of marine resources. There remain large gaps in knowledge that currently prevent reliable projections of these impacts.

Therefore it is recommended that the Arctic Council:

- Urge its member states, observer countries and the global society to reduce emission of CO2 as a matter of urgency;
- Urge its members to implement adaptation strategies that address all aspects of Arctic change, tailored to local and societal needs; and
- Advocate for enhanced research and monitoring efforts that expand understanding of the accelerating acidification processes and potential effects on marine life and northern societies.

Process for completion/delivery of AOA

- January 2013 – Provisional (policy-relevant) recommendations reviewed by SAOs + PPs (discussed at AMAP HoDs meeting, subject to national and scientific re-confirmation): COMPLETED.
- 1 March – Final handover of scientific assessment report (for technical editing): DONE
- 20-21 March – Present revised policy-relevant recommendations.
- April - Review by SAOs of Summary for Policy Makers
- 6-8 May – AOA Scientific Conference (Bergen); AOA film.
- Publication of AOA Scientific and Overview reports.

“Eye Catching” Communication Products

- 3 min and 15 min. films – Kiruna
- Summary for Policy Makers – Kiruna
- Science Report – Kiruna in electronic form only.
- AOA Science Conference – 4-6 May 2013 in Bergen, Norway
Announcement and First Call for Papers

International Conference

Arctic Ocean Acidification

6-8 May, 2013, Bergen, Norway

Monday 6 May

Venue: Slekem konferansesenter
Sigurdri gade 6
5015 Bergen

08.00 - 08.30: Registration and morning coffee
08.30 - 08.35: Welcome to the conference by Roar Moe, ANAP, Qatar, Indian and Northern Affairs Canada
09.00 - 09.30: Opening by Erland Sæljeby, Norwegian Minister of Health and Environment
09.30 - 09.40: Welcome speech by:
Jan Christian Brønnimann, General Secretary ICES
Geir Georg, Director, NPI
Per Olav Langeland, Director, NPI
09.40 - 10.05: Richard Ekdahl, Norwegian Institute for Water Research: Arctic Ocean Acidification - Introduction and Background
09.00 - 09.20: Presentation from UNICEF on climate change and the Arctic
10.20 - 10.25: The effects of ocean acidification - biological impacts and benefits for marine ecosystems
10.25 - 10.40: The Arctic Ocean Acidification: Implications for food webs and biogeochemical cycling
10.40 - 10.45: Break
10.45 - 11.05: The Arctic Ocean Acidification: Implications for coastal communities
11.05 - 11.20: The Arctic Ocean Acidification: Implications for the economy