ARCTIC MONITORING AND ASSESSMENT PROGRAMME

AMAP

Recent activities and workplan 2017-19

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ARCTIC MONITORING AND ASSESSMENT PROGRAMME

AMAP initiated in 1991 to monitor and assess levels, trends and effects on Arctic ecosystems and humans:

- **Climate change**, incl. UV, ozone, black carbon, methane & ocean acidification;
- **Pollutants** – Persistent Organics (POPs), heavy metals, radionuclides, petroleum hydrocarbons & acidification;

- **Analyzing samples** from: air, water, snow, ice, sediments, plankton, invertebrates, fish, birds, mammals & humans;
- **Perform integrated assessments** of several drivers.

- **Provide science based policy related Actions**
- Working Group of the Arctic Council

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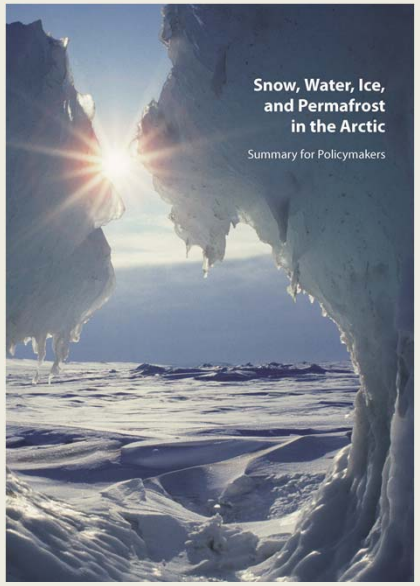
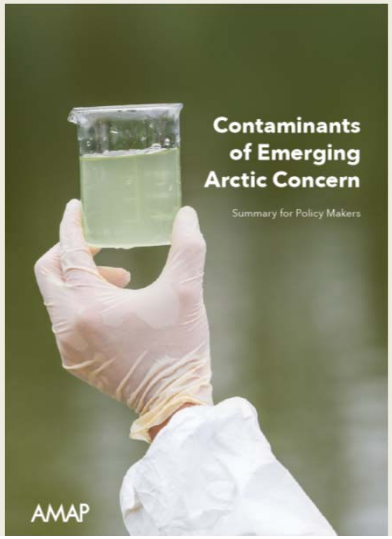
AMAP reports released in 2017

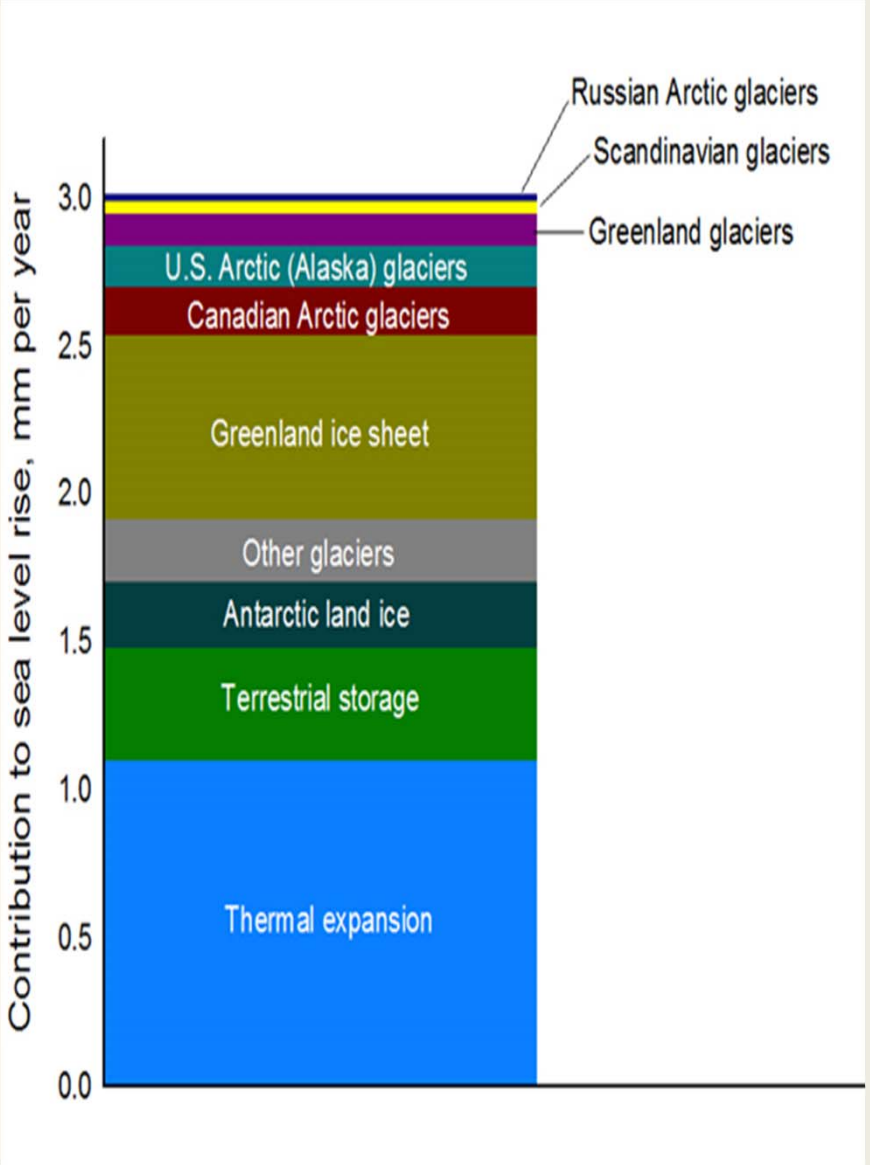
- Snow, Water, Ice and Permafrost In the Arctic (SWIPA)
- Reports of Adaptation Actions for a Changing Arctic (AACA)
  - Barents
  - Bering-Chukchi-Beaufort
  - Baffin Bay -Davis Strait
- Chemicals of Emerging Arctic Concern (CEAC)
- Arctic Resilience Report (ARR) – Summary for Arctic Leaders
  - Reported through AMAP

Available at www.amap.no





During the period 2004-2010 melting Arctic land ice accounted for more than 1/3 of global sea-level rise



Including all sources, estimated global sea level rise during 2006-2100 is between 0.52 m (RCP4.5) and (at least) 0.74 m (RCP8.5)

(AMAP/SWIPA 2017)

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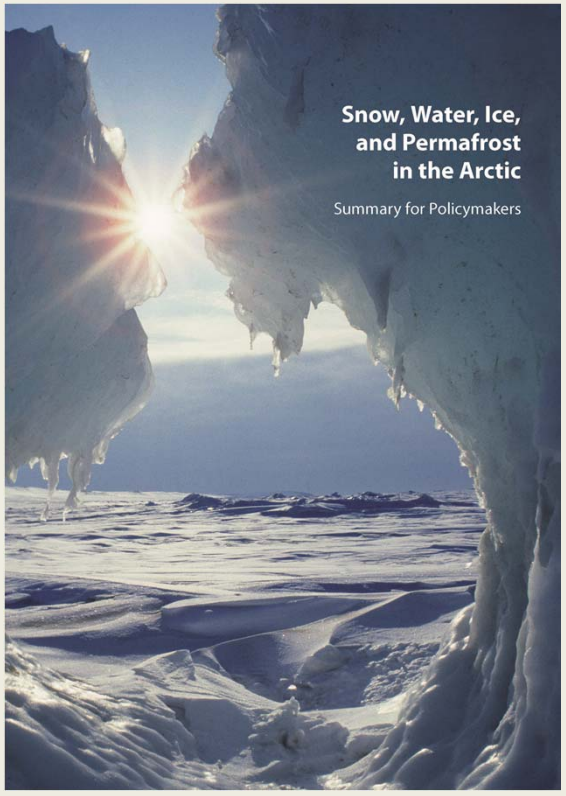
Key Findings

- The Arctic's climate is shifting to a new state
- Climate change in the Arctic has continued at a rapid pace – more than twice as rapidly as the world
- Changes will continue through at least mid-century, due to warming already locked into the climate system
- Adaptation actions needed and can reduce vulnerabilities → see AMAP adaptation reports
- Substantial cuts in emissions now can reduce the impacts after mid-century for most cryospheric components



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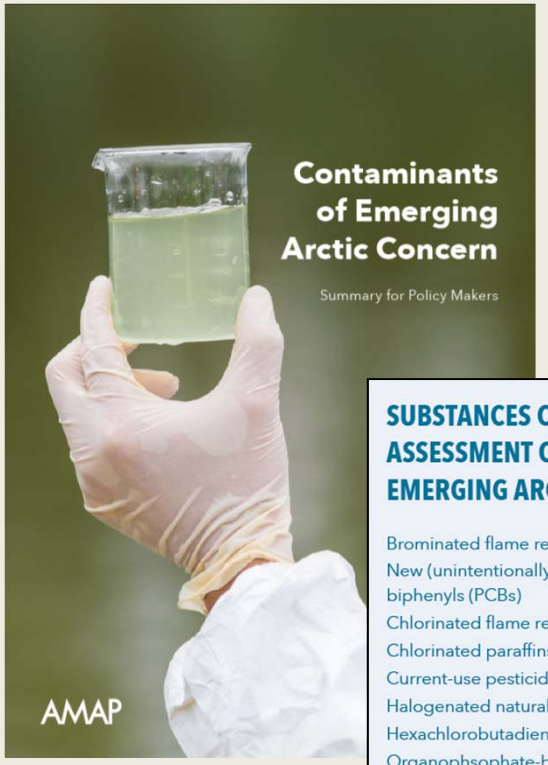
AMAP Assessment of Chemicals of Emerging Arctic Concern (CEAC)

Pollution threats to the Arctic are continually evolving.

AMAP monitoring shows that international and national pollution control activities have been effective at reducing levels of the chemicals they regulate.

AMAP's new chemicals assessment confirms that a broad range of new chemicals of emerging concern are now found in the Arctic.

Moreover, an even larger number of chemicals with the potential to reach the Arctic are presently in use, with new chemicals continuing to enter commerce each year.



SUBSTANCES CONSIDERED IN THE ASSESSMENT OF CHEMICALS OF EMERGING ARCTIC CONCERN

Brominated flame retardants (BFRs)*
New (unintentionally generated) polychlorinated biphenyls (PCBs)
Chlorinated flame retardants (CFRs)
Chlorinated paraffins*
Current-use pesticides (CUPs)*
Halogenated natural products (HNPs)**
Hexachlorobutadiene (HCBD)***
Organophsophate-based flame retardants (PFRs)
Organotins
Pentachlorophenol (PCP)***
Per- and polyfluroalkyl substances (PFASs)*
Pharmaceuticals and personal care products (PPCPs)
Phthalates
Plastics and microplastics
Polycyclic aromatic hydrocarbons (PAHs)
Polychlorinated naphthalenes (PCNs)***
Siloxanes

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Workplan: Climate issues

Snow, Water, Ice and Permafrost in the Arctic (SWIPA)

- Contribute to IPCC special reports ('impact of global warming of 1.5°C above pre-industrial levels' and 'climate change and the oceans and the cryosphere') and IPCC AR6
- Disseminate SWIPA 2017 results (Joint outreach on climate change issues with CAFF and PAME)
- Enhance cooperation with WMO, UNFCCC
- Leads: Canada, Kingdom of Denmark, Norway, Russia, Sweden, USA

Arctic Ocean Acidification (AOA)

- Finalize ongoing AOA update assessment during 2017
- 5 case studies
- Cooperation with e.g. ICES
- Leads: Norway and USA

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Workplan: Supporting adaptation actions

- Evaluate the AACA project
- Possible development of an overarching report

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Workplan: Pollution and human health issues #1

Air Pollution Issues (SLCPs)

- Interim update assessment (emissions and scenarios) 2019
- Integrated air pollutants update assessment 2021
- Collaboration with EGBCM, ACAP, CLRTAP, EC-BC
- Leads: Finland, Norway, USA

Mercury and Persistent Organic Pollutants (POPs)

- Joint work with UN-Environment on Global Mercury Assessment 2018
- Update of AMAP mercury assessment planned for 2021
- Completion of ongoing work on biological effects of POPs (and mercury)
- Follow-up of “Chemicals of Emerging Arctic Concern” assessment with international bodies (UN-Env. Stockholm Convention, SAICM, +)
- Leads: Canada, Kingdom of Denmark

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Workplan: Contaminants and human health issues #2

Human health / POPs / Mercury

- Produce Arctic data and information products in 2019 for Stockholm Convention effectiveness evaluation process (2022)
- Strengthen collaborative work with other AMAP expert groups on combined effects and climate change influences on contaminant releases, transport and effects
- Update dietary exposure assessment related to POPs and Hg for delivery in 2019
- Leads: Canada, Kingdom of Denmark, Sweden

Radioactivity

- No update assessment planned before 2021

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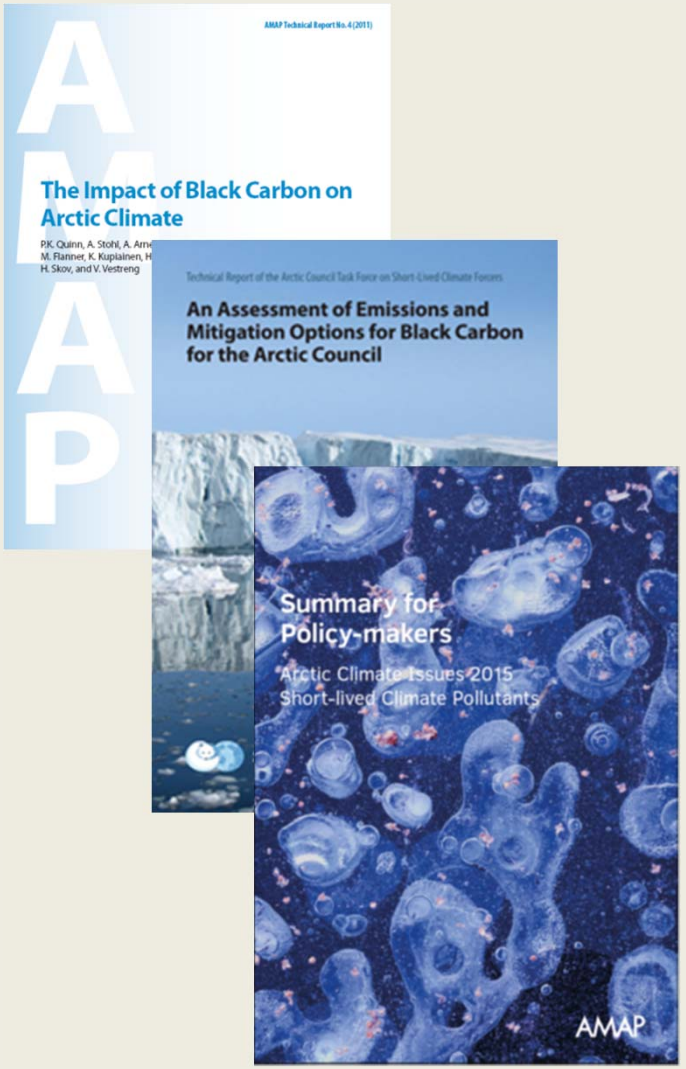
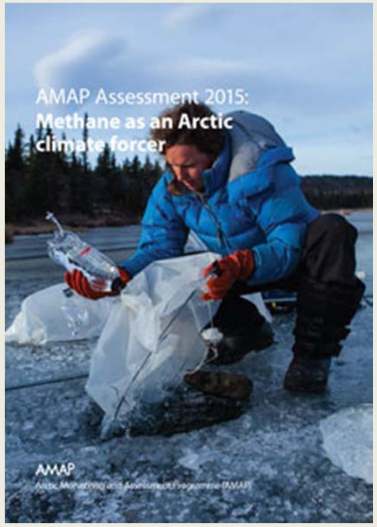
Scientific work on Black Carbon and Methane within the Arctic Council

- 2008: workshops and literature reviews
- 2009->: AMAP Expert Group on SLCF
- 2011: 1st AMAP assessment 'The Impact of Black Carbon on Arctic Climate' (BC and radiative forcing)
- 2011-2015: AMAP extended the scope to include the impacts of methane and tropospheric ozone
- 2015: 2nd AMAP assessment. A series of publications





www.amap.no/documents

AMAP/CLRTAP collaboration on air pollution issues

- AMAP's Integrated air pollutants update assessment 2021 + interim assessment 2019
  - Informal discussions between AMAP SLCP-group and HTAP conducted
  - Nomination of CLRTAP scientists in author team
- EU Action Fiche for Black Carbon in the Arctic
  - Final proposal coordinated by AMAP should be submitted to the Commission by 15 October 2017
  - Efforts to facilitate coordination with the Arctic Council and CLRTAP planned (CIAM, CEIP, TFMM, TFEIP, HTAP……)
- Hg and POPs
  - Coordination of scientific work and assessment activities
  - AMAP assessments on both Hg and POPs planned for 2019/2021
  - Co-operation with CLRTAP bodies ongoing/foreseen (MSC-E, WGE/ICPs….)