AMAP Report 2018:3

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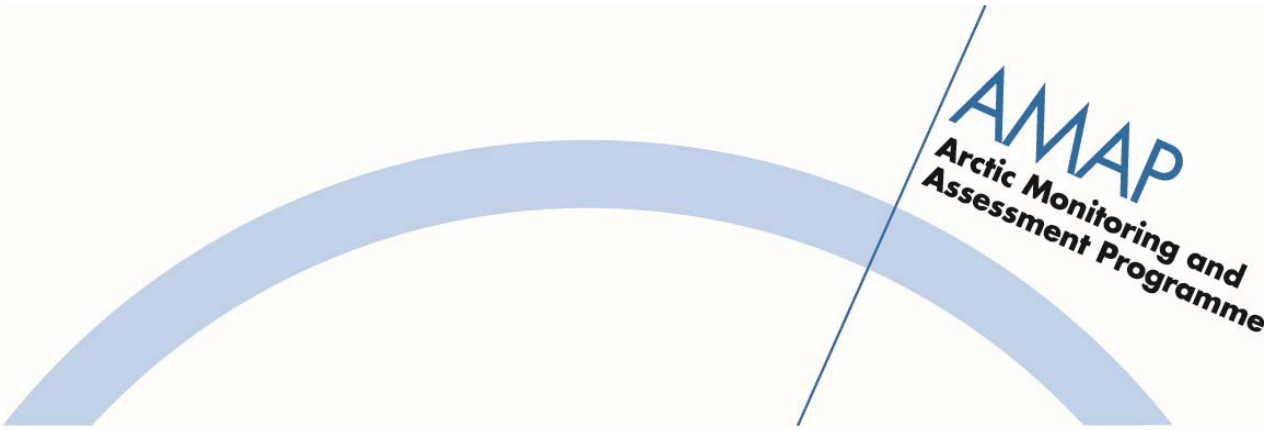
Minutes of the 32nd Meeting of the AMAP Working Group Kiruna/Giron, Sweden; 25–27 September 2018



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Minutes of the 32nd Meeting of the AMAP Working Group Kiruna/Giron, Sweden; 25–27 September 2018

1 Welcome and opening of the 32nd WG meeting; Adoption of agenda

The AMAP Working Group Chair, Marianne Kroglund (Norway), opened the meeting at 9:00 hrs on 25 September and welcomed the participants to Kiruna/Giron. The AMAP WG meeting was attended by representatives from all the Arctic Nations, Permanent Participants (ICC, AAC, Saami Council) and observers or invited experts from France, Germany, Italy, Japan, The Netherlands, Republic of Korea; European Commission (JRC), WMO, UN-Environment, IASC, and University of the Arctic. Additional experts attended the meeting using teleconnection.

The Chair highlighted the AMAP deliverables in the past year, with production and publication of five assessments and also the nearly finalized assessments of Arctic Ocean Acidification and Biological Effects of POPs and mercury. The latter two reports will be published during the Arctic Biodiversity Congress in Rovaniemi, 9-12 October. The Chair thanked the experts for their hard work on the assessments and underlined the importance of their skills and work.

The host, Tove Lundeberg, welcomed participants to Sweden and to the meeting. She provided practical information for the meeting.

The Chair pointed to the draft agenda and the important issues the meeting would cover, among others, the AMAP Work Plan 2019-2021 and the AMAP Strategic Framework 2018+.

The meeting reviewed the draft agenda and adopted it without change. The agenda is attached as Annex 1 and the list of participants as Annex 2.

Rolf Rødven, the new AMAP Executive Secretary participating in his first AMAP Working Group meeting, introduced himself and presented his scientific background.

2 Welcome statements by the Swedish Senior Arctic Official Björn Lyrvall and the Saami Council, Åsa Larsson Blind

Ambassador Bjørn Lyrvall, Swedish Senior Arctic Official, welcomed participants to Sweden and thanked the Saami Council for welcoming participants to Sápmi. He stated that Sweden has a long history of Arctic research; some of it was shown at the Abisko research station the previous day. He pointed to the peaceful international cooperation in the Arctic and that the Arctic is increasingly in focus, but it is still a harsh and remote environment. He noted that the Arctic is increasingly important for many reasons, but nonetheless scientific data are lacking on the Arctic and few resources are being devoted to the study of the Arctic. The large climate and environmental issues should be at the top of the Arctic agenda, while cooperation, together with indigenous groups, on the many opportunities for commercial development, resource use and tourism is also important. He commended AMAP on the excellence of its reports, both in content and design, and stated that he personally has benefitted from reading the SWIPA and AACA reports.

Åsa Larsson-Blind, President of the Saami Council, welcomed participants to Sápmi and Giron, the land of the rock ptarmigan. She stated that this was the first AMAP Working Group meeting co-hosted by the Saami Council. She thanked AMAP for translating reports to the northern Saami language and hoped the

practice will continue in the future, noting that AMAP has done well in communicating with Indigenous Peoples. She challenged AMAP to take further steps to work even more closely with Indigenous people, as they see changes first and can bring this knowledge forward. There is a great need to use the best available knowledge for policy-making, including Indigenous knowledge and greater use of community-based monitoring. The new AMAP Strategic Framework could provide that partnership with Indigenous Peoples.

3 Presentation by Saami Council

Niila Inga, of the Laevas Saami community, presented the project 'Reindeer husbandry under pressure', which is a project between the Saami community and Stockholm University. The project started as an activity to monitor snow changes, but has developed into a much wider project on land use. The traditional area of reindeer herding is now also used for mining and other industries. This project concerns land use and how the land can be used in the traditional way in the light of climate change and a changing environment. The project combines traditional knowledge with Western science in a study of weather data combined with observations of snow. The snow structure defines how the reindeer can use the land and the Saami people have hundreds of words to describe different snow structures and conditions. Snow accumulation changes greatly from year to year, and the timing of snow-free ground has changed from early July to late May; this has implications for calving and for the reindeer to find food and to give milk. Increased rain-on-snow events in winter create a major source of difficulty for reindeer to find food as they cannot smell the lichen under the frozen rain layer. This shows that great flexibility is needed in land use and changes in reindeer herding methods, but the flexibility is so far not present and is reduced owing to competing land use between reindeer husbandry and other types of activities.

4 AMAP Scientific Assessment Work

4A Presentations of completed assessments and implications for future work

Arctic Ocean Acidification

Richard Bellerby, participating via videoconference, presented an overview of the 2018 Arctic Ocean Acidification (AOA) assessment. In addition to the focus of the 2013 AOA assessment on the chemistry of ocean acidification and biological responses, the new assessment covers some of the socio-economic responses to AOA. This was based on a series of case studies: 1) changes in the balance between sea urchin populations and conditions for kelp regrowth; 2) the greater vulnerability of Northeast Arctic cod stocks to temperature deviations from optimal conditions; 3) development of a framework for the study of the effects of ocean acidification on the Greenland shrimp fishery; 4) a risk assessment for different fisheries in Alaska according to sector and community; and 5) an evaluation of subsistence fisheries in the western Canadian Arctic in the light of ocean acidification.

Richard Bellerby stated that the recommendations from the 2013 assessment are still valid: there is no need to study ocean acidification on its own; there is a need for more monitoring based on an ecosystem approach and training people to sample; a greater inclusion of Indigenous knowledge is needed; and research is needed into long-term responses to ocean acidification. The Arctic Ocean is under increasing pressure from multiple stressors, so all stressors must be considered together. Greater effort is also needed to study the impacts of activities in the coastal zone. AMAP should have better internal cooperation within its expert groups, with other Arctic Council Working Groups, and also with external programs including the Global Ocean Acidification Observing Network.

The Chair thanked Richard Bellerby for his work on this assessment and the clear advice to AMAP. She noted that there is no need for another ocean acidification assessment, but this issue should be included in broader AMAP assessment work.

Biological Effects of Arctic Contaminants on Wildlife and Fish

Co-leads of the assessment on biological effects of POPs and mercury (see Agenda Item 4A), Rob Letcher (Canada) and Rune Dietz (Denmark), participated via teleconnection and presented the key findings of the assessment. They stated that this is the first AMAP assessment of the biological effects of contaminants that covers both POPs and mercury in a single assessment; the main focus is on effects in top predators due to their high exposure, in particular marine mammals and seabirds, but terrestrial mammals, birds of prey and also some fish species are also included. Data included were mostly from 2010 to 2017. Although flame retardants, PFAS, and some other legacy pesticides were included, PCBs and mercury remain the main contaminants of concern. Unfortunately, there were few data from Russia. The outcome indicated a need to harmonize sampling frequency, season and food species, with a closer investigation of hotspots, reference areas and 'unique' regions. There is also a lack of specific health end-points. Furthermore, in addition to contaminant exposures, there is a need to investigate other stressors, including infections, in wildlife and fish.

The assessment will be presented at the CAFF Arctic Biodiversity Congress in Rovaniemi in the second week of October and a 'Key messages' outreach product was being developed for that event. The technical assessment report would also be completed and available on the AMAP website by the time of the AB Congress.

The Kingdom of Denmark thanked the Co-leads for their work and looked forward to the final report.

4B Contaminants/Pollution Issues

4B1 Human Health Assessment Group work plan

The Delegation of the Kingdom of Denmark reported that Henning Sloth Pedersen passed away on 17 September. He was a long-time member of the AMAP Human Health Assessment Group (HHAG) and worked for nearly four decades in Greenland as a physician, researcher, and excellent communicator with the Greenlandic people, especially in conveying the message regarding effects of contaminants from a marine diet. He will be very much missed in Greenland and by the AMAP HHAG and WG.

The Secretariat presented the draft work plan for 2019-2021 from the HHAG (Document WG32/4B/9), with the planned main deliverable being an update of the 2015 human health assessment on biomonitoring, health effects of contaminants and risk assessment and communication. An important new part of the report will be a first assessment of dietary changes in Arctic populations and their health effects, which have included the loss of important nutrients and vitamins.

The Delegate from the Arctic Athabascan Council (AAC) stated that the geographical coverage of contaminants in First Nations groups in western Canada is quite poor and he would like to re-establish working relations so that these groups can be included in the next assessment report.

The Delegation of Norway stated that the human health work is important and relevant, but for the next two years they have given less priority to the human health work than to other AMAP activities. The Norwegian HHAG co-lead will step down from this position by spring next year, and Norway will not

nominate a new co-lead. Norway would like to see greater cooperation with the human health group under the Sustainable Development Working Group (SDWG).

The Kingdom of Denmark supported the updated assessment with a focus on dietary transitions and also looked forward to work on updating the human health monitoring guidelines. They also had some comments to the proposed HHAG work plan. While welcoming the invitation of the Russian key national expert to HHAG to hold the next full meeting of HHAG in St. Petersburg, Russia in November 2019, the Kingdom of Denmark stated that it had also invited the group to meet in Nuuk, Greenland in association with the Nunamed conference in October 2019.

The Saami Council Delegation stated that, while they have not previously been very involved in the HHAG, the increase in zoonotic diseases makes this a higher priority. They thus wish to be more involved and they intend to nominate a Saami Council representative to the HHAG.

The Delegate of Sweden supported the HHAG work plan; Sweden will participate in the assessment and will support a Swedish HHAG national expert as the lead author on the dietary transitions chapter. Sweden further supported work on risk communication, the participation of SDWG in the assessment and greater cooperation with the AMAP EGs on POPs and Mercury.

The Delegation of Canada also supported the proposed assessment and would like greater connections with the CEAC and biological effects assessments. Canada has a particular interest in dietary transitions and supports increased work on this in the future. Canada also supports the work on QA/QC, cooperation with other groups, as well as the informal meeting to draft assessment text in Iceland and the full meeting in St. Petersburg.

The Delegation of Finland supported the work plan and the Finnish lead authors of the assessment report. Finland further reported that, under its chairmanship of the Arctic Council, it will host a 'One Arctic–One Health' workshop in Oulu on 7 to 9 February 2019.

The Delegation of the USA queried whether metrics or targeted indicators of health in the Arctic could be identified that could be updated over time. Such targeted indicators could be a way forward for the HHAG work.

In discussion, it was suggested that the issue of indicators should be considered in a broader context as there is an overlap with other groups in terms of content, etc.

It was also noted that, as part of their work plan, the HHAG should plan to deliver (in 2020) updated information, in particular concerning trends of POPs in human bio-media, as part of the AMAP deliverables in support of the next Stockholm Convention effectiveness evaluation. Human blood and maternal milk are core matrices under the Stockholm Convention Global Monitoring Programme for POPs.

Finally, noting the request of the HHAG for the nomination of new, preferably young members to the group, the question was raised as to the area of expertise that the group needs.

The Chair noted the general support for the updated human health assessment and the focus on dietary transitions in Arctic populations. Although the HHAG has indicated that it will have the assessment ready for delivery for peer review in early 2020, the WG later decided under Agenda Item 10 that final production of the report will be of lower priority than production of the assessments on mercury and SLCFs and thus the production of the human health assessment may not occur until 2022.

There is also support for closer cooperation with POPs and mercury experts and beneficial links to the SDWG and One Health initiative. There is a need for coordination within the Secretariat to link health with other pollution issues in AMAP. Finally, the Heads of Delegation (HoDs) will need to discuss work on scoping the assessment and the budget for this work and associated meetings.

Agenda item no.	**Decision/Context for Action(s)**			
B1	- *The WG supported an update of the Human Health assessment, including consideration of health effects of dietary transitions in Arctic populations and risk communication, and agreed on a preliminary timeline aiming for delivery in 2022.* - *Work should target the Stockholm and Minamata Convention effectiveness evaluations, and prioritize delivery in line with the timelines for these processes.* - *The draft outline of the update assessment will be circulated to the WG for comments, for consideration at the next meeting in the assessment group. The WG will also review the list of experts and authors.* - *AMAP agreed that there is a need for updating monitoring guidelines* - *HHAG should keep close cooperation with the POPs and Hg expert groups and the SDWG human health group, and review which 'new' contaminants should be included in the AMAP Trends and Effects Monitoring Programme.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B1-1	Ensure good coordination between HHAG and the other AMAP Expert Groups working with contaminants in the coming work plan period	AMAP Secretariat	Continuous	
B1-2	Prepare updated assessment of human health in the Arctic, including dietary transitions, according to timeline and submit to Secretariat for peer review	HHAG authors and members		
B1-3	Update monitoring guidelines for human health sampling and analyses.	HHAG/ AMAP Secretariat	15 December 2019	
B1-4	Evaluate the CEAC list with the aim of determining whether any of the compounds should/could be included in the AMAP Trends and Effects Monitoring Programme	HHAG	November 2019	
B1-5	Provide comments on the HHAG work plan including the draft outline of the assessment and the lead authors	HoDs	10 December 2018	
B1-6	Obtain full overview of reporting requirements/year to the Stockholm and Minamata Conventions and inform the contaminant Expert Groups	Secretariat		
B1-7	Nomination of experts	HoDs		

4B2 Radioactivity Expert Group work plan

The Delegation of Russia introduced the proposed work plan for the Radioactivity Expert Group (Document WG32/4B/6) with delivery to the Arctic Council Ministerial Meeting in 2023. The proposed work plan included an updated radioactivity assessment with inclusion of new radioactivity data, effects of radon on human health, data on radionuclides dumped into the Arctic Ocean and a comparison of radionuclides in the Arctic with those in the Antarctic.

Norway supported the plan and the timeline, but indicated that owing to a lack of available resources some of the work may need to be postponed.

Finland would check their possibility to contribute to the work, as the Rovaniemi office that monitored radioactivity had closed.

The Kingdom of Denmark generally supported the work plan including the database improvement, but questioned the comparison with the Antarctic. The Kingdom of Denmark stated that they will deliver data from Camp Century to the expert group; however, no contamination appears to be evident from the operation of the nuclear reactor at that site. Thus, they suggested that Camp Century data be included in the upcoming assessment, but not as a specific case study.

Canada also supported the work plan and considered the study on radon exposure and human health to be particularly interesting. Canada also suggested to link the database issue to SAON and asked the Secretariat, SAON and the radioactivity co-leads to look into this.

The observer from The Netherlands stated that the present database is located at the University of Groningen and needs to be revised as it is 20 years old. Only a few countries report regularly and the person responsible has left, so decisions need to be made on the future. He suggested that a workshop in spring 2019 should discuss the issue in more detail.

Iceland would look into the possibilities to contribute to the radioactivity work with a national expert.

The AAC stated that the Yukon has high radon levels, so this issue is important; he also noted that drill cuttings from oil and gas activities have high levels of radioactive substances and would be useful to include in the assessment.

Questions were raised about the proposed comparison between Arctic and Antarctic radioactivity levels. Russia responded that the expert group would investigate the issue to see whether it was worthwhile to include it in the assessment.

In conclusion, the WG generally supported an updated assessment for 2023. There is a need to check the scoping of the assessment and the topics to be covered. A dialogue is needed with the co-leads of the Radioactivity Expert Group from Russia and Norway before a workshop is held in April 2019. This work could also be supported by observers.

Agenda item no.	Decision/Context for Action(s)
B2	*The WG supported the work plan from the Radioactivity Expert Group with production of an update radioactivity assessment to be delivered to the 2023 Ministerial Meeting, including a section on radon and human health.*

Action item no.	Related Action(s)	Responsible	Deadline	Follow-up
B2-1	Circulate to HoDs contact information for the Radioactivity Expert Group Co-leads	AMAP Secretariat	1 October	Done 26 Sept
B2-2	Discuss and propose how the radioactivity database issue can be brought forward. Link database issue to SAON.	Radioactivity Co-leads and the Netherlands	15 December	Document for the 2019 HoDs meeting
B2-3	Kingdom of Denmark to submit possible data from Camp Century to the Expert Group	KoD experts	Expert Group workshop spring 2019	
B2-4	Look into the rationale behind comparing Arctic and Antarctic data to decide about inclusion in the assessment.	Expert Group co-leads	Expert Group workshop spring 2019	
B2-5	Nomination of experts to the assessment	HoDs and observers		
B2-6	Circulate preliminary assessment outline/scoping document for additional comments and input for consideration by the EG at their next meeting	Expert Group co-leads		

4B3 Contaminant monitoring systems

The Secretariat reported that the response from the Arctic countries to a request to HoDs and observers for contributions to a paper on the general issue of documenting AMAP monitoring work (Document WG32/4B/8) had been poor. At the AMAP HoDs meeting in Wendake, HoDs had requested this paper and agreed to provide information on mercury monitoring systems as an example for use in further consideration of this issue. Information on work relevant to AMAP's mercury assessment had been received from Italy, Japan, Norway and Spain. Finland, Sweden and the Kingdom of Denmark have updated their National Implementation Plans (NIPs) for a number of issues, including mercury, through registrations in the AMAP Project Portal. However, questions remain about how the WG views updating information on NIPs, data reporting to AMAP Thematic Data Centres (TDCs), use of monitoring guidelines, QA/QC aspects, etc., in order to achieve a comprehensive picture of their AMAP monitoring activities.

The Kingdom of Denmark stated that their main focus has been on updating their NIP in the AMAP Project Portal although how this information is used remains unclear. Their experience was that it is much easier to use the Project Portal to document their activities than to prepare dedicated NIPs documents.

Sweden thanked the Secretariat for the good overview and stated that updated pollution monitoring guidelines should be made available as soon as possible. Sweden updated the AMAP Project Directory last autumn and this had required some work, but this was offset by the fact that most of the information was still up-to-date.

Canada stated that it uses monitoring guidelines in the Northern Contaminants Monitoring Program, but compiles information on its activities through the Canadian national data catalogue rather than through the AMAP Project Directory. Canada would like to see the development of an automated transfer of information from their national system to the AMAP Project Directory. Canada reports data on POPs and mercury to the AMAP atmospheric TDC.

The Secretariat stated that AMAP uses the AMAP Project Portal and NIPs reporting system internally to identify data sets for use in assessments, and also to respond to external requests concerning AMAP work. Although countries nominate key national experts to expert groups, this is often only one individual who covers a specific field and may not know about all relevant national activities in their country. A related issue is AMAP's ability to present its monitoring program and activities to other organizations. If the Secretariat does not have the information, it cannot respond to questions. This is particularly important at the beginning of an assessment activity.

It was suggested that the kick-off meeting for the mercury assessment could be used to discuss data availability and data access, and to evaluate the usefulness of the information submitted so far; countries that had not already done so were encouraged to provide their input.

The observer from IASC stated that the IASC/SAON Arctic Data Committee has a role to play in identifying data sources and their availability. The Arctic Data Committee would be willing to work with AMAP and the Arctic countries to clarify the availability of data.

In conclusion, it was agreed that this issue should be discussed further at the next HoDs meeting.

Agenda item no.	**Decision/Context for Action(s)**			
B3	*Continue to review the existing list of available data, including information about experts, QA/QC arrangements and views on applicability of monitoring guidelines for mercury, and provide this information before the mercury workshop in December.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B3-1	Recirculate the current monitoring guidelines for mercury	AMAP Secretariat	ASAP	
B3-2	Review list of experts Provide further information on activities relevant to the next AMAP mercury assessment	HoDs and observers	Mid-November	HoDs and obserers

4B4 Mercury assessment work/scoping of 2021 update assessment

The Secretariat provided information on the proposed scope of a mercury assessment that is planned for delivery in 2021 (updating the 2011 assessment of this issue) (Document WG32/4B/1). The assessment will be the subject of a kick-off workshop at the end of the year. It is planned to be a question-based assessment. In this connection, HoDs and members of the Mercury Expert Group would be invited to comment on the proposals in the scoping paper developed by the expert group co-leads.

Norway supported the question-based approach, but will send a number of comments in writing and will nominate new mercury experts from several institutes. The assessment should aim to be useful for the Minamata Convention.

Finland also supported the assessment and has identified eight national experts willing to participate. A national kick-off meeting on this assessment will be held on 21 October.

Canada accepted the proposed plan with the understanding that it will be further refined. The new section on Indigenous perspectives was appreciated and Canada would like to document Indigenous knowledge on other topics, such as climate change and food webs. Canada is prepared to host the kick-off meeting in December in Ottawa in association with the ArcticNet conference.

The Kingdom of Denmark expressed appreciation to the Co-chairs for the document but noted that a written round of comments is still needed as focus is mainly on biological effects. The most important task is to respond to the future needs of the Minamata Convention; the Convention effectiveness evaluation is very important in this context and relevant information arising from the COP2 and COP3 should be taken into account. There is also a need for more exposure scenario work to be done.

Sweden considered the plan to be good but noted the need for a clear connection to the Minamata Convention. The assessment should also link contaminants in biota to observed changes. Sweden has a number of scientists who are interested in contributing to the report, but support for their work has not yet been discussed.

The Delegation of the USA was generally supportive of the proposal, particularly the question-based approach. This also gives stakeholders the opportunity to pose questions. Written comments have been prepared by the U.S. EPA, one of which queries how AMAP collaborates with other regional monitoring networks.

The Inuit Circumpolar Council supported the comments of Canada regarding the Minamata Convention and Indigenous contributions.

The observer from IARC stated that it will be important to have experts who understand natural sources of mercury and their impacts, especially regarding human health.

The observer from Italy indicated that he would nominate several experts to contribute to this assessment.

The expert from the EC Joint Research Centre stated that the participation of an expert on mercury has been confirmed for the assessment and the EC has a database on mercury that can be used.

The Secretariat stated that the Minamata Convention COP2 will be held in November and hoped that it will result in greater clarity on the Minamata Convention effectiveness evaluation process. With regard to human health, there is a need to consider the relation with the HHAG assessment. One proposal would be that the mercury assessment should include a specific chapter on human health and this should be coordinated with the HHAG.

In conclusion, there was general support for preparing an assessment of mercury for 2021. There is a need to determine access to data and to determine how the Minamata Convention requirements will be addressed. Comments on the plan for the assessment should be sent within two weeks and nominations of participants for the December workshop should be made as soon as possible. The Chair expressed appreciation for the co-leads of this assessment who had participated via teleconnection.

Agenda item no.	Decision/Context for Action(s)			
B4	- *AMAP agreed to support plans to conduct an update assessment of mercury for delivery in 2021, and expressed appreciation on the question-based approach.* - *AMAP highlighted the need to take into account Minamata Convention needs (and also timelines to take account of Minamata decisions on effectiveness evaluation, etc.)* - *AMAP approved the planned kick-off meeting for 10-11 December 2019*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B4-1	Provide written views on scoping proposal to Secretariat for communication to assessment co-leads	HoDs and observers	15 October	Co-leads – refine scoping document prior to kick-off meeting
B4-2	Provide nominations to the Secretariat of additional experts to be involved.	HoDs/observers	15 October	Secretariat/leads to review expert nominations/gaps, etc.
B4-3	Arrange a kick-off meeting in Ottawa on 10-11 December 2019	Co-leads/ Canada/ Secretariat		Co-lead (Canada) confirm meeting room booking
B4-4	Identify workshop participants (workshop also to review data flow issues)	HoDs and observers	31 October	

4B5 POPs update assessment, status of work

The WG noted that the biological effects assessment was the third part of a multi-component update assessment that had also addressed trends in POPs and Contaminants of Emerging Arctic Concern (CEAC) (Document WG32/4B/7); the final planned component was an update on climate-contaminant interactions. The POPs Expert Group proposed to initiate work on this component in 2019, and possibly link it to ongoing work under other expert groups (including the AMAP Climate EG, Mercury EG and Radioactivity EG). A session to be arranged at the DIOXIN 2019 conference could serve to initiate/support parts of this proposed work. (See also the conclusions under Agenda Item 4C1, below.) Other work proposed under the work plan for the coming period concerned follow-up of recommendations of the CEAC assessment and updating of information on trends of POPs in air and biota as input to the next Stockholm Convention effectiveness evaluation.

The Secretariat reported that OSPAR had indicated an interest in gaining access to AMAP data for use in its 2023 Quality Status Report (QSR); since this was now planned as an indicator-based assessment, they were interested in access to original AMAP monitoring data rather than 'assessment results' that had served this purpose in the past.

The Kingdom of Denmark supported the temporal trend assessment of POPs for both air and biota, as this is important for the Stockholm Convention; however, only one or two years of extra data will be

available so the need for a new trend assessment for 2021 should be discussed with the Stockholm Convention Secretariat. The delegation also supported increased cooperation with OSPAR, but with a more equal relation between OSPAR and AMAP. The delegation also supported a follow-up on CEAC, and recommended that agreement be sought on the definition of criteria to go forward when addressing Arctic emerging contaminants. The Kingdom of Denmark will support its experts in this work.

Norway supported the work on CEAC and stated that enough time should be given to allow the expert group to discuss synergies with other groups and also to take climate change into account.

Finland stated that a number of chemicals in the CEAC report are not subject to long-range transport and thus would not be covered by the Stockholm Convention. Finland has made a proposal for how this can be moved forward in the Strategic Approach to International Chemicals Management (SAICM), which was established so that local concerns regarding chemicals can be addressed. SAICM will meet in Uruguay in April 2019, so preparation needs to be started now.

In conclusion, there was clear support for updating information on POPs trends to support the next Stockholm Convention effectiveness evaluation, but the requirements should be discussed with the Convention Secretariat. Regarding the SAICM proposal, it was agreed that HoDs should check with their national SAICM focal points to determine whether AMAP should make a presentation at a relevant meeting. HoDs also agreed that, as a component of work previously agreed, the proposal for work on climate-contaminant interactions should be included under the 2019-2021 work plan, but requested that the POPs EG co-leads further scope this work for reporting to the next HoDs meeting. Regarding follow-up activities, the WG agreed that work targeting the Stockholm Convention should have high priority.

Agenda item no.	**Decision/Context for Action(s)**			
B5	- *AMAP calls for better integration and streamlining of AMAP work on climate and pollution issues and a more detailed follow-up should be discussed as part of the 2019-2021 work plan and in dialogue with EGs.* - *AMAP agreed that HoDs should check with their national SAICM contact points as to whether they would support an AMAP presentation and bringing the Arctic context into SAICM.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B5-1	HoDs agreed that AMAP should continue efforts to develop systems to produce standardized data products (especially in connection with temporal trend datasets). Pending resources and prioritization, arrange a (statistical, etc.) workshop in spring 2019	AMAP Secretariat follow-up with ICES and OSPAR	31 October	

B5-2	AMAP HoDs to follow-up with their SAICM representatives to take advice on possibilities to arrange an AMAP presentation to SAICM and/or take an (Arctic harmonized?) initiative under SAICM to address especially chemicals that will not meet criteria for inclusion under the Stockholm Convention.	AMAP HoDs with SAICM representatives	31 October to provide outcome to Finland, copy to Secretariat	Finland lead work to track SAICM process and investigate possibilities to have an AMAP presentation at SAICM meeting(s) and/or follow-up with SAICM Secretariat
B5-3	Connect the POPs work to Stockholm Convention effectiveness evaluation	Secretariat and Tracking HoDs		
B5-4	Initiate an update assessment of climate-contaminant interactions as part of the work in the period 2019-2021, and provide more detailed scoping of this activity	POPs EG Co-leads	31 December	Provide updated scoping of work to next HoDs meeting

4B6 Environmental Specimen Banking and screening activities

The Secretariat introduced a document about Environmental Specimen Banking (ESB) and the concept of using frozen environmental samples to screen the concentrations especially of emerging contaminants in the environment (Document WG32/4B/3). Analysing samples archived in national ESBs can be used to determine temporal and spatial trends of emerging contaminants in the Arctic. The Secretariat stressed that AMAP should not operate its own ESB, but organize cooperation between national ESBs and connect to the international ESB network.

Several countries reported about their national ESBs and that samples from the ESBs are a useful tool to investigate emerging contaminants. Finland also reminded the meeting of scientists who have stored their own samples outside the national ESBs.

It was considered useful to have guidelines on ESBs, including a structure and justification for the use of samples.

The meeting supported the proposal that AMAP arrange a session at the next international ESB conference in Stockholm, Sweden, in June 2019. The AMAP POPs Expert Group co-lead, Derek Muir, will be a keynote speaker at the conference.

Bård Nordbø (Norway) gave a remote presentation of the Norwegian screening program (Document WG32/4B/10), which started in 2002, with a special focus on the 2017-2018 screening which was a national follow-up of AMAP's CEAC assessment. The 2017-2018 study focused on volatile fluorinated organic substances (vPFAS), volatile siloxanes and brominated/fluorinated flame retardants from the CEAC assessment and as well as some additional compounds selected by Norway. The sampling stations were at Svalbard and around Tromsø city. The main findings are that volatile fluorinated organic compounds are of serious environmental concern and have for the first time been detected in the Arctic

environment. They potentially undergo long-range transport. It is very likely vPFAS can act as long-lived greenhouse gases.

Several countries thanked Norway for the presentation and reported that they also have national screening programs on emerging contaminants; there may be a need to further coordinate national screening programs. Canada would provide contact information to their national screening representative.

The Kingdom of Denmark (the Faroe Islands) reported about the Nordic screening project, which began in 2001/2002 and under which a new screening is initiated every second year by institutes responsible for contaminant monitoring covering the Nordic area from Finland to Greenland (Document WG32/4B/4). The 2019 study will be a follow-up on CEAC compounds, building on the Norwegian national screening mentioned above and using the Norwegian report to choose compounds for screening. A steering group with representatives from each Nordic country will organize the study. As only a few laboratories are able to conduct these analyses, the screening will be qualitative at first. The Kingdom of Denmark invited non-Nordic countries to take part in the Nordic 2019 screening to make it a circumpolar study. The approximate cost per country for participation is $20 000 USD. Further information about this study and a timetable for the work is attached as Annex 3.

Canada would provide a national contact for potential collaboration and the USA would check the level of interest with EPA.

The Kingdom of Denmark stressed that the Nordic screening projects are in addition to the national screening programs.

Agenda item no.	**Decision/Context for Action(s)**			
B6	- *Sweden will take the lead to arrange an AMAP session at the June 2019 ESB conference in Stockholm, Sweden*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B6-1	KoD (Faroe Islands) to give input to AMAP Sec about the content of their ESB	KoD (FI) HoD	1 December	
B6-2	Request the AMAP POPs EG to discuss and propose in more detail how AMAP can utilize national ESBs and connect to the international ESB network	Secretariat		POPs EG
B6-3	Provide information to HoDs about Nordic screening so HoDs can reach out to national experts and evaluate participation in the 2019 Nordic screening	Secretariat/HoDs	10 October	HoDs feedback 1 December

4B7 Proposal for future AMAP work on marine litter and microplastics

The Secretariat provided the background on this item (Document WG32/4B/5), including a draft desktop study by PAME that recommends that a regional action plan be established on marine litter, which should include monitoring and associated guidelines. Current guidelines, for example those by OSPAR, should be reviewed to determine whether they are applicable to the Arctic before going forward.

The Delegate of Iceland supported the proposal and the project for the next Work Plan. This is an issue of global attention. The International Maritime Organization will develop an action plan on this topic for ships, so the terms of reference for the AMAP work should be checked against those to decrease any overlap.

Norway also strongly supported the proposal and offered to nominate a co-lead for the work. Overlap with other organizations should be avoided. The monitoring should be conducted by AMAP, but alignment is needed with PAME on the overall work. This should be discussed at the WG Chairs meeting with PAME and CAFF.

The above views were also supported by the Kingdom of Denmark, Sweden, Finland and Canada, who also suggested that a joint task force among all WGs could be useful. The observer from Italy indicated an interest in contributing, and the representatives of the University of the Arctic and the EC Joint Research Centre stated that their organizations are also working on marine plastics. ICC also supported the proposal and reminded delegates that microplastics are a problem that affects lakes, as well.

In conclusion, there was general support for a project on marine litter and microplastics, which should harvest synergies among other groups. There is a need for coordination among AC WGs and this should be discussed at the WG Chairs meeting. However, the scope of the work should not extend too broadly and the main focus initially should be on monitoring and guidelines for this.

Agenda item no.	Decision/Context for Action(s)
B7	*The background for a discussion of whether marine litter and microplastics should be part of AMAP's future work program is the upcoming PAME Desktop Study on Marine Litter including Microplastics in the Arctic (PAME, 2017-19) and the AMAP CEAC report. The PAME study recommends that a regional action plan on marine litter in the Arctic be developed and that the plan should be accompanied by a monitoring program.* *The WG/HoDs decided that the further development of the initiative should await the next draft version of the PAME study (expected before the coming PAME meeting, 1-4 October)* *A discussion of AC follow-up on marine litter and the division of roles and responsibilities should be on the agenda for the WG Chairs/Executive Secretaries meeting in Rovaniemi in autumn 2018 for coordination among WGs. Based on these discussions, the AMAP representatives at the meeting should propose that a joint steering group be formed to enable work coordination.* *- Considering the mandate and expertise within AMAP, AMAP will offer to take responsibility for providing a chapter on monitoring of microplastics and marine litter in the PAME Action Plan*

	- If development of a monitoring plan for marine litter and microplastics is approved, AMAP should take responsibility for this. AMAP considers that this will be a stand-alone AMAP product, as a follow-up of the PAME Action Plan *- Iceland, Norway and Canada will consider serving as co-leads of the AMAP marine litter and microplastics work* *-Taking resource considerations into account, the WG's advice was to limit the scope of this activity in the 2019-2021 work plan, for instance by delaying work on impacts to later work plans.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B7-1	Discuss the scope, work division among AC WGs, leadership, and next steps and timelines	WG chairs + Executive Secretaries	1 November 2018	
B7-2	Discuss with AC WGs the possibility of establishing a joint steering group under WG Chairs and how to proceed to achieve this	WG chairs + Executive Secretaries	1 March	
B7-3	Prepare an updated version of the project plan	Secretariat	15 November	
B7-4	Canada, Iceland, Norway to give feedback about serving as co-lead countries	Canada, Iceland, Norway		
B7-5	Kingdom of Denmark to check possibility for arranging a workshop among AMAP marine litter and microplastics experts in Nuuk in 2019	KoD HoD		

4B8 Joint workshop between HHAG and POPs/Hg EGs

The Secretariat reported that the HHAG and POPs and Hg Expert Groups had been polled to provide suggestions for possible topics for a workshop on contaminants in wildlife and humans (Document WG32/4B/2), for HoDs to review and decide on the agreed focus of the proposed workshop.

Canada had offered to host this workshop in Ottawa in December, possibly in conjunction with the planned mercury assessment kick-off workshop. However, it was now considered that the time was too short to plan adequately for the workshop at this time, although the venue in the context of a large meeting was attractive.

The Kingdom of Denmark reported that the human health experts had indicated that they would not be able to join a meeting in Ottawa, so a new venue/timing should be sought. In addition, the list of topics should be expanded to include exposure scenarios and also the CEAC chemicals.

ICC suggested that, even though the workshop would not be held in Ottawa, an informal meeting might be arranged among the many participants, including Indigenous knowledge holders, to discuss the topics for the workshop.

It was noted that an alternative venue for the workshop had been suggested by the HHAG: the 'One Arctic–One Health' conference in Oulu on 7 to 9 February 2019. This venue was supported by Norway.

The observer from Korea indicated that two experts on POPs would like to join the workshop.

In conclusion, it was agreed that the workshop should not be held in December 2018 and an alternative venue and timing should be explored. HoDs agreed to further discuss this planned workshop at their next meeting.

Agenda item no.	**Decision/Context for Action(s)**			
B8	- *The proposed workshop is postponed from December 2018 to sometime in 2019.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
B8-1	Check the possibility to arrange the joint workshop b2b with the 'One Health' conference 7-9 February 2019	Finland	30 October	
B8-2	Establish a small group to discuss whether the joint HHAG/POPs/Hg workshop should be arranged in February or later, and work on the scope and content of the workshop	Secretariat and Tracking HoDs		
B8-3	Coordinate work between the EGs for the 2021/2023 deliverables. Possibly arrange a workshop between EG co-leads	Secretariat /HoDs/EG co-leads	15 December	Document to HoDs meeting early 2019

4C Climate Issues

4C1 SWIPA/IPCC work progress and AMAP's future climate work

The Kingdom of Denmark presented the outcome of discussions on AMAP future climate work among a designated group of Tracking HoDs and the Secretariat (Document WG32/4C/1). The document gives an overview of past climate work, recent work following up on SWIPA 2017, and proposals for future work. Over the summer, a 'silent procedure' was held to decide whether an outreach product 'Key Climate Issues for Ministers' should be prepared by a science writer based on the post-SWIPA activities; this was agreed (see Agenda Item 8). Climate initiatives for the 2019-2021 Work Plan include work in relation to the IPCC Sixth Assessment Report (AR6), including an evaluation of CMIP6 models for several parameters in the Arctic, and further work on Arctic/mid-latitude weather connections, and thresholds and extremes. Follow-up work on trends and patterns in Arctic parameters would include biological interpretation, ecological/societal consequences and adaptation issues. New work is also proposed on

the ecosystem effects of climate change and ecosystem feedbacks to the climate. Finally, it is proposed that an update on climate issues of concern be prepared for the 2021 Arctic Council Ministerial Meeting.

The next climate workshop will be held in Copenhagen on 6-8 November 2018 (agenda in Document WG32/4C/2). This workshop will bring experts on meteorology together with climate modelers to determine how to strengthen this cooperation, as well as follow up on the issues mentioned above, which were initiated in the previous two workshops. The AMAP climate work plan for 2019-2021 will also be reviewed at this workshop, together with plans for the future direction of AMAP climate work, communicating the results of this work, and consideration of monitoring guidelines. HoDs and observers were encouraged to nominate experts for this workshop, both for the climate and the ecosystem effects issues.

Canada stated that the climate is linked to many issues and recommended that climate work be organized under a conceptual framework; climate is an organizing principle and a strategic approach is needed for this work.

Finland supported the document, stating that the main topics have been covered. Finland supported the focus on ecosystem impacts as important and the expansion of the group to include more meteorology work. Finland offered a Co-lead to this group.

Norway stated that it is looking to find the right experts for this complicated work and also nominated a potential Co-lead for this group.

The USA supported the Canadian statement as a good strategic question on this work, to consider how climate work feeds into other work areas. Also, in the light of the complex landscape of climate work in the world, determining the niche role of AMAP is important—what can AMAP do to make the best contribution. The Copenhagen workshop could inform on the future strategic direction, with a set of targeted questions so that feedback can be given on a long-term strategy.

Sweden supported the plans and priorities in the document and the USA comments and will identify Swedish experts for this work. Support and the nomination of potential participants in the work were expressed by Russia, Iceland, Italy, Germany, Japan and Korea.

ICC found the proposal on ecosystem effects of climate change to be interesting, stating that ecosystem changes are important to Indigenous Peoples, who are closest to these changes. The participation of Indigenous knowledge holders in this work and other AMAP climate work should be ensured.

In the discussion, the long history of AMAP putting Arctic climate change on the agenda was commended. The proposal to revive the Climate Expert Group was welcomed as there is a need to bring in the biosphere and understand the broader impacts of climate change, possibly also including socio-economic impacts. Impact response has been identified as a new strategic approach, providing a greater ecosystem perspective. Trends and patterns work may be linked to ecological issues and possibly also socio-economic issues, and could be useful to identify gaps and also communicate results. Bringing in meteorology issues was also welcomed. Coordination and integration are important, as well as communication. An early involvement of communication experts is important.

For the Copenhagen workshop, it was considered that an opening presentation giving a broader overview of AMAP work on all topics would be useful. It was agreed that a sketch of an opening statement should be prepared by a group of HoDs, comprising those from Canada, Finland, ICC, Norway and the USA.

Finally, it was agreed that a practical arrangement is needed for the Co-leads of the re-established Climate Expert Group to cover the various topics and geographical areas. The AMAP Chair will send a letter to HoDs requesting nominations and the AMAP Board will make a suggestion for discussion at the next HoDs meeting.

Agenda item no.	**Decision/Context for Action(s)**
C1	- *The WG approved the Meteorological and Climate Workshop to be arranged 6-8 November 2018 in Copenhagen, and will provide comments to the agenda and nominate experts* - *The AMAP Climate EG should have one overall Lead and up to four Co-leads covering the main topics of the EG responsibilities.* - *A scoping process for the climate and pollution work should start in 2019. No delivery year is decided. The context of the assessment to be suggested during the scoping process, e.g., a series of minor case studies.* - *The text of the document 'Key Climate Issues for Ministers' should be delivered to the Ministerial Meeting 2019 and approved by AMAP HoDs by 12 February 2019 at the latest.* - *AMAP supported a larger strategic objective to advance climate change activities related to understanding trends and patterns of relevance to societal and ecosystem risk and resilience.* - *AMAP supported plans for developing a 'Climate issues of concern' report for delivery to the MM 2021.* - *AMAP welcomed the proposal to seek cooperation with CAFF on an assessment of ecosystem effects of climate change, and requested the Chair and Secretariat to follow up with a formal letter to CAFF* - *John Walsh (USA) will continue as lead of the climate expert group and several co-leads will be nominated in relation to other scientific areas covered by the group*

Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
C1-1	Provide comments to the November workshop agenda	HoDs	15 October	
C1-2	Nominate experts for the 6-8 November workshop	HoDs and observers	15 October	
C1-3	Opening presentation for the workshop – sketch of the context of the climate work and AMAP priorities	USA, Canada, ICC, Norway, Finland	26 October	
C1-4	Nominate co-leads (especially on ecosystems) of the Climate Expert Group. To be followed by a nomination of EG members from member states and observers	(Finland, Norway, Russia)	15 December	

C1-5	Reach out to CAFF in a formal letter about a possible 'Ecosystem effects of climate change' assessment for 2023	Secretariat / Chair	15 October	
C1-6	Produce initial content and text of 'Climate issues' to MM 2019 ready for the November 2018 workshop	Brad Hurley/ Secretariat/ KoD		Brad to produce a final draft for HoD approval by 12 January 2019
C1-7	Information/instruction to EG co-leads about the 'Climate and Pollution' process and guiding on content	Secretariat		
C1-8	Secure funding for the CMIP6 modelling work	USA/HoDs		

4C2 Status report on Finland's priority on meteorological cooperation

Finland presented an overview of its action plan on meteorological cooperation and its activities to implement it (Document WG32/4C/Info2). There will also be a side event at the 2019 Ministerial Meeting on Indigenous knowledge and meteorology.

In the discussion, this initiative was welcomed. It was considered that involving meteorological stations in AMAP monitoring work would provide useful support for assessing climate change issues. This more operational aspect could be used to obtain products for evaluation in assessment work. It was suggested that Finland prepare a paper for the Copenhagen workshop indicating how to obtain better meteorological cooperation on long-term and assessment activities.

4C3 Monitoring guidelines and NIPs reporting for AMAP climate monitoring program

The Secretariat presented the current status of the review of climate monitoring guidelines (Document WG32/4C/4). To continue this work, there is a need to know what parameters are already being monitored. The issue now is how to structure this work and to identify experts to help on these guidelines.

The WG considered this a useful update and agreed that marine observations should also be included, and that linkages to global programs, as well as Indigenous knowledge and community-based monitoring, are important. Linkages to CAFF work should be included. This should aim to result in a catalogue giving an overview of the observations needed, who is doing this work and the gaps that AMAP could fill. The document should be distributed to the Climate Expert Group for their review.

Agenda item no.	Decision/Context for Action(s)
C3	*The draft monitoring guidelines were presented to the meeting, asking members to provide input on the structure and to identify additional experts to consult with.* - *The structure of the 'AMAP Monitoring Guidelines: Climate change, Effects and Impacts' was approved with some updates.*

Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
C3-1	Identify additional experts to provide input to the monitoring guidelines	HoDs	12 October	
C3-2	Add these topics to the climate monitoring guidelines: - Marine observations, including ocean currents - Add Indigenous knowledge and local knowledge and community based monitoring (CBM), where relevant	Secretariat	15 November	

4C4 SLCP work

Finland presented an overview of the work of the SLCF Expert Group, which has recently updated its work plan covering the structure of the assessment report, timelines, cooperation with other groups and resources (Document WG32/4C/6). The work is on schedule. A subgroup working on emissions of both short- and long-lived pollutants will deliver its products to the full expert group around the end of the year; this work is connected to activities supported by the EU Action on Black Carbon in the Arctic (EUA-BCA). Data sets and products developed by the International Institute of Applied Systems Analysis (IIASA) will be used together with other available data sets as well as other peer-reviewed scientific material as a basis for modelling work in 2019/2020 that will underpin parts of the planned assessment. Over 50 experts are involved in this assessment. The next meeting of the SLCF EG will be held in Bologna, Italy 13-15 November, back-to-back with an EUA-BCA workshop that will at take place 15-16 November. The AMAP work is also now coordinated with the work under the AC Expert Group on Black Carbon and Methane (EGBCM) and supporting their needs. AMAP representatives participated in the recent meeting of the EGBCM. There is a need for better cooperation and coordination of ongoing and planned work of the AMAP SLCF EG and the AMAP (SWIPA) Climate EG, in particular in relation to modelling climate impacts and related impacts including on human health.

The Secretariat noted that its role in coordinating the EU Black Carbon Action is going well; Russel Shearer has been engaged by AMAP as a project manager for this activity. Implementation of the EUA-BCA started in January 2018 and the project will run until January 2021. Work is currently focusing on scenarios and technical products addressing knowledge gaps due to be completed in 2018, with objectives relating to awareness building and more policy-orientated aspects including development of guidance documents planned for 2019 and 2020.

In the discussion, the WG expressed satisfaction with the progress of this work and the coordination with other groups. The systematic framing of policy-related questions was appreciated, and considered a good framework for all AMAP work. It was considered that further cooperation with WMO on aerosols is important as well as to sustain and enhance monitoring of the existing suite of parameters, without taking on new items.

An interim progress report on the work on the 2021 SLCF assessment is a deliverable to the 2019 AC Ministerial Meeting. HoDs agreed that this progress report (to be developed during the EG meeting in November) should be delivered through the AMAP sections of the SAO Report to Ministers.

Agenda item no.	Decision/Context for Action(s)			
C4	*The WG decided that the progress report on the AMAP work on SLCFs will be included in the AMAP contribution to the SAO Report to the 2019 Ministerial Meeting.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
C4-1	Communicate GAPS BC proposal to relevant bodies for information / review (e.g., WMO aerosols group) – and request their views on utility of this approach as a complement to existing methods	Secretariat		
C4-2	Develop draft of progress report	SLCF EG leads	After EG meeting = 15 November 2018	HoDs approval and incorporation in materials to be delivered to SAOs (deadline 15 November)

OECD cooperation

Finland presented a background document on cooperation with the OECD on the economic consequences of reducing black carbon and other air pollutants (Document WG32/4C/7). This cooperation has been agreed by SAOs. Key stakeholders met the previous week to discuss the scope and additional value of this work and to integrate with AMAP to avoid overlap. This work will be relevant to the planned AMAP SLCF assessment if undertaken in time, and also be relevant to the Arctic Council EGBCM as various economic issues will be analysed by the OECD covering Arctic countries and AC observers. The main work will be conducted by the OECD Secretariat, using data from JRC and IIASA on emissions. This will be an OECD report.

4C5 AACA lessons learned

The Secretariat presented the results of the online AACA lessons learned (lessons identified) survey (Document WG32/4C/8). Authors of the three regional reports as well as HoDs, the Secretariat and others were asked to respond to the questions. In all, 107 people responded. The survey concerned the AACA process and not the implications of the results as it was too early to determine them. The survey results do not differ between the three AACA regions.

The results show that most of the responders had received adequate support for their AACA involvement, but around 20% responded they did not receive support. Travel support and support for person hours working were identified as the two issues missing support.

The survey results show that multidisciplinary, integrated projects are important, but also challenging to organize, particularly relating to project communication and involvement. Several responded that the involvement of Indigenous Peoples could have been improved, but others also considered that the involvement of Indigenous Peoples was good.

In the discussion, all countries agreed that the survey was useful and a good checklist for future assessments. It was underlined that the survey can be used as a general checklist for AMAP assessments.

The Kingdom of Denmark reported that a lot of knowledge has been obtained from the project in Greenland, with relevant data to be used further. The Government of Greenland has used the BBDS report actively.

The Saami Council, ICC and AAC pointed to the answers about involvement of Indigenous Peoples and stated that AMAP in the future needs to look into better cooperation, partnership and communication with IP organizations and the nomination process for authors to enhance participation.

Canada indicated that they still are interested in gaining information on the impacts of the AACA project, but no survey or review of the impacts has so far been decided.

Agenda item no.	**Decision/Context for Action(s)**			
C5	- *Use the results of the AACA 'lessons identified' survey as a checklist for future AMAP assessments.* - *The HoDs 2019 meeting should discuss whether a future evaluation of the impacts of the AACA reports would be useful, and how relevant AMAP work on climate and pollution can contribute to adaptation and resilience building*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
C5-1	Evaluate how ongoing/future AMAP work can be seen through an adaptation lens/contribute to adaptation actions	Secretariat/HoDs/ EGs		

4C7 Arctic Report Card review

The Secretariat reported that reviewers for this year's Arctic Report Card have been chosen from among the nominated experts and the review will begin the first week of October (Document WG32/4C9).

Agenda item no.	**Decision/Context for Action(s)**			
C6	- *No further nominations of reviewers are needed.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**

The Chair summed up the discussion on climate issues, noting that there is a certain consensus on niche AMAP work: to bring Arctic issues to the global agenda and global linkages to the Arctic agenda. There is general support on the strategic direction, with more focus on impacts/responses to climate change and further cooperation on meteorology in relation to climate. As AMAP is one actor among many, overlaps should be avoided and the aim should be for coordination, integration and synergies. There is general

support for developing the work on trends and patterns of Arctic parameters and linking climate science to impacts and responses in Arctic ecosystems as well as better utilization of Indigenous knowledge.

5 Upcoming policy-relevant meetings and events and associated AMAP outreach activities

5A AMAP active participation

The WG considered various upcoming meetings at which AMAP will be an active participant (Document WG32/5/Info1):

The AMAP Chair will give a five-minute presentation on climate issues at the Arctic Environment Ministerial Meeting in Rovaniemi on 11-12 October and AMAP information on pollution issues will be given to ACAP for their presentation.

AMAP representatives will also participate in the CAFF Arctic Biodiversity Congress in Rovaniemi from 9 to 12 October.

For the next SAO meeting, the AMAP presentation will concern the results of the assessment on biological effects of contaminants in wildlife.

The delegate of Sweden reported that she had represented AMAP at the Arctic Resilience Forum meeting in Rovaniemi, at which Arctic Council WGs presented information on their activities to enhance Arctic resilience. She provided information on AMAP activities, particularly the SWIPA assessment, and indicated that AMAP can provide further information to support understanding and enhancement of resilience in the Arctic.

Regarding the Arctic Frontiers conferences, the Executive Secretary stated that he will take over his predecessor's role on the organizing committee for this conference.

The Secretariat stated that a side event at the Minamata COP-2 is provisionally identified as an event co-organized by UN Environment and AMAP, based on the joint work to prepare the technical background material for the UN Environment 2018 Global Mercury Assessment (GMA) (Document WG32/5A/2). There will also be a side event co-sponsored by Norway focusing on monitoring, and a further side event on monitoring networks where AMAP has been invited to make a presentation.

In the discussion, there was a desire for AMAP to be visible at COP-2. The proposal for a joint UN Environment/AMAP side event to present parts of the joint work on the GMA was supported. The delegate of ICC stated that she will attend COP-2 and is willing to represent AMAP at the side event that will cover monitoring networks.

At IPCC COP-24, there may be a side event on short-lived climate forcers, but this has not yet been confirmed.

5B AMAP representatives present

The observer from Germany reported that it is co-sponsoring, together with Finland, a second Arctic Science Ministerial Meeting, which will be held in Berlin. Science ministers from thirty countries have

been invited to this event. The meeting will comprise a full-day scientific meeting including panels on a number of topics. A joint statement will be prepared for the signature of ministers.

Finland agreed to serve as a conduit to transfer information from the AMAP WG to the Science Ministerial Meeting. The Secretariat has also sent SWIPA material to this event.

Action item no.	Actions	Responsible	Deadline	Follow-up
5A-1	Prepare a short overview on AMAP participation at Arctic Biodiversity Congress	Secretariat	1 October	For HoDs to use in national briefing
5A-2	Prepare AMAP contribution to thematic discussions on Arctic biodiversity at SAO meeting	AMAP chair	SAO meeting	
5B-1	Finland to act as a conduit to transfer information from the WG to the Arctic Science Ministerial Meeting	Finland	Arctic Science Ministerial Meeting	

6 Follow-up Actions from WG31 and February HoDs meeting

The Chair noted that issues from the February HoDs meeting that still needed follow-up included a final decision on a workshop on contaminants in wildlife and humans, further work on the AMAP communications strategy, communication between AMAP and ICES, and the potential development of standardized presentation materials on AMAP and its work. There is currently no funding for the latter activity.

7 AMAP Strategic Framework

The Secretariat introduced Document WG32/7/1, version 13 of the AMAP Strategic Framework 2018+ (SF 2018+). Since the February 2018 HoDs meeting, a group of HoDs have held several teleconferences to update and revise the SF 2018+ and all HoDs have participated in two teleconferences, the latest one month ago, to review and revise the draft. The present version was revised after the August HoDs call.

The WG discussed whether AMAP needs to wait for the approval of the new Arctic Council Strategic Framework (AC SF) before finalizing AMAP's Strategic Framework. The Executive Secretary reported that there was no specific timeline for finalizing the AC SF. HoDs therefore decided to finalize AMAP's SF 2018+ and not wait for the AC; however, it will need to be aligned with the AC SF at a later stage.

HoDs reported that they had no major comments to version 13, but several mentioned they had not had adequate time to go through a national process so there may be additional comments at a later stage. Several also mentioned that section 4, 'Implementation…' could be strengthened and fine-tuned.

Canada stated that AMAP needed a plan for how to measure the implementation of AMAP's recommendations; references and links should also be made to AMAP implementation documents, including monitoring guidelines, communication strategy, etc.

The Chair stated that there was not adequate time to forward the SF 2018+ document to the late autumn SAO meeting and therefore the aim would be to forward the final AMAP SF 2018+ to the March 2019 SAO meeting for approval and subsequent reporting to the 2019 AC Ministerial Meeting. The framework, therefore, needs to be approved by AMAP HoDs by 12 February 2019 at the latest.

The Secretariat also stated that the SF 2018+ will need technical editing before final approval by HoDs and that it will then be produced and printed in hard copies.

Agenda item no.	**Decision/Context for Action(s)**			
7	- *The Strategic Framework is named 'AMAP Strategic Framework 2018+'.* - *The final SF 2018+ should take account of the SAO decision on wording about TLK/IK.* - *The AMAP SF 2018+ should be finalized without waiting for the finalization of the AC SF.* - *The SF 2018+ should be finalized and approved before 12 February 2019 to be forwarded to the March 2019 SAO meeting for approval.* - *A printed paper version of the SF 2018+ should be produced.*			
Action item no.	**Related Action(s)**	**Responsible**	**Deadline**	**Follow-up**
7-1	Seek advice as to whether the SF 2018+ needs approval by SAOs	AMAP Chair	SAO meeting	
7-2	Provide comments to the present Strategic Framework text	HoDs	5 October	
7-3	Send e-mail with timeline and the next steps	Secretariat	1 October	
7-4	Provide for the next HoDs meeting a paper on how to follow-up AMAP policy recommendations and the goals of the SF 2018+	Secretariat	30 days before next HoDs meeting	
7-5	Look into whether/how ACAP can follow up AMAP recommendations	Secretariat		

8 Assessment deliverables for the AC 2019 Ministerial Meeting

Arctic Ocean Acidification assessment – Summary for Policy-makers

Richard Bellerby, lead of the Arctic Ocean Acidification (AOA) assessment, speaking by remote connection, presented a summary of the assessment and associated case studies. The science writer of the SPM, Mark Nicholls, also joining remotely, presented a draft of the Summary for Policy-makers and a timeline for its completion (Document WG32/8/1). The SPM restated the recommendations of the 2013 AOA SPM, as they were still considered relevant and necessary.

All delegations preliminarily approved the draft SPM and timeline for completion, although several delegations wished to submit further written comments. Final approval was scheduled to occur during a teleconference on 29 October.

Biological Effects of POPs and Mercury – Key findings/optional SPM

The Secretariat introduced a draft outreach product containing draft key findings of the update assessment of biological effects of contaminants on Arctic wildlife and fish prepared by science writer Jennifer Balmer (Document WG32/8/2). The aim is to approve this product so that it can be delivered at the CAFF Arctic Biodiversity Congress (ABC) from 9-12 October. The current draft does not contain recommendations, so a question was whether some recommendations should be developed for the product for the ABC or rather to add them later for the next Ministerial Meeting.

Delegations expressed appreciation for the assessment report and the draft key findings, which were approved with any additional comments by the end of the week. As there was inadequate time to add recommendations, these will need to be prepared for delivery to the Ministerial Meeting in 2019. They should include cooperation with the Stockholm and Minamata Conventions.

Progress report on SLCF update assessment

The progress report is Document WG32/8/3; discussion of this item occurred under Agenda Item 4C4, above.

Update on selected climate issues

The Secretariat presented a draft outline of issues that could be covered in the 'Key Climate Issues for Ministers' eight-page document, to be prepared by science writer Brad Hurley (Document WG32/8/4).

The WG was supportive of this outline, which was based on current papers being produced by AMAP climate scientists as well as the Arctic Report Card. Consideration should also be given to including material from other reports such as the U.S. Fourth National Climate Assessment and the IPCC 1.5° C report. A Canadian consensus assessment report on climate will also be available by late December or early January that should be considered. The timeline was reviewed to ensure that the document will be available for approval by HoDs by 12 February 2019 at the latest.

Agenda item no.	Decision/Context for Action(s)
8	- *The timeline for approval of the 2018 Arctic Ocean Acidification SPM was approved with final approval at a teleconference 29 October 2018 (with a possible new date for final approval).* - *Key messages for the Biological Effects (BE) assessment should be ready for the Arctic Biodiversity Congress and policy-relevant recommendations for delivery to the Ministerial Meeting in 2019.* - *There will be no second round for HoDs comments to the Biological Effects key messages after providing comments by 28 September* - *The 'Climate issues' deliverable should be approved by HoDs by 12 February 2019 at the latest.*

Action item no.	Related Action(s)	Responsible	Deadline	Follow-up
8-1	Provide written comments to the AOA SPM	HoDs	28 September	For approval by HoDs before end of 2018
8-2	Finalize AOA SPM	Secretariat/science-writer	31 March 2019	Delivery at AC Ministerial 2019
8-3	Provide written comments to the Biological Effects key messages	HoDs	28 September	
8-4	Provide potential photos for illustrating the Biological Effects Key Messages	HoDs	3 October	
8-5	Develop draft policy-relevant recommendations on Biological Effects	Secretariat/Tracking HoDs	30 November 2018	For approval by HoDs in early-2019
8-6	Finalize Biological Effects SPM product (expanding the key messages outreach product)	Secretariat	31 March 2019	Delivery at AC Ministerial 2019
8-7	Submit climate issues deliverable for review by HoDs	Secretariat/science-writer	12 January 2019	For approval by HoDs by 12 February 2019

9 External cooperation

Cooperation with ACS, AC/WGs and AC Task Forces

AMAP cooperates with other AC bodies and takes part in coordination of activities among groups.

Cooperation with International Organizations, EU-PolarNet

The Secretariat reported that the AMAP/EU-PolarNet Stakeholder Workshop on Research Needs on Arctic Biology and Terrestrial Ecosystems will be held on 12 October in Rovaniemi in association with the CAFF Arctic Biodiversity Congress. This is the fourth and final international stakeholder workshop on Arctic research needs that AMAP will host under the EU-PolarNet project. Another final deliverable is the preparation of a roadmap for optimization of monitoring and modelling programs, which is due to be submitted by the end of the year.

SAON

The Secretariat presented the SAON Strategic Implementation Plan that was approved in the summer of 2018. This aims to 1) provide a roadmap for a well-integrated Arctic observing system, 2) promote free and ethical open access to all Arctic observation data, and 3) ensure sustainability of Arctic observing systems. SAON will be involved in the Arctic Observing Summit (with ISAC and IASC), a side meeting at the Arctic Science Ministerial Meeting, and a session at the Arctic Circle co-sponsored with EU-PolarNet (Roadmap to Arctic environmental monitoring and modeling programs and networks). SAON is also involved in an ESA project to define future satellite missions and has applied to GEO to have status as a

Regional GEO Initiative, the ArcticGEOSS. Document WG32/9/1 on the upcoming Polar Data Planning Summit encourages AMAP to identify a case that can serve as an input to the architecture for an international, interconnected Arctic data system that the document describes. The Summit is planned and hosted by the Arctic Data Committee in cooperation with other Arctic and Antarctic initiatives.

IASC presentation

Magnus Friberg, representing IASC, gave a presentation on relevant activities of IASC and called for expanding and deepening collaboration between IASC and AMAP. IASC can, among others, nominate experts to take part in AMAP activities and coordinate reviews, as well as continuing its co-sponsorship of SAON. IASC has a large network of scientists and includes all AMAP member countries as well as a number of additional countries. It also has a fellowship program and provides early career support for scientists.

In the discussion, interest was expressed in involving IASC fellows in AMAP work. The AMAP Chair will contact Allen Pope, IASC Executive Secretary, to discuss future cooperation.

WMO

Paolo Ruti, Chief of the WMO World Weather Research Programme, presented the WMO contributions to Arctic resilience as a three-component activity: 1) observing, 2) predicting, and 3) adapting. Observing activities follow a value-chain approach to develop predictive capacity and warning systems. Observations are linked to an Earth System Approach and include the Global Atmosphere Watch and the Global Cryosphere Water as well as the Arctic Hydrology Cycle Observing System. For predicting, cooperative international research is promoted, including the Year of Polar Predictions (YOPP), to generate societal value. Under adapting, regional cooperation is encouraged to improve Arctic weather and climate services, including better seasonal outlooks. The Arctic Regional Climate Centre is part of this system.

In the discussion, it was considered important that links be established with national meteorology experts who are part of WMO groups to gain more access to WMO work. WMO could also assist in monitoring and data acquisition and this cooperation could also improve modelling. It was considered that there are many possibilities for cooperation between AMAP and WMO.

10 AMAP Work Plan 2019-2021

The Secretariat presented the AMAP multi-year work plan, which contained all proposed projects (Document WG32/10/1). The Chair noted that there are limited resources in the Secretariat as well as in member countries, so the entire work plan needs to be reviewed carefully so that the work can be accomplished as intended.

The WG agreed that the analysis of trend data on POPs and mercury has priority, with an emphasis on POPs in air and biota for the Stockholm Convention. The Human Health Assessment Group should contribute relevant updated information on trends of POPs in human bio-media. A full overview of the requirements for data and the timing of input for effectiveness evaluations are needed from the two Conventions.

The WG agreed on the production of three update assessments under the 2019-2021 work plan for delivery in 2021: SLCFs, mercury and human health, and a radioactivity assessment for delivery in 2023.

Work on the mercury assessment will begin with a kick-off meeting in December 2018 aiming at a deliverable in 2021. The WG decided, however, that the scope of this assessment should be somewhat scaled down.

Given the work on the ongoing SLCF assessment and the priority of the mercury assessment, the WG decided that the human health assessment should have the lowest priority of the three and finalization could be postponed by one year if resources are insufficient. There is also need for a human health chapter in the mercury assessment, which is a priority.

The preparation of a new radioactivity assessment was supported. This should be discussed at the next HoDs meeting and scoping should start now during the 2019-2021 Work Plan with the aim of completing the assessment by 2023. Experts from all Arctic countries were encouraged to participate. Assessment co-leads and the Secretariat should discuss data handling for this assessment and a link should be made with SAON.

In addition to the assessments, the WG agreed that work on POPs and climate change should continue, as there are several relevant initiatives under way, and the needs and work should be scoped for the next HoDs meeting. This will not, however, include an assessment. Planning for a workshop on contaminants in wildlife and humans should also be continued.

The proposed work on climate/cryosphere change and its impacts was approved, with a request for further development of the trends and patterns work. It was agreed to reach out to CAFF as soon as possible to cooperate on an assessment of climate impacts on Arctic ecosystems and ecosystem feedbacks to climate. The timeline for the IPCC Sixth Assessment Report should be checked, particularly with regard to climate change effects on ecosystems. [Added after the meeting: The timeline for AR6 can be found at: https://wg1.ipcc.ch/AR6/AR6.html]

It was also agreed that a chapter and/or a standalone product focusing on monitoring of marine litter and microplastics should be prepared by 2021 for the regional action plan on marine litter by PAME.

The delegate of Iceland provided a brief preliminary overview of the priorities of the upcoming Icelandic Chairmanship of the Arctic Council. More details will be presented at the November Senior Arctic Officials meeting. The main issue will be sustainable development, resting on three pillars: economic, social and environmental. Three key areas will be the ocean, climate change, and the well-being of Arctic communities. Closer cooperation with Arctic Council observer countries will also be emphasized.

The Chair noted that small adjustments to the 2019-2021 Work Plan may be needed when the full details of the Icelandic chairmanship priorities are available.

11 Information from the AMAP Secretariat

The Secretariat described the move of the offices from Oslo to Tromsø and the conditions in the new office. As Jon L. Fuglestad will leave the Secretariat shortly, his position will be announced soon, with requirements indicating a desire for a geophysical scientist. The AMAP archive is currently being digitized so that it will be easy to provide documents to others; this includes a document/project management system.

The Secretariat also described the work to update the AMAP website. This update will make it easier to maintain and refresh the site as well as to find information on projects. The revised website will be made compatible with mobile devices; this will require decisions on the formatting of material. The aim

is also to make all AMAP graphics easily available; the material, including high-resolution graphics, will be packaged together.

12 Any other business

The delegate of Finland, who has represented AMAP at meetings under LRTAP and HTAP, stated that the co-chair of HTAP is resigning. He queried whether AMAP would be willing to serve as HTAP co-chair. The other co-chair is from the USA. This shared leadership would strengthen the cooperation. A response to this offer is needed by December.

The WG agreed that cooperation with LRTAP is important but the resource issue needs to be considered.

Norway provided information on the new research icebreaker, the R/V 'Kronprins Haakon', which contains high-technology scientific equipment and very comprehensive acoustic sensors. Norway is also conducting the 'Nansen Legacy Project', an 800 million NOK interdisciplinary project to characterize the main human impacts on the Barents Sea ecosystem. AMAP is represented in the user group of the Nansen Legacy Project and will have access to the data acquired.

13 2019 HoDs and WG meetings

The USA stated that it will explore the possibility of hosting the next HoDs meeting. It was anticipated that this meeting will be held in April 2019.

14 Review of List of Actions and Decisions

The draft record of decisions and actions from the meeting will be updated and sent to participants shortly after the meeting; comments should be returned by 5 October.

15 End of meeting

The Chair thanked all the participants, HoDs, PPs and observers, for their contributions. Much work has been accomplished, but questions remain for HoDs to resolve in their meeting thereafter. The Chair also thanked the Secretariat for the excellent meeting preparation. She closed the meeting at 12:00 hrs on 27 September 2018.

Annex 1

AMAP WG 32 Meeting

25-27 September 2018, Kiruna / Giron, Sweden

Agenda

Agenda Item	Documents
Tuesday 25 September	
1. Welcome and opening of the 32nd WG meeting **Adoption of the agenda.** - Overview of achievements the past year - Deliverables and plans towards the 2019 Ministerial meeting - Overview of the WG32 agenda and expected outcome - Presentation of Rolf Rødven, AMAP Executive Secretary - Practical meeting information	Slide: Overview of 2019 MM deliverables WG32/1/1- Draft agenda WG32/1/Info1. Draft list of documents
2. Welcome statements by the Swedish Senior Arctic Official Björn Lyrvall and the Saami Council, Åsa Larsson Blind	
3. Presentation by Saami Council "Climate change and Saami knowledge"	PowerPoint presentation
4. AMAP scientific assessment work This agenda item will cover status of AMAP work; what we have produced and achieved, what is ongoing, what is the future direction in AMAP contaminant and climate issues work, cooperation with AC WGs/TFs and external bodies, observer contributions, inclusion of TLK, communication and outreach efforts, input to WP 2019-2021. Possible project on TLK in AMAP work in relation to 5B and/or 5C. **4A. Presentations of completed assessments and implications for future work** Overview of report production. o AOA 2018 assessment o Biological effects of POPs and Hg assessment **4B. Contaminants/pollution issues** B1. Human Health Assessment Group suggested work plan B2. Radioactivity. Future assessment/work o Work plan proposals B3. Contaminant monitoring systems, NIPs, guidelines and data reporting. Example for HG	AOA remote presentation Biological effects remote presentation WG32/4B/9. HHAG assessment work WG32/4B/6. Proposed Radioactivity Expert Group Work Plan WG32/4B/8. Pollution monitoring Guidelines.

o Data collection and documentation of monitoring systems is vital for AMAP assessments. Using the example of mercury monitoring we seek overview of national data systems that can support AMAP assessment work o Information on national data for the upcoming Hg assessment, NIPs, laboratory QA, application of guidelines	NIPs and data reporting
B4. Mercury assessment work (scoping of 2021 update assessment) o Plans for the assessment work; key science and policy relevant questions to address; timeline, resources, deadlines	WG32/4B/1. Scoping of Mercury update assessment 2021
B5. POPs update assessment, status of work.* o Follow-up of completed assessments; assessment of climate-contaminant interactions *Presentation of POPs and Hg biological effects (see 4A)	WG32/4B/7. POPs Update Assessment(s) – Status of Work
B6. Future AMAP work on contaminants This session is primarily dedicated to emerging contaminants including follow-up of the CEAC Assessment. o Environment Specimen Banking. Overview of AC member states ESBs, possible use of ESBs in AMAP contaminant work o Norwegian screening – follow-up of CEAC* o Invitation to Nordic screening of emerging contaminants	WG32/4B/3. AMAP and Environmental Specimen Banking WG32/4B/10. Norwegian screening based on the CEAC assessment WG32/4B/4. Circumpolar screening of new substances – a follow-up of AMAPs CEAC Assessment
B7. Proposal for future AMAP work on microplastics o Possible connection to PAME work plan	WG32/4B/5. AMAP work on microplastics
B8. Joint workshop between HHAG and POPs/Hg EGs o Possible themes for workshop; workshop practical arrangements	WG32/4B/2. Proposal for joint HHAG/POPs/Hg EGs
B9. Summing up discussions on the direction of AMAPs future work on pollution issues, and input to AMAP work plan	
Wednesday 26 September	
4C. Climate issues	
C1. SWIPA/IPCC work progress and AMAP's future climate work o Status of the work, papers, deliverables, how this scope AMAP climate work	WG32/4C/1. SWIPA /IPCC work progress and AMAP's future climate work WG32/4C/2. Climate and meteorological workshop draft agenda

C2. Status report on Finland's priority on meteorological cooperation	WG32/4C/Info2. Finland's priorities – A status report on meteorological cooperation
C3. Monitoring guidelines and NIPs reporting for AMAP climate monitoring programme – way forward	WG32/4C/4. Climate monitoring guidelines WG32/4C/5. NIPs reporting
C4. SLCP work o Status and progress of SLCP assessment, coordination with EGBCM, EU black carbon project, o OECD cooperation	WG32/4C/6. AMAP 2021 Update Assessment of Short-lived Climate Forcers (SLCFs) – Status of Work WG32/4C/7. Cooperation with OECD
C5. AACA lessons learned o Results from the online survey, how to use the results in other AMAP work, possible follow up	WG32/4C/8. AACA lessons learned
C6. Arctic report card review o Organization of work, nominated reviewers,	WG32/4C/9. Arctic Report Card review
C7. Summing up discussions on the direction of AMAP's future work on climate issues, and input to AMAP work plan	WG32/4C/Info1. AACA follow-up. The Tooniktoyak project
4. Upcoming policy-related meetings and events and agreed/possible associated AMAP outreach activities	
5A. AMAP active participation o Arctic Environmental Ministers Meeting o Arctic Biodiversity Congress o SAO meeting o COP 24 o Minamata COP 2 o Arctic Resilience Forum o Arctic Frontiers	WG32/5A/2. Minamata COP2: AMAP organized side-event WG32/5/Info1. Overview of meetings and events.
5B. AMAP representatives present o Science Ministerial Meeting	
5. Follow up Actions from WG 31 and February HoDs meeting	

6. AMAP Strategic Framework 2018-2026 Discussion at WG meeting. Final approval/timeline for final approval at HoDs meeting. Observers and EGs will be asked to give their input before the WG meeting and made available for WG participants. o Draft SF 2018 for discussion o Overview of inputs from observers and EGs	WG32/7/1. Draft AMAP Strategic Framework 2018+
7. Assessment Deliverables for the AC 2019 Ministerial meeting – for information Overview of AMAP deliverables to MM 2019. Discussion on draft SPMs. Comments from the WG. Further discussion at HoD meeting with possible agreement on process and timeline for final approval. o Arctic Ocean Acidification - Summary for Policy-Makers o Biological effects of POPs and mercury - Key findings/optional SPM o Progress report on SLCP update o Update on selected climate issues	WG32/8/1. Draft AOA Summary for Policy-Makers WG32/8/2. Draft Biological Effects SPM WG32/8/3. Draft SLCF progress report WG32/8/4. SWIPA/IPCC deliverable
Thursday 27 September	
8. External cooperation (if not previously covered) o Cooperation with ACS, AC/WGs and AC Task Forces o Cooperation with International Organizations EU PolarNet o SAON presentation o IASC presentation by Magnus Friberg o WMO presentation	
9. AMAP work plan 2019-2021 This agenda item will compile an overview of projects, assessments and other work to be included in the 2019-2021 Work Plan and the multi-year work plan. Prioritization of the work and final approval of work plan at the HoDs meeting. o Information on (provisional) Iceland AC chairmanship priorities o Multi-year work plan (2019 - ca. 2025)	WG32/10/1. Multi-year work plan WG32/10/2. Draft work plan 2019-2021
10. Information from the AMAP Secretariat o AMAP website update o Standardized presentation materials o Secretariat relocation update (online archive, etc.)	
11. Any other business	
12. 2019 HoDs and WG meetings	
13. Review of List of Actions and Decisions	To be developed during the WG meeting
14. End of meeting	

Annex 2

AMAP 32nd Working Group Meeting, 25-27 September 2018, Kiruna / Giron, Sweden

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Kingdom of Denmark Denmark	Rune	Dietz	Aarhus University, Bioscience, Arctic Environment Danish Center for Environment and Energy, DCE	Arctic Research Center, ARC Frederiksborgvej 399 P.O. box 358 4000 Roskilde	rdi@bios.au.dk	+45 87 15 86 90	
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Annex 3

Environmental Specimen Bank and Nordic Screening Group

The Environment Agency, Faroe Islands

by Maria Dam, November 2018, for the AMAP Secretariat as agreed at AMAP WG 32 meeting in Kiruna, Sweden 2018.

The Environment Agency of the Faroe Islands holds an Environmental Specimen Bank (ESB). The ESB was established in 1997 in a Nordic co-operation supported by the Nordic Council of Ministers. The ESB was established at the Environmental Department at the Food and Environmental Agency with head of department Jákup Pauli Joensen, and with Maria Dam as the project leader. The ESB was established using the same or similar materials and methods as used by the Swedish ESB represented by Tjelvar Odsjö at that time. A Nordic steering group serving as a supporting and coordinating body was operating at that time, and the participants in that group were Frank Riget, DK/GL, Maria Dam FO, Aevar Petersen IS, Juha-Pekka Hirvi FIN, Tjelvar Odsjö SE, Jon Barikmo and Kari Viken Olsen (both NO). One of the aims was to produce openly accessible ESBs on the web, and in the Faroe Islands we succeeded in doing that. In the Faroe Islands, the work was led from the Environment Department at the Food and Environment Agency, and a Faroese ESB was established with participation also from the Museum of Natural History and The University of the Faroe Islands. The three organisations presented their samples and willingness to share them on the Faroese website of the Nordic ESB, which was established.

The ESB of the Environmental Department was organised in a Windows Access database, and the database was accessible on the web. However, searching in the database on the internet was quite slow, and there were few visitors to the service.

When the Environmental Department at the Food and Environmental Agency (now Food and Veterinary Authorities of the Faroe Islands) moved into the Environment Agency in 2008, it took the ESB along into the new agency. The ESB became part of the research department. The ESB database, however, could not be run on the website of the new Environment Agency, and the database has not been accessible via the web since 2008.

Sampling and deposits have continued throughout, and the ESB Access database been updated at intervals.

The physical storage of the ESB has for a large part been at the commercial freezing storage facility in Kollafjørd (Samskip/Klosterbooer). The samples are stored frozen at approximately -20°C, often packed in laminate wrapping as outer material, and in aluminium foil, polyethylene bags, heat-treated glass or polymethylpentene jars or similar depending on the volume and presumed future use of the samples. Information of the specimens is stored in a Windows Access database. The ESB presently holds tissue samples of 22 fish species both marine and freshwater, nine bird species, nine marine mollusc species, two terrestrial mammal species and two marine mammal species that include 1635 samples of long-finned pilot whale.

Depositing in the bank is primarily done on a voluntary and opportunistic basis, though so that any matrix sampled by the Food and Environmental Agency as a part of the environmental monitoring is being stored for future use. This is also the case with samples collected as the Faroese contribution to

the circumpolar Arctic Monitoring and Assessment Programme, which is primarily handled by the Food and Environmental Agency.

There are a few exceptions where the sampling of a selection of matrices is done regularly. Examples of this are the sampling of lamb, vegetation (mixed grass) and soil, which are sampled annually by the University of the Faroe Islands.

Systematic sampling to the bank is under consideration, and is supposedly going to be initiated as a response to the development of a Nordic monitoring program for environmental pollutants in the coastal zone.

The bank of the Food and Environmental Agency is open for the public and no password is required. Deposits in the banks are the property of the institution holding them. However, a major reason for establishing the bank was to hold material available for scientists everywhere. The bank holder defines the conditions for withdrawal of material from the bank. Please contact the relevant institution directly for further information and arrangements of withdrawals.

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Nordic Screening of Contaminants of Emerging Concern

The Nordic Screening Group will coordinate a screening activity in 2019 to obtain a snapshot of the occurrence of potentially hazardous substances in the environment, as a first step in assessing whether a substance may pose an environmental threat. The benefits of the coordinated approach in the Nordic Screening activity include that samples for all participating countries are included in one study, sampling and analytical methods are coordinated, and analyses of all samples are conducted in only one laboratory or a few cooperating laboratories for which interlaboratory uncertainty is controlled and high comparability of the data is ensured. This is also a cost-effective approach to this study.

There has been successful cooperation in the Nordic Screening Group since 2001. Joint screening activities have focused on little-known anthropogenic substances used in high volumes or substances that are persistent and hazardous to humans and wildlife. This work is supported by the Nordic Council of Ministers and the group includes representatives involved in environmental monitoring for each Nordic country and self-governing area. Thus far, ten reports on the results of screening a wide range of substances have been printed in the Nordic Council of Ministers series TemaNord. A range of technical seminars and workshops has also been arranged by the screening group.

A consortium is being established for the 2019 screening activity and funding is being secured. The starting point for the selection of substances to be analysed is the AMAP assessment report *Contaminants of Emerging Arctic Concern*. This selection has been refined via a literature review and the results of the Norwegian Environment Agency ‘Screening Programme 2017’, as well as other relevant reports.

The schedule of work for the 2019 screening is:

Establishment of consortium	January 2019
Funding secured	January 2019
Steering group meeting (probably in Nuuk, GL)	February/March 2019
Selection of substances to be analysed	March 2019
Invitation to tender	March 2019
Laboratory selected	May 2019
Sampling guideline and containers distributed	May/June 2019
Sampling in field (in freezers_	June–October 2019
Analyses	October–early 2020
Reporting of results	2020

The costs of the 2019 screening include in-kind contributions (person-hours for planning, sampling, shipping and reporting; sampling equipment; and optionally for travel, accommodation, per diem for participation in the steering group meeting for planning and coordination). In addition, the cost for each partner will be approximately 20,000 USD to cover shipping the samples, the cost of analysis (normally limited to 90,000 DKK per participating country/self-governing area), and reporting by the analysing laboratory.

Further information can be obtained from members of the Joint Nordic Screening Group:

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