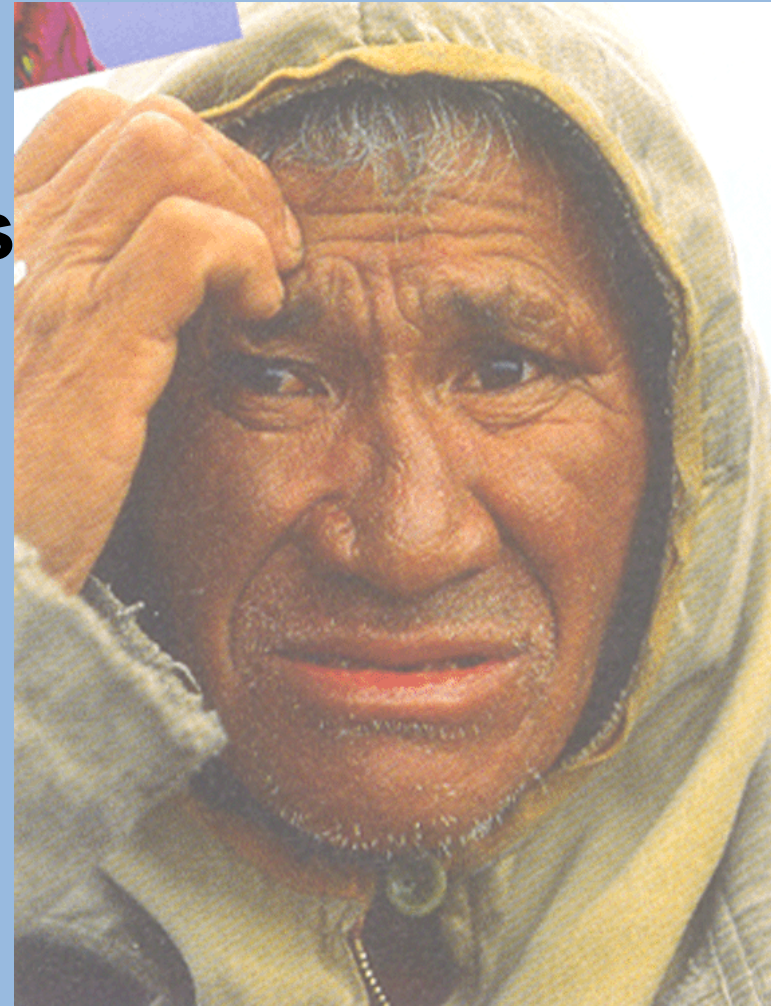


Sustained Arctic Observatory Networks SAON

Workshop on
St. Petersburg July 7, 2008.

Lars-Otto Reiersen,
Executive Secretary



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AMAP's geographical coverage



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Air monitoring at Alert

Continuous measurement of POPs and mercury
Meteorological Service of Canada



Alert, Nunavut. Defence R&D Canada/Janice Lang

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Zackenbergl: Implementing the AMAP Programme

Appendix 3. MarineBasis in relation to AMAP's Effects Monitoring Programme (Climate Change effects)

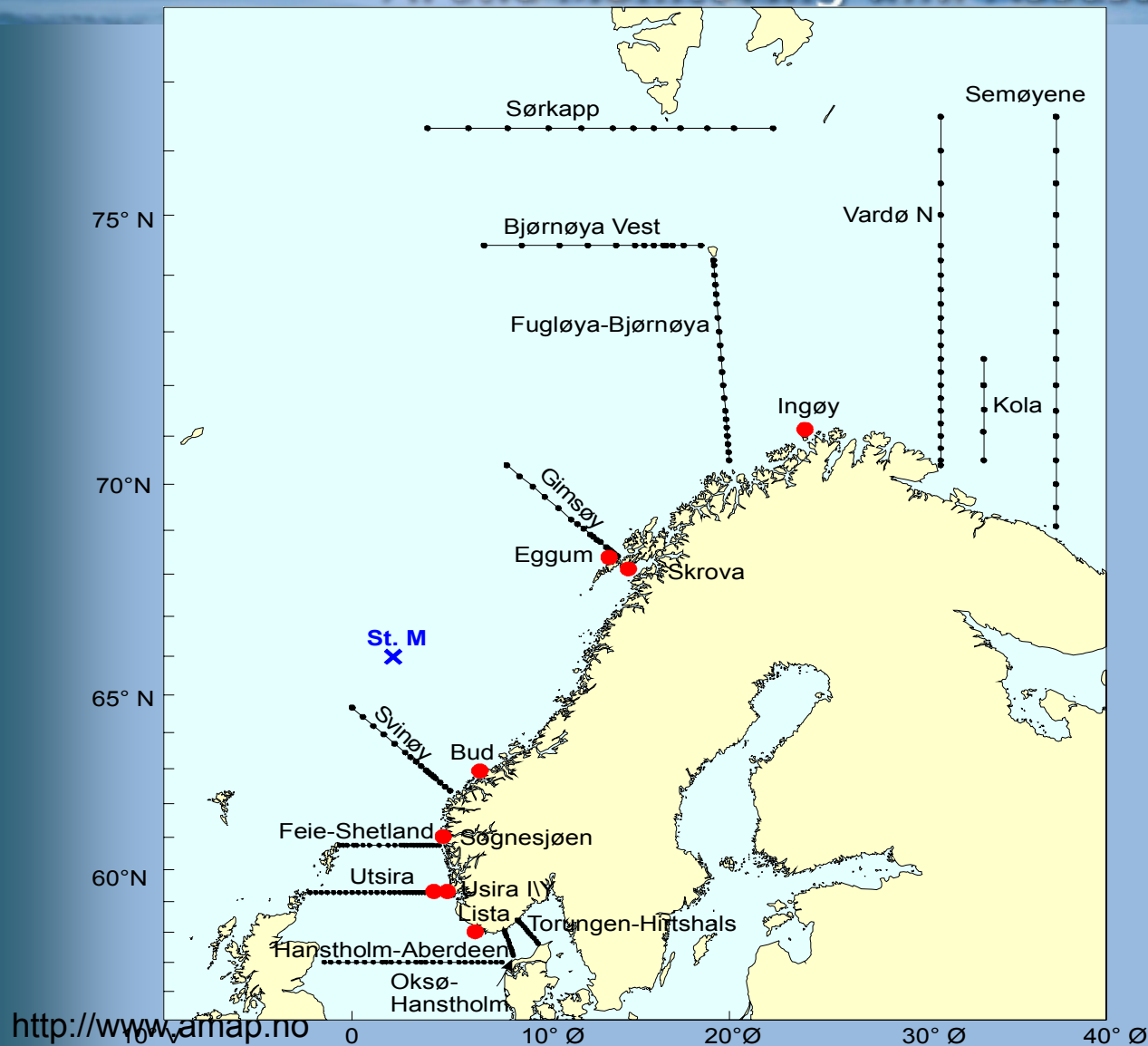
Variable	Parameter subdivision	MarineBasis Sites	Level	Recommended by AMAP
Radiation	UV-B	2	Micro/Fjord	Yes
	Short wave	2	Micro/Fjord	Yes
	PAR	2	Micro/Fjord	Yes
Air pressure		1	Micro/Fjord	Yes
Wind	Speed	1	Micro/Fjord	Yes
	Direction	1	Micro/Fjord	Yes
Snow cover	Depth	3	Micro/Fjord	Yes
	Extent	3	Outer fjord	Yes
	Duration	3	Micro/Fjord	Yes
Ice cover	Depth	1	Micro/F	
	Extent	10	Outer a	
	Freeze time	1	–	
	Thaw time	1	–	
Current patterns	Vertical profiles	2	Micro/	
	Speed & direction	2	Micro/	
Nutrients	Vertical profiles & fluxes	2	Micro/	
Carbon and CO2	Vertical profiles & fluxes	2	Micro/	
Salinity and temperature profiles	Vertical profiles	2	Micro/	
Water table, tides	Depth	Irrelevant	–	
Plankton	Species composition, abundance, distribution	2	Micro/	
	Ice algae/phytoplank-ton/ underwater plants	2	Micro/	
Primary production		10	Outer	
Underwater plants/diatoms	Species composition, abundance, distribution	10	Outer	
	Species composition, abundance, distribution	10	Outer	
Benthos		1	Outer and mid fjord	Yes
Walrus	Abundance	–	Outer and mid fjord	Yes
Ringed seal	Change in food choice and condition	–	Outer and mid fjord	Yes

Zackenbergl: site of coordinated long-term Bio-, Geo-, Climate- and Marine monitoring



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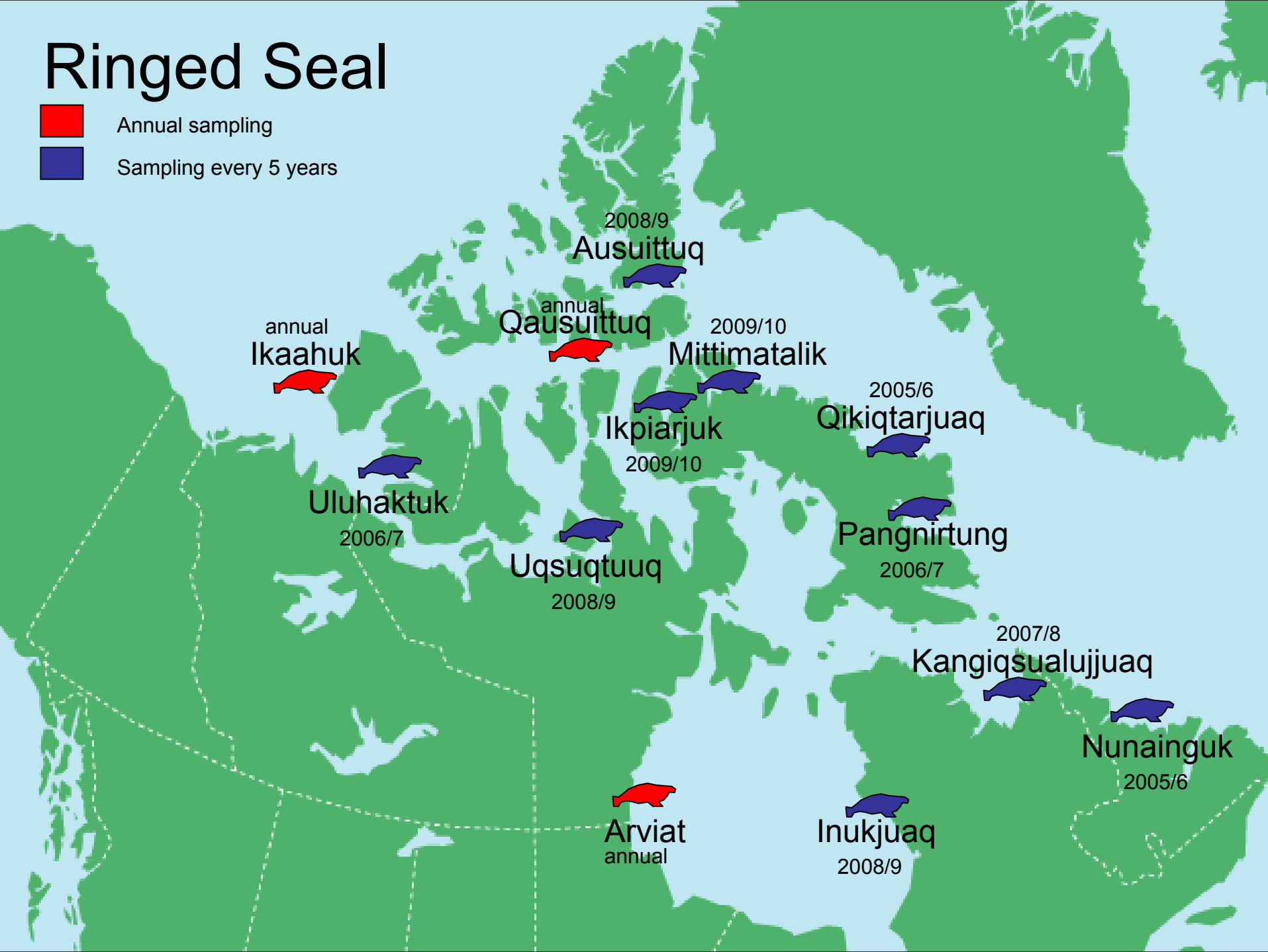
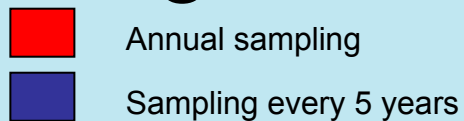
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SCANNET is now a circumarctic network of terrestrial field sites consisting of 22 sites.

Ringed Seal



CCGS AMUNDSEN

CANADIAN RESEARCH ICEBREAKER
www.amundsen.quebec-ocean.ulaval.ca



The CCGS *Amundsen*: a Canadian research icebreaker for international collaboration in the study of the changing Arctic



Canada Foundation for Innovation
Fondation canadienne pour l'innovation



Pêches et Océans
Canada

Garde côtière

Fisheries and Oceans
Canada

Coast Guard



UNIVERSITÉ
LAVAL

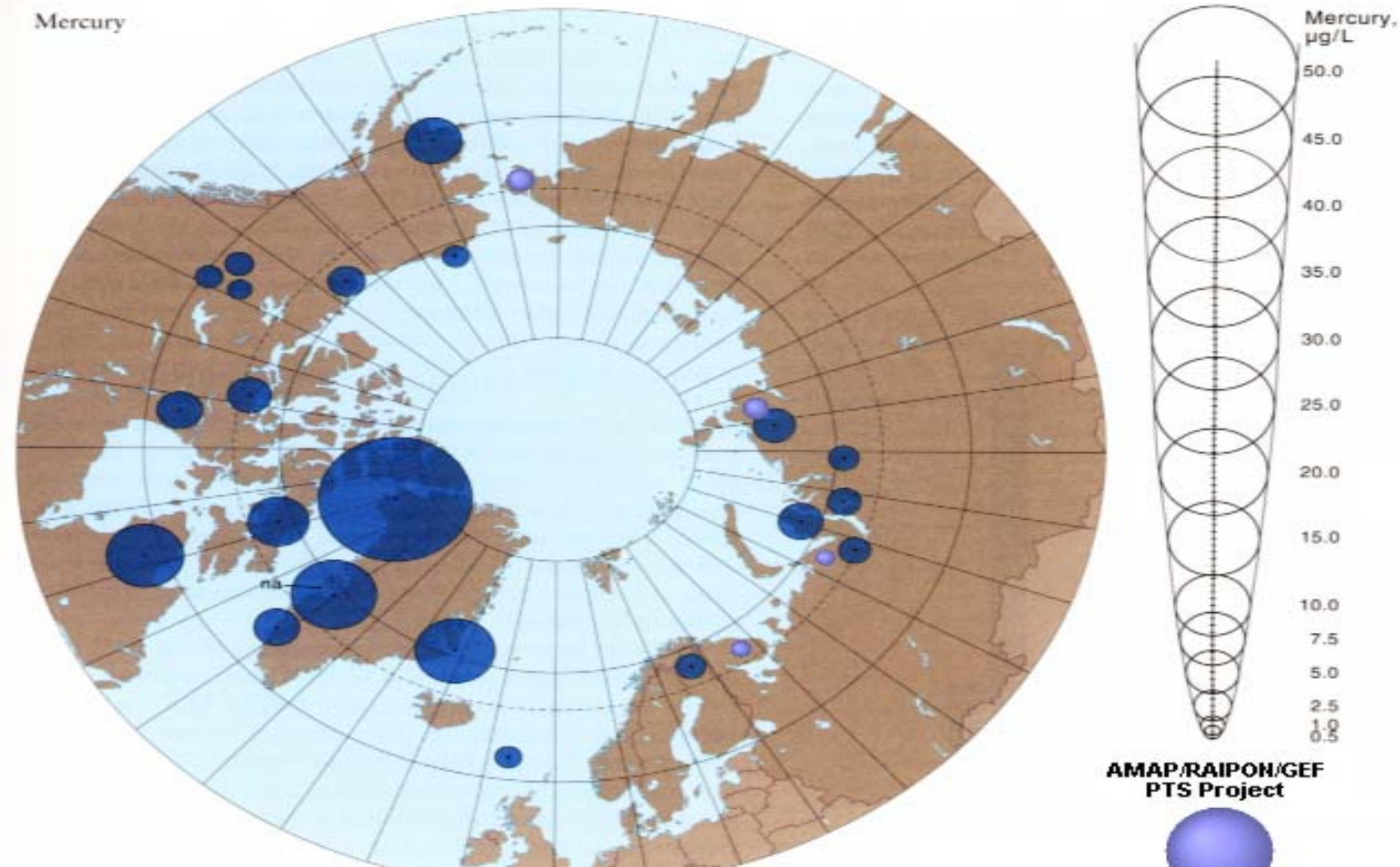


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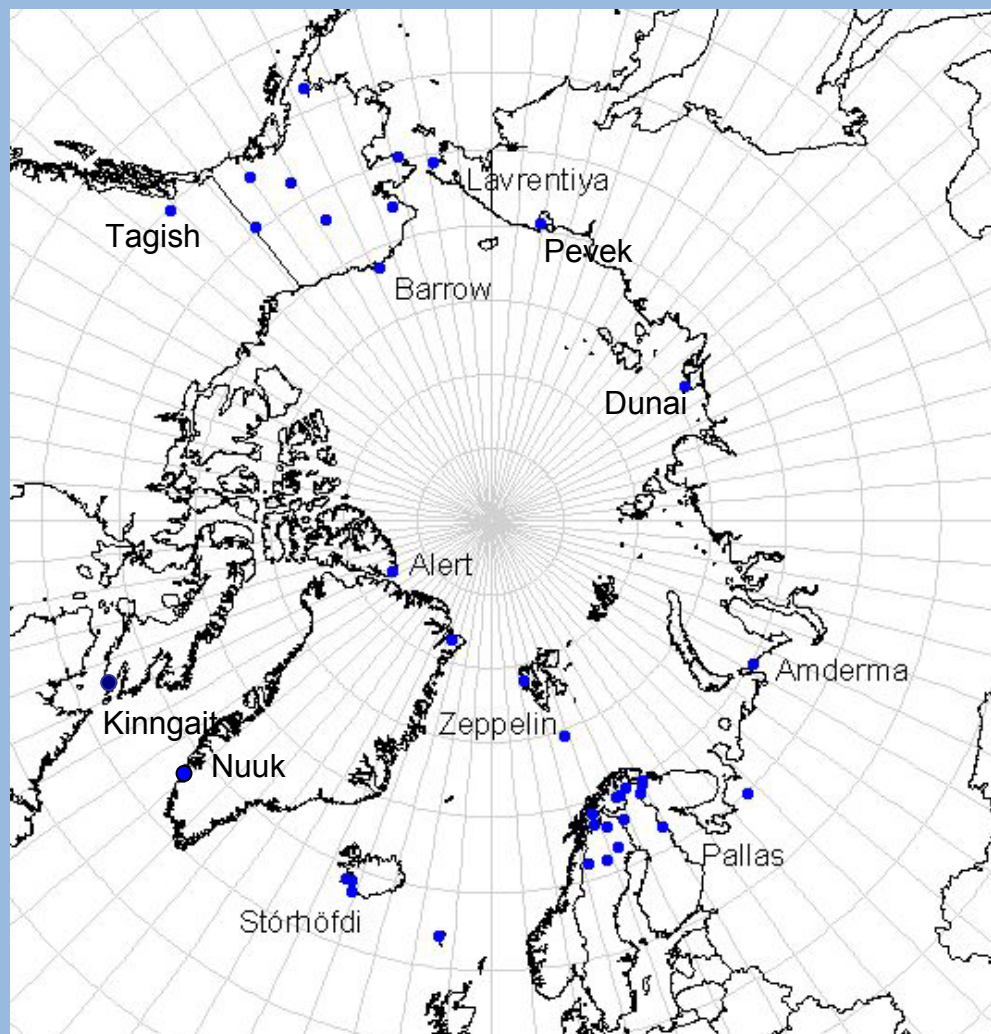
Mercury in maternal blood (AMAP, 2003, 2004)

Mercury



Arctic Monitoring and Assessment Programme

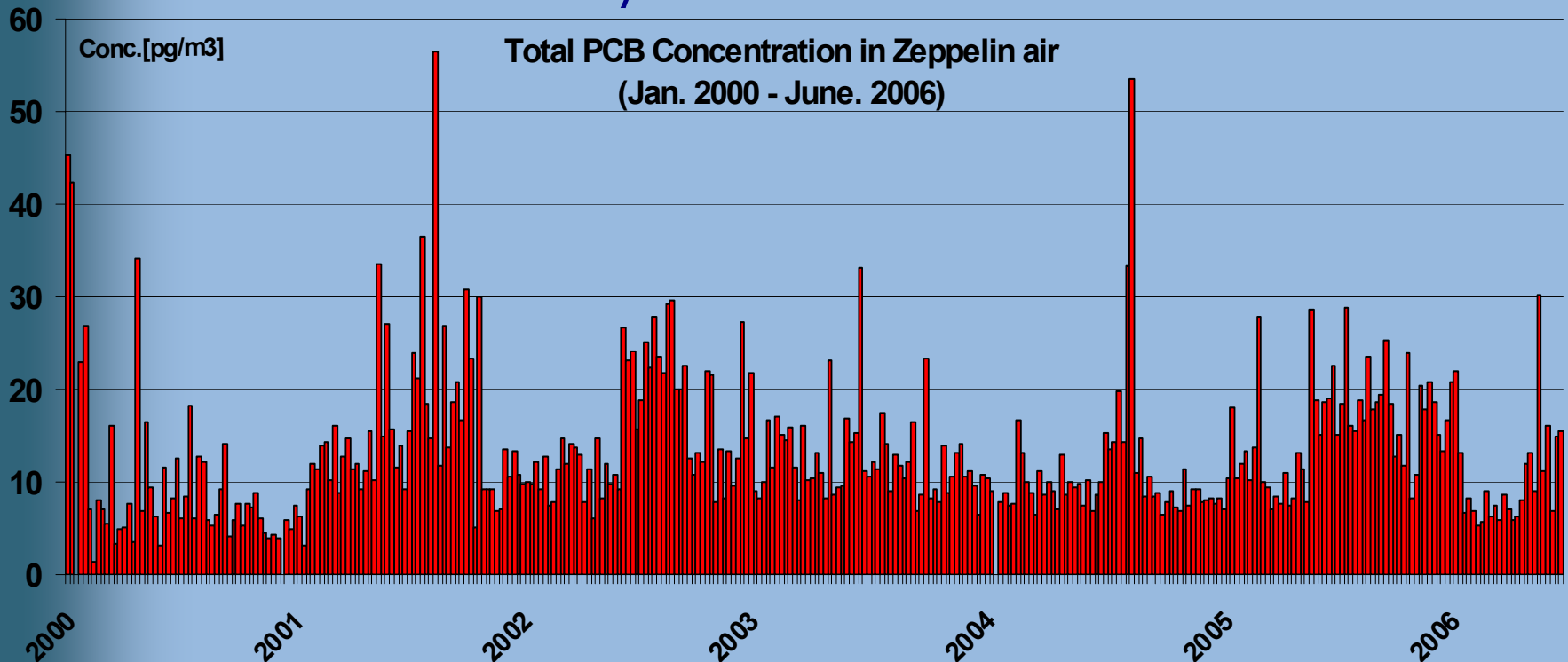
- AMAP air monitoring sites
- Key AMAP air monitoring sites where POPs monitoring is performed
- AMAP POPs monitoring sites operated under temporary funding arrangements
- POPs monitoring sites where operations have ceased
- NILU



PCB in Zeppelin air, Svalbard

Week 41/2001

Week 30/2004



SAON Request from Arctic Council

”Urge all Member countries to maintain and extend long term monitoring of change in all parts of the Arctic, and request AMAP to cooperate with other AC Working Groups, IASC and other partners in efforts to create a coordinated Arctic Observing network that meets identified societal needs”

Arctic Council Ministerial Meeting 26 October, 2006

SAON Overarching Aims

Combining observational efforts by

- national agencies,
- research communities,
- local residents and
- others

Creating Sustained Arctic Observing Networks.

Circum arctic focus and coverage

Inclusiveness

Accessible data (open, easy, timely, free)

Global connections

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SAON Initiating Group (IG)

To develop a set of recommendations to achieve long-term Arctic wide observing activities that provide free, open and timely access to high quality data.

AC/AMAP, IASC, WMO/CLIC, IPY,
AOSB, FARO, IASSA, ISAC,
GOOS, IPS & US-NSF.

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Workplan for SAON

workshops during the 2007/2008:

- Stockholm, Sweden, November 2007
- Edmonton, Canada, April 2008
- St. Petersburg (July 2008) and Incheon, Korea (September 2008)
- Helsinki, Finland, October 2008

Delivery date: December 2008

Recipients: Arctic Council and IG partners

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SAON Basic Questions

- 1: What Arctic observing sites, systems and networks currently **exist**?
- 2: What spatial, temporal and disciplinary **gaps** exist?
- 3: How will gaps be filled and the entire effort **sustained**?
- 4: How are these activities to be **coordinated** and integrated?
- 5: How are free, open and timely **access to data** to be achieved?

Thematic Data Centres

Met. data	WMO network
Atmospheric, NILU	EMEP, AMAP, OSPAR, HELCOM
Marine, ICES	ICES, AMAP, OSPAR, HELCOM
Terrestrial & Freshwater	UAF, AMAP
Radioactivity NRC,	AMAP
Human	National, WHO, AMAP,

- Provide access to data from recent monitoring and research
- Ensure that data are treated in a consistent manner, QA/QC
- Provide long-term secured archive of Arctic-relevant environmental data for use in future research and assessments.

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Stockholm workshop

Are current Arctic observing networks and data & information management activities sufficient to meet **users' needs** - science, governments, agencies, Arctic residents?

Thematic break-out groups

- identify present observing sites, systems and networks

Stockholm workshop report printed and available on the web

<http://www.arcticobserving.org>

<http://www.amap.no> This website serves all workshops, and information will be added as it becomes available

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Edmonton workshop

How will Arctic observing and data & information management activities be **coordinated and sustained?**

Mission agencies far better represented, so also for local observations

About 200 participants

Take Actions better involve Asian and Russian participation:

- St. Petersburg, Russia 7 July 2008 (SCAR/IASC conference)
- Seoul, Korea 23 September 2008 (Asian meeting)

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Edmonton Workshop programme

Finalize Stockholm thematic group reports

National perspectives

Observational networks and operational agencies

- Atmospheric and Operational Meteorology
- Terrestrial Observation Networks
- Marine Observation Networks
- Human Health and Community Observation Networks
- Earth Observing and Satellite Networks
- Community-based Observation Networks
- Funding and Mission Agencies
- Cyberinfrastructure and Data Management
- New Technologies for Cold Climate

Wsh note 1: National perspective

European Environment Agency: EIONET

- Streamlining observations – national nodes – international reporting
- 32 member countries + 6 collaborating

U.S. Federal Inter-Agency Arctic Observing (IARPC)

- Coordination and integration of US Arctic observing activities
- NSF and NOAA as co-leads

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Wsh note 2: Atmosphere

'Building blocks' identified earlier, some quotes from the operational reporting:

Research observations without long term monitoring are suboptimal

Modelling: Research & operations more and more intertwined

Monitoring for compliance with international agreements

Local, national and/or international user requirements contribute to the definition of a network

Identify and justify the needs, demonstrate the benefits

Enhanced economic exploitation of resources in the Arctic will broaden the basis for observations and this wider observational basis needs to be publicly available

Wsh note 3: Terrestrial

Recommendations:

- Establish coordination function for a network of networks - integrate site-based and theme-based
- Best monitoring practices/Standardized parameters
 - Inventory/metadatabase of existing monitoring, data and methods
 - Develop core set of standardized, simple and cheap measures – that can be implemented
- Strengthening data management and infrastructure
- Integrated terrestrial observation network
- Sustaining our integrated network of networks

Wsh note 4: Marine

Encourage sustained observations for both the Arctic and the sub-Arctic

Use already existing and proven entities for integration of observing activities (GOOS)

The aim is to develop a dynamic, flexible observing system that adapts to the changing needs of society and research

SAON should promote an international, cross-domain approach to an integrated observing system. Both in science and in operational-management processes the whole is greater than the sum of parts

A sustained observing system is a tool to ensure that decision-making is based on the best scientific information and advice available. Sustainability is the challenge.

The key is to define the societal benefits.

Wsh note 5: Human health and community observations networks

Work started at this workshop

Review of existing networks

Strengthen linkages between organizations

Funding (WGs, databases, infrastructure, training)

Barriers to Health/ Social Science data



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Wsh note 6: Earth observations & satellites

Important tool for observations within its limits

Develop a capabilities/gaps analysis

Improve Arctic observations with existing and planned missions

Invest into data management for disciplines such as pollution and biodiversity

Invest into data validation to fully exploit satellite capabilities (local observations with feedbacks)

Increased access to high resolution data in support of local communities, for educational institutions (UoA) etc.

Wsh note 7: Community-based monitoring

Local communities as an asset for monitoring and data collection

Value of traditional knowledge

Interface with other monitoring networks (including ground truth for satellite data)

Need a collaborative process to design CBM, including training

Free and easy access to data and information

Community concerns: wildlife (biodiversity), contaminants, climate change

Wsh note 8: Funding and mission agencies

Two main funding sources:

- Mission agencies (weather, pollution, marine etc.)
- Research funding agencies

Internationalization

- Important challenges (climate change, pollution etc.) not only a national issue
- The Arctic as a part of the global system

Multinational consultations needed to secure long-term funding for Arctic monitoring and observations

European cooperative proposal (INFRAPOLAR) to link European observing sites and possible long-term monitoring (research agency based). Open for consultations with non-European partners.

How to organize mission agencies in the Arctic countries

Wsh note 9: Cyberinfrastructure and data management

An important component of SAON; e.g. providing the user 'product'
Several systems/models available such as CADIS: Cooperative Arctic Data and Information Service

Several recommendations such as:

- Verify that Discovery Metadata is interoperable
- Begin discussion and coordination among all potential distributed Arctic data systems/portals

Update inventory of all networks/data sources

- Work closely with WIS and GEOSS developments
- Need to develop SAON Data Policy

Closing remarks

A lot of enthusiasm and energy achieved – SAON is an important initiative that people believe in

Bringing together governmental agencies' monitoring, science community observations and community based observations is quite a challenge, but all will benefit

Non-Arctic countries can make significant contributions to SAON

Drafting the promised Recommendations is starting now

Deadline for delivery of Recommendations:

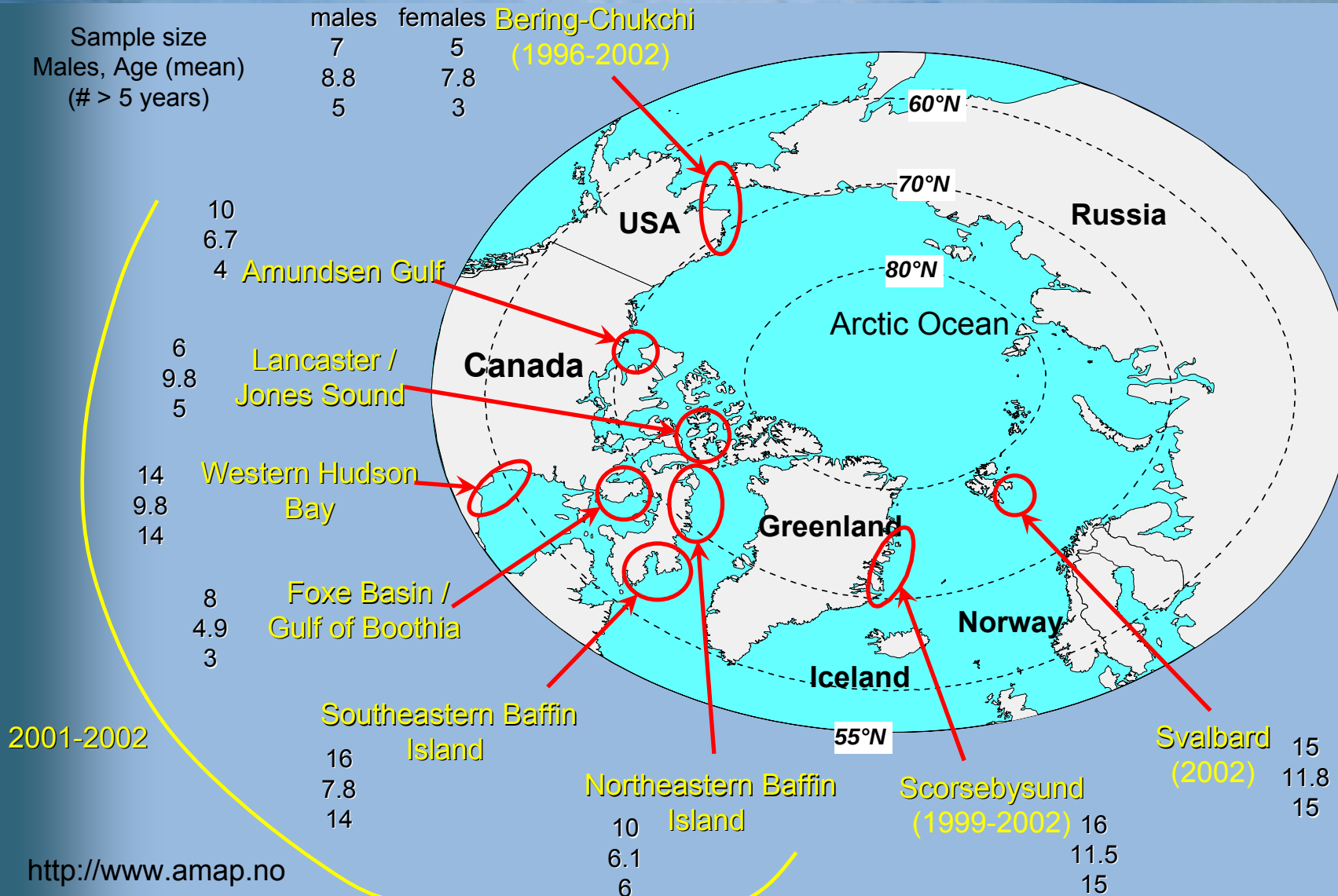
– 15 December 2008

Helsinki workshop:

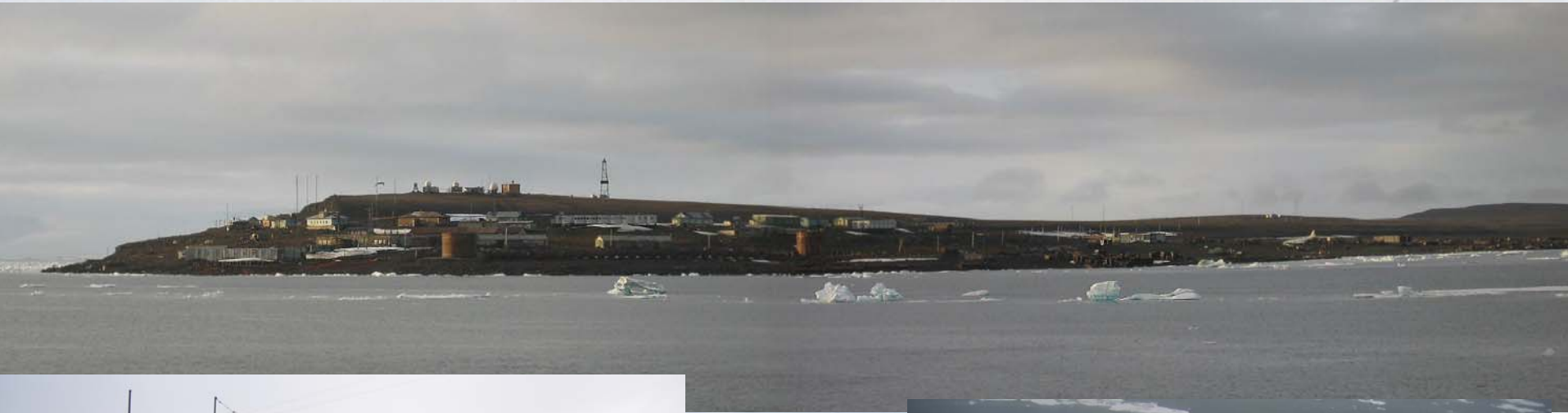
Finalizing the recommendations

Temporal and Spatial Trend Study in the Fat of Polar Bears From Circumpolar Regions: Chlorinated Contaminants and Metabolites

Arctic Monitoring and Assessment Programme



FJL: Heiss Island



Krenkel Polar Station
Recovered in 2004



My wishes to Russian stations

Stations that provide:

- support for International Monitoring and Research;
- Cover a basic set of variables/observations based on international programmes e.g. AMAP, CAFF, EMEP, etc.
- recorded data from a “Station data base” to International Data Centers, e.g. AMAP TDCs;
- a platform for special campaigns to clarify emerging issues;
- a platform to develop new techniques for Arctic conditions, e.g. UAS ;
- etc.

New techniques, Unmanned Aircraft Systems (UAS) - Issues to be clarified:

The Users needs

Aviation regulations in each state

National security issues

Principles for cooperation, e.g.
transparency, share of data, etc.

1st workshop held March 2008.

Classic monitoring of the Arctic

