Responding to Arctic Environmental Change

Nikolaj Bock
European Environment Agency

European Environment Agency

Task

To establish a common understanding and definition of what is meant by responding to Arctic environmental change.

Human Response

Governance, legislation, planning

and/or

Environmental Response

Resilience, adaptation, tipping points, system change

European Environment Agency

European Environment Agency

- Established in Copenhagen in 1995
- Independent EU Agency
- 230 staff from 32 Member countries

Mission:

To support Sustainable Development and to help achieve significant and measurable improvement in Europe's environment, through the provision of timely, targeted, relevant and reliable information to policymakers and the public.

EEA and the Arctic

Of the 32 EEA member countries:

- 5 are member countries in the Arctic Council (DEN, SWE, FIN, ICE, NOR)
- 6 are permanent observes in the Arctic Council (ES, FR, GE, NL, PL, UK)
- EU/EEA and Italy has applied for observer status in Arctic Council

Cooperation with Greenland:
2010: Environment
2012: Health

Cooperation with Russia: 5 areas of environmental monitoring

EEA has a responsibility to ensure that there is a good understanding amongst Europeans of the environmental changes occurring in the Arctic, their underlying causes and the policy changes needed to address them.

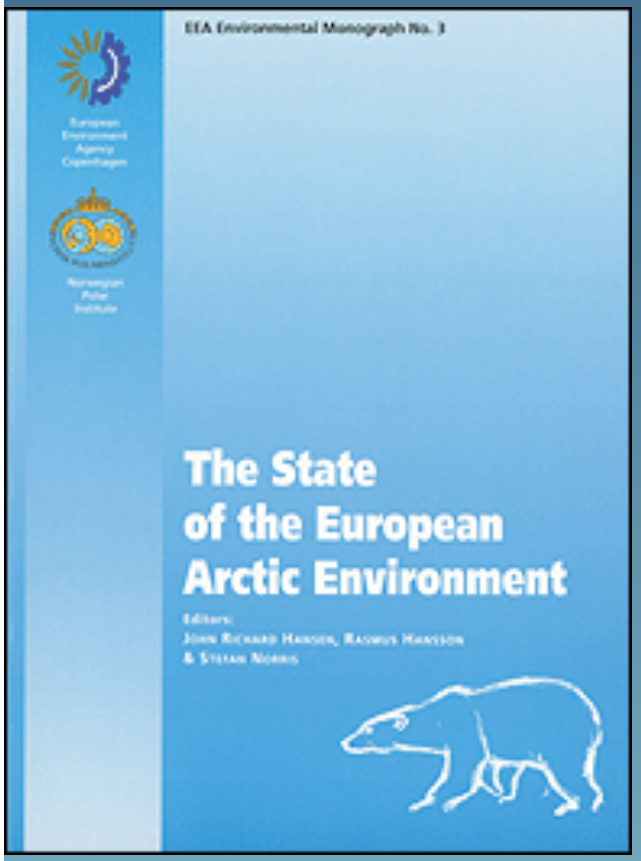
32 Member countries
6 Cooperating countries in Western Balkans

European Environment Agency

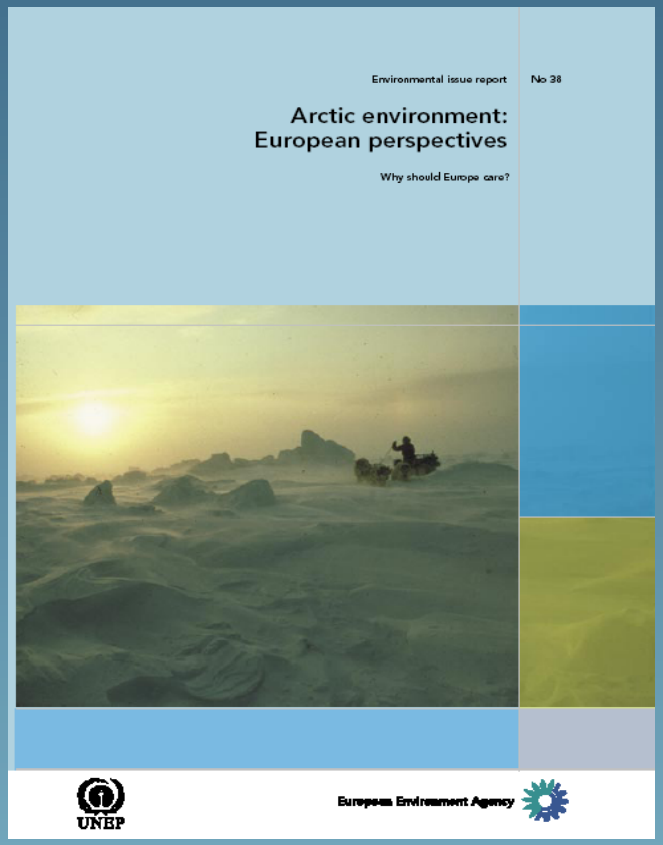
Assessments: EEA area + Pan-European area

EEA – Arctic Reports

1997



2004



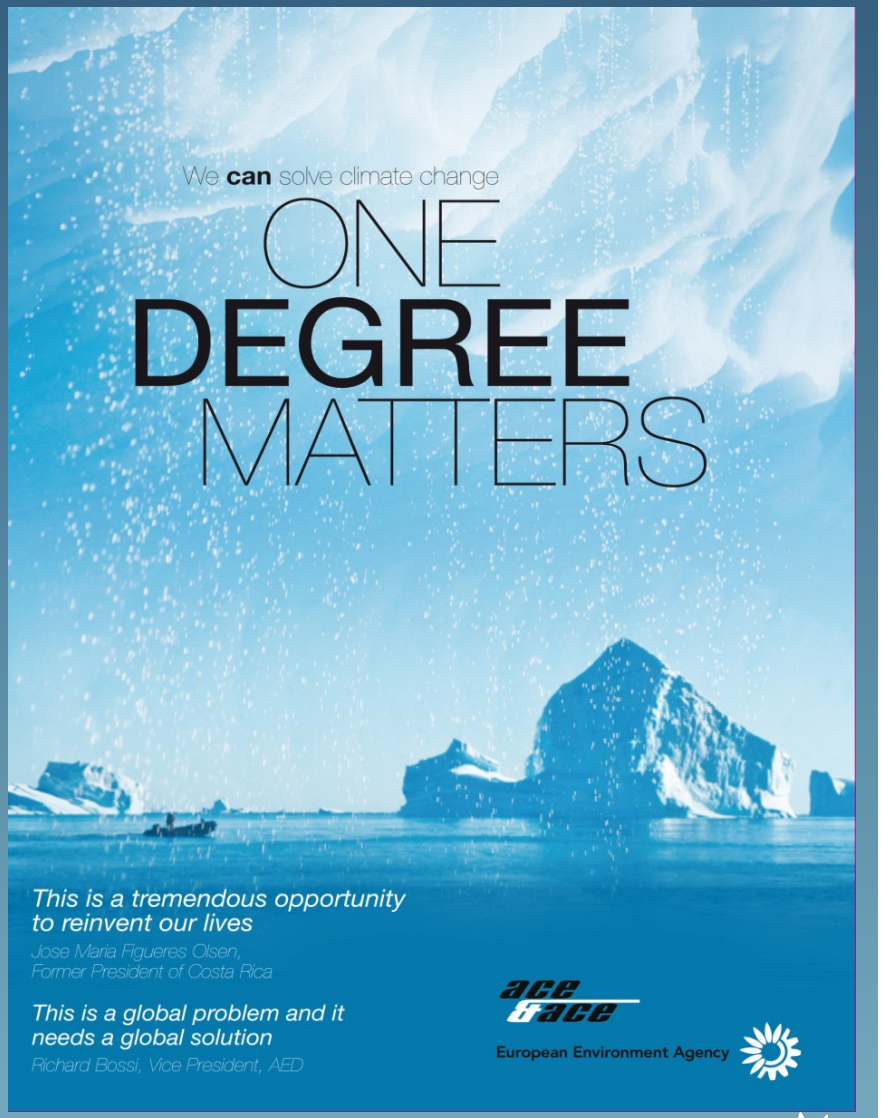
2013

Environment & Health in the Arctic

(European perspective)

European Environment Agency

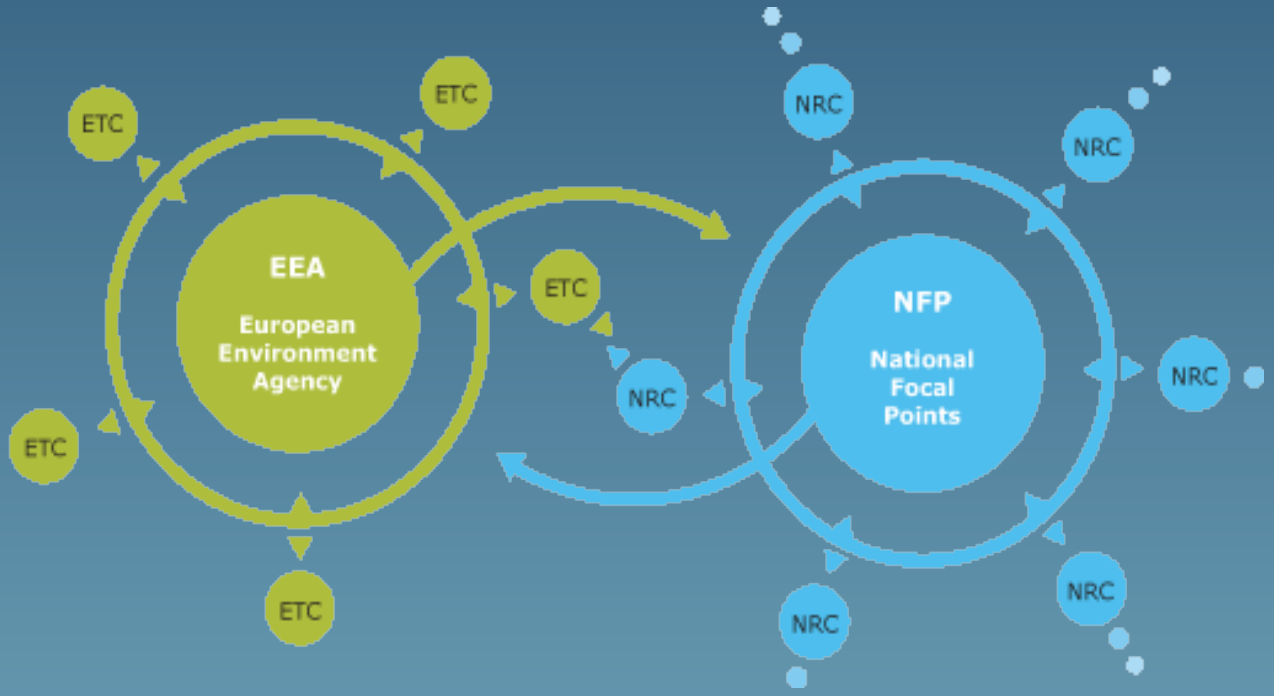
Arctic Multimedia products - Filmed in Greenland



European Environment Agency

EIONET

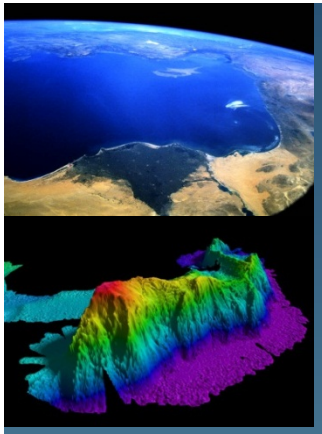
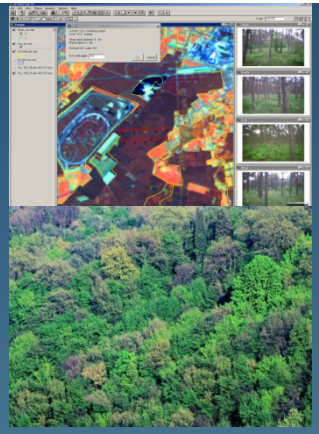
European Environment Information and Observation Network

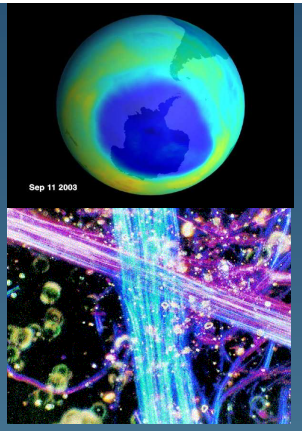


A network of > 1000 experts from EEA member and cooperating countries in > 350 national organisations

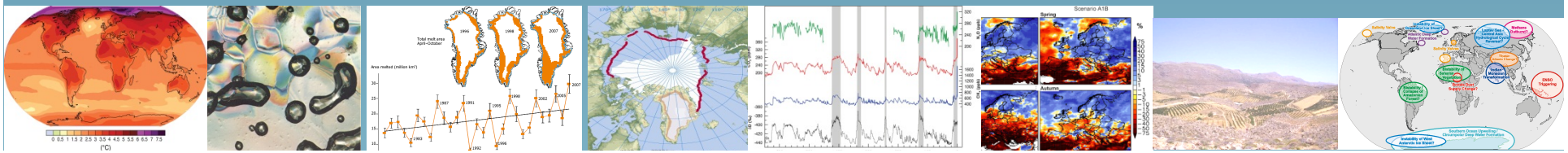
Integrated monitoring

Source: Olav Rune Godø,
Institute of Marine Research - Norway



EEA coordination of the GMES in-situ component



Global Public Service
12-15th December 2011 Abu Dhabi

EYE ON EARTH

Global public service

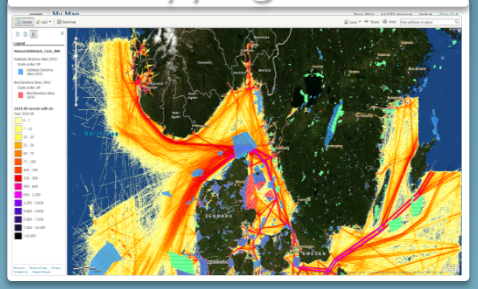
Web map services

ArcGis – Esri web-services
WMS – OGC services
KML – OGC / Google services

Data

GPX – GPS Exhange format
KML – Google keyhole file
CSV – Comma seperated file
SHP – Esri Shape file

Mapping tools



Applications

SAON

SUSTAINING ARCTIC OBSERVING NETWORKS

EU support to SAON (Monaco Declaration)

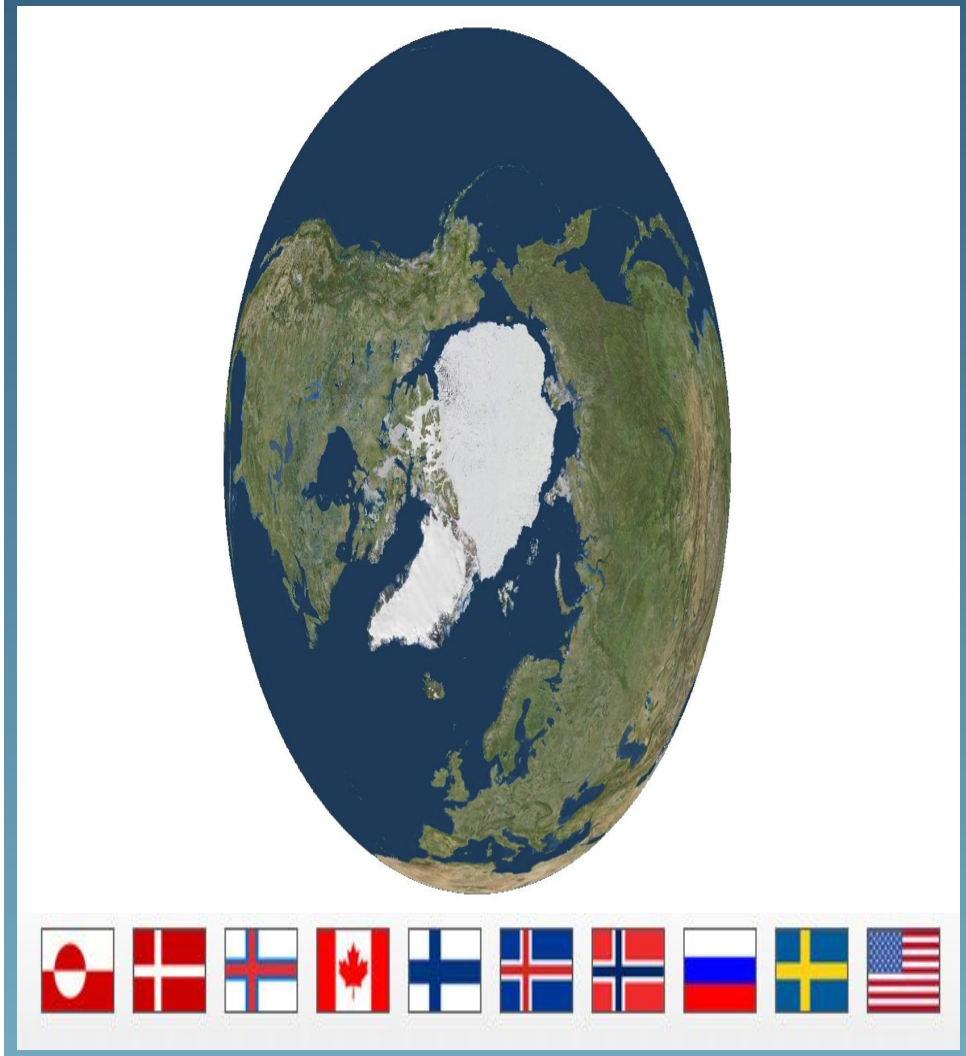
EEA supported SAON process

EEA on SAON Board

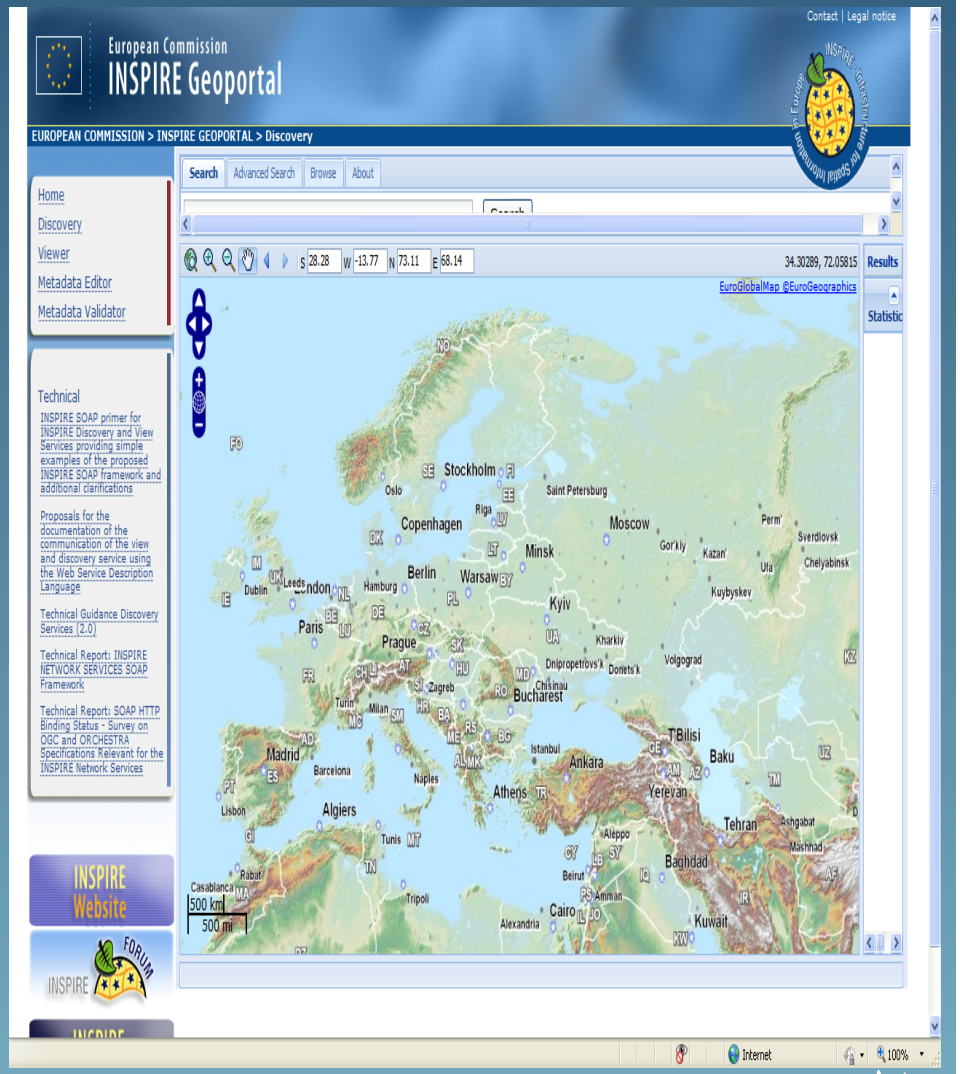
EEA will provide Arctic observation and information service on EoE

European Environment Agency

Arctic Spatial Data Infrastructure (Arctic SDI)



European Spatial Data Infrastructure (INSPIRE)



EEA member of the ASDI Advisory Board

European Environment Agency

Outline

Response to Arctic change

- Arctic changes & challenges
- Governance, legislation, management, planning (spatial/science)
- Operational monitoring, observation and science/research activities
- Assessing the consequences of Arctic change
- Indicators, trends, outlooks, global linkages
- Relevant European & EEA activities
- Final remarks – but no definition on the ‘Response to arctic change’

The challenges facing the Arctic
- and responses are needed:

- Climate Change (change in snow/ice cover + permafrost)
- Long range pollution (air/ocean currents)
- Exploitation or damage to natural resources
- Overharvesting of certain key fish stocks
- Mismanagement of areas of Arctic forest and unsustainable logging practices
- Pollution from mining activities and metal ore processing plants
- Impacts of infrastructure developments
- Operational accidents in the oil and gas sector
- Land fragmentation
- Loss of biodiversity
- Overall quality of surface and marine waters
- Pressure from increasing tourism

Responding to change through Governance in the Arctic

- UNCLOS
- Fisheries
- IMO
- Indigenous Peoples rights
- Stockholm convention (POPs)
- Biodiversity convention
- Security
- Arctic Council

European Environment Agency

Human Response to Arctic environmental change (governance)

Tools available for responding:

- Strengthening existing legislation (or improve enforcement)
- Introducing new regulations – addressing gaps/weaknesses
- Multilateral Environmental Agreements (MEA's) - international
- Guidelines and best practices for industry operations
- Local, national and regional planning
- Integrated management plans – Ecosystems Based Management
- Developing a coherent common Arctic strategy by AC ?

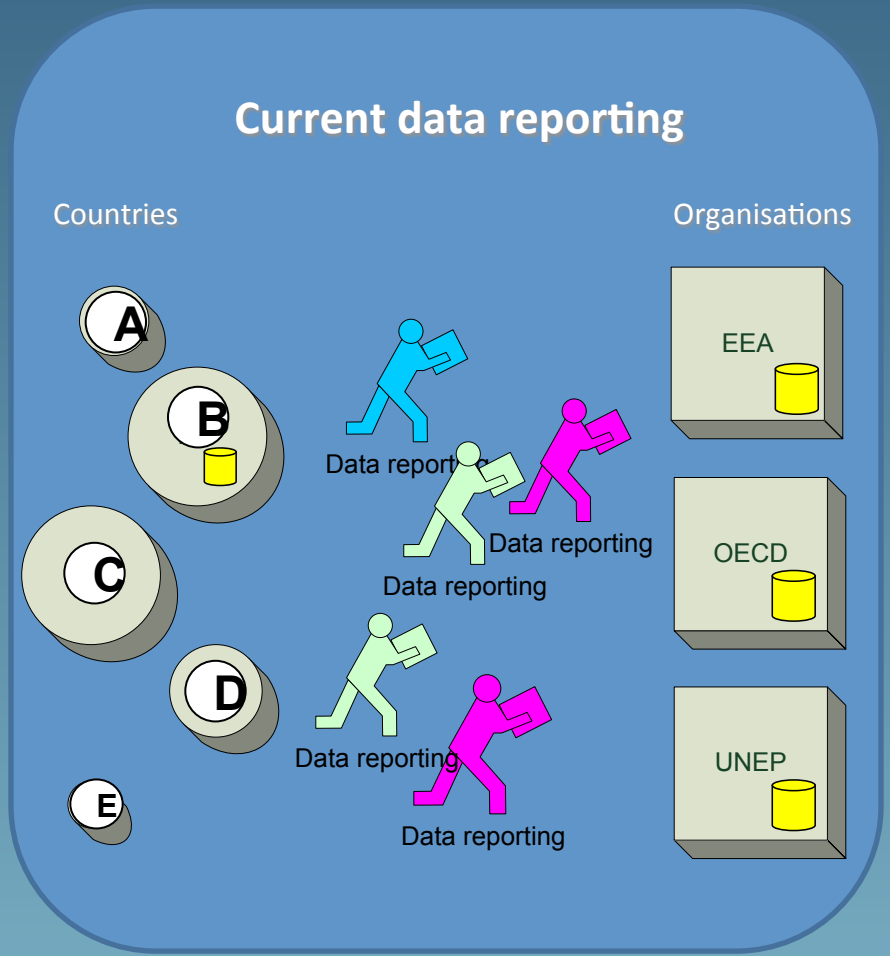
Improved accounting is essential for wise management — “What you don’t measure you can’t manage”

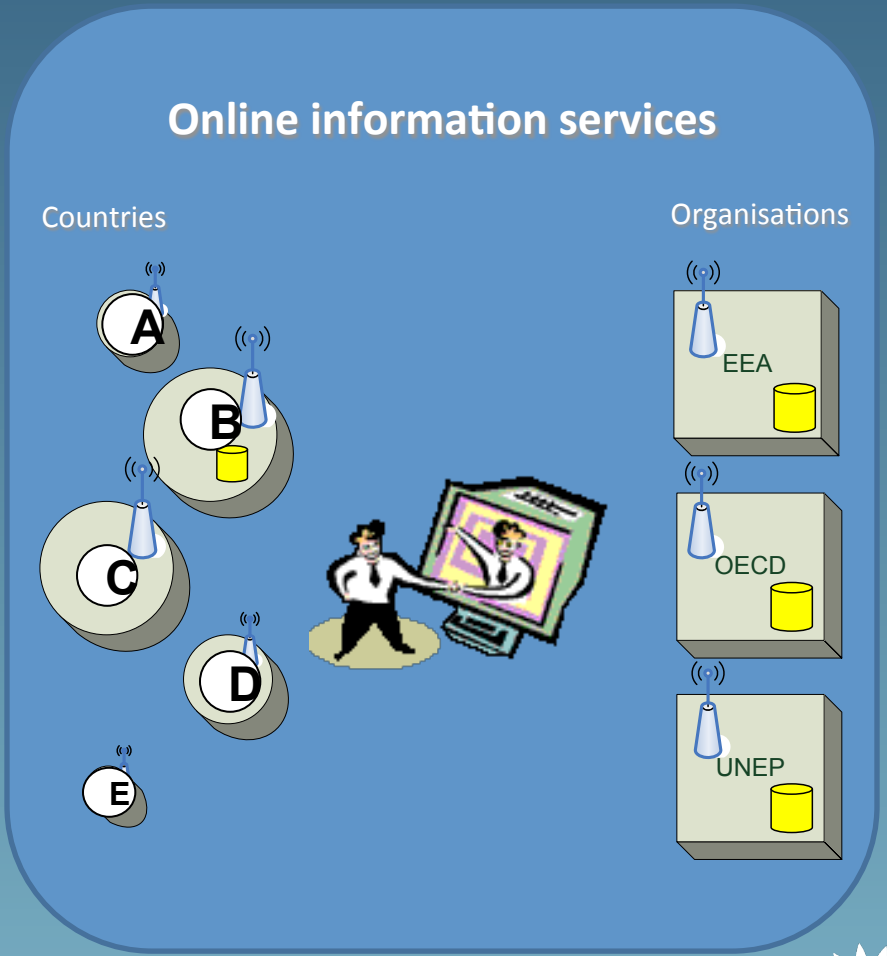
Tools for improving decision making & response

- Operational monitoring and observation
- Scientific observations and research findings
- Community based monitoring/citizens science/Lay, local and traditional knowledge
- Better use & integration of remote sensing
- Improved systems for sharing of data and information (SEIS)
- Indicators, trends, outlooks/scenarios, forward looking studies
- Assessments (incl. AoA, AC-ACA), risk assessments/management
- Adaptation & mitigation strategies (national/regional).
- Resilience studies – identifying potential tipping points and understanding global feedback systems
- Identification of new/emerging areas or linkages of importance
- Coordination of Arctic observation/research efforts (SAON) + global
- International Polar Decade (AC/WMO initiative)

European Environment Agency

From reporting to online information services





European Environment Agency

Implementing SEIS Principles

Information should be

- managed as **close** as possible to its source;
- collected **once**, and shared with others for many purposes;
- readily **available** and easy **accessible**
- accessible to enable users to make **comparisons** at the appropriate geographical scale
- fully available to the general **public** at national level in the relevant **national language(s)**
- supported through common, free **open** software standards

Global Data Sharing Principles - GEOSS

European Environment Agency

Information/understanding a prerequisite for appropriate response to Arctic environmental change

Assessments and outlooks are needed to address the effects of the Arctic change on society (health), environment (biodiversity or land use change) and economy (jobs). This includes the response of current actions and inactions, although some effects have decadal timescale.

There is a need to explain and quantify the value of the ecosystem services that the Arctic provides (beyond GDP). By better understanding the service to society more appropriate responses can be identified.

Decision makers need to better understand the regional and global consequences of a changing Arctic. The positive feedback systems, system change/collapse and global implications or effects must be explained better. Strategic Impact Assessments and 'footprint' reports are called for.

Arctic states cannot respond in isolation as many global megatrends (climate change, population growth, resource demand) require a response from non-arctic states.

Although down-toned by Arctic states, security implications (from climate change or access to resources) need to be addressed.

Continued

Responses will only be successful with proper ‘maps’ (provided by science/ research) and vision (provided by policy makers). If not thought through, responses can have negative unintended effects and consequences (climate change –> biofuels –> food shortage)

Integrated responses required. Acknowledge that responses to change are likely to create ‘winners’ and ‘losers’.

Although complex, integrated modelling combining human behaviour, environmental processes and their interactions are needed to access if the responses will lead towards sustainable development. Combined recommendations from the natural science community and social science community to policy makers can provide powerful arguments.

The assessments, outlooks and models must be useful for planners and managers in order to be effective. And devised strategies must periodically be reviewed and updated – they need to respond too!

First steps towards an EU Arctic Policy

EU Arctic Policy Key recent EU documents on the Arctic:

- March 2008: Joint paper by the High Representative and the European Commission on Climate Change and Security
- October 2008: Resolution of the European Parliament
- November 2008: Communication of the European Commission on the European Union and the Arctic Region
- December 2009: Council Conclusions
- January 2010: European Parliament report on the High North
- February 2012: European Commission Arctic Progress report
- Summer 2012: EU Arctic policy (strategy)?

EU Arctic policy & EEA activities

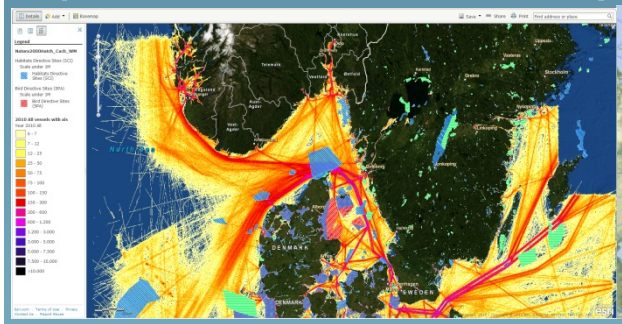
The European Union and the Arctic Region, 3 main objectives:

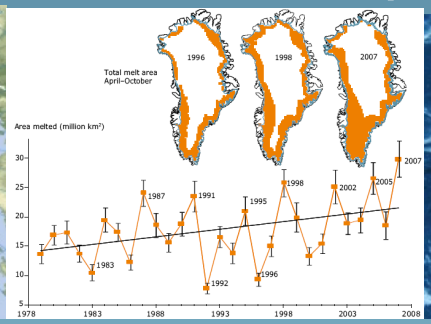
1. Protecting and preserving the Arctic in unison with its people
2. Promoting sustainable use of resources
3. Contributing to enhanced Arctic multilateral governance

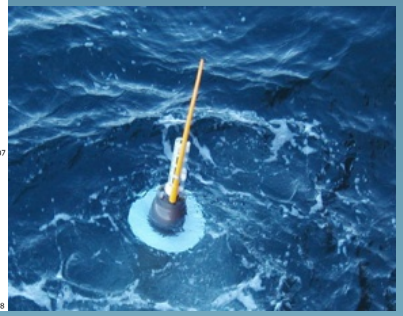
EEA supporting and contributing to environmental monitoring, networking and information systems and discussions on sustainable development.

EEA engaged in process on **ecosystem accounts** to inform on natural capital management

EEA is contributor to The '**Assessment of Assessments**' established by decision of the UN (Regular Assessment Process).

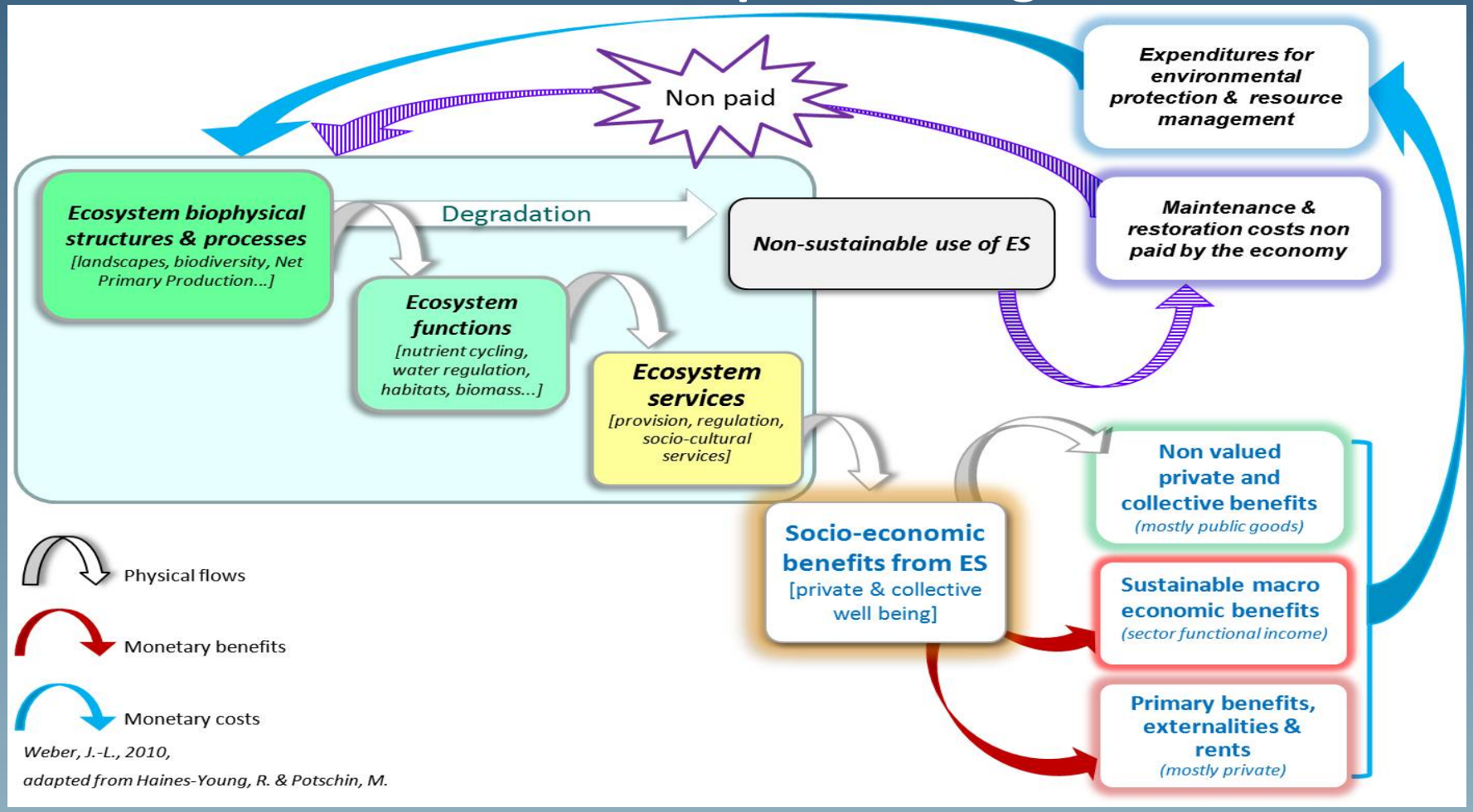






European Environment Agency

EEA methodological approach: ecosystem accounts to inform on natural capital management



Accounts allow for e.g. measurement of key ecosystem structures, functions & services in physical units, and measurement of ecosystem state and degradation

European Environment Agency

Concluding remarks

IPY conference (Montreal 22-27 April) – From knowledge to Action.
Title indicate that it is time for policy makers to act/respond to the environmental (physical/societal) changes observed in the Arctic (not only during IPY). Useful with an input to this process on how to respond – both on governance and adaptation.

Need for better policy oriented recommendations, devised by government officials and researchers jointly. Recommended responses need to be targeted towards specific needs and set in a broad context, avoiding being inconclusive and asking for further funding. A precautionary principle/reponse should be advocated.

Responses need to address emerging issues, identified priorities, gaps or improving risk management and giving better/robust outlooks/scenarios for policy makers to respond to (quantify uncertainties). All while maintaining and improving the use of resources on operational monitoring, harvesting LLTK/CBM and streamlining the open sharing of data & information.

The responses to Arctic environmental change need to work towards **sustainable development**. With 8 developed states the major players in the Arctic, this is the 'showcase' for sustainable development. If is not possible here it is unlikely to succeed elsewhere!

The responses needed require international cooperation/engagement, including setting a science/research agenda for the Arctic.


Doing it with the local & indigenous people – not for the people!

Thank you

European Environment Agency