



Space and the Arctic



December 2008

“the European Union and the Arctic”

- first layer of Arctic policy
 - protecting and preserving the Arctic in unison with its population
 - environment and climate change
 - support to indigenous people and their population
 - research, monitoring and assessments
 - promoting sustainable use of resources
 - hydrocarbons
 - fisheries
 - transport
 - tourism
 - contributing to enhanced Arctic multilateral governance

December 2009 Council Conclusions

- EU policy on Arctic issues should be based on:
 - adequate measures to mitigate climate change
 - reinforced multilateral governance;
 - The United Nations Convention on the Law of the Sea (UNCLOS) and other relevant international instruments;
 - EU actions and policies that respect its unique characteristics,
 - ecosystems
 - Arctic residents, including the indigenous peoples;
 - responsible, sustainable and cautious action in view of new possibilities for transport, natural resource extraction and other entrepreneurial activities linked to melting sea ice and other climate change effects.



EUMETSAT

RYMSTYREISEN

SMHI

esa

→ SPACE AND THE ARCTIC

Building on regional examples

October 2009 Swedish Presidency Event

- The European Commission to consider the needs of the Arctic when assessing the results of the preparatory action on receiving **Automatic Identification Systems** from space.
- The European Commission to ensure that proposals for future operational **GMES** satellites and services, address the special needs of the Arctic (sea ice, icebergs, snow, glaciers, ice sheets and permafrost)
- ESA to review **communication satellites** coverage and determine solutions that can improve the situation following priorities identified with all involved parties.
- ESA and EUMETSAT to review the coverage of **meteorological** missions and to identify the necessary priorities and technical solutions for weather forecast.
- All partners concerned Research and Development efforts, especially addressing issues such as **monitoring of ice features, permafrost, biodiversity etc.**
- Scientists and operational users to continue dialogues in order to accelerate the development of operational **decision support and early warning systems**
- The European Commission, ESA, and Member States to sustain **continuous observations** ensuring long term data records to support climate monitoring. The European Space Agency and EUMETSAT should discuss the possibility of joint programmes with international partners.
- The EU, ESA, EUMETSAT and their Member States as well as other involved parties to support and implement a fully open and “obstacle” **free data access policy** and infrastructure.
- ESA to check the requirements of the **Sustaining Arctic Observing Networks** for measurements from space.
- Industry to establish and adopt common guidelines and best practices to improve safety, security and manage the environmental impact of their activities in the Arctic by making further use of satellite-based geo-information products to monitor operations in the fields of oil & gas, shipping and tourism



European
Commission
Maritime Affairs
and Fisheries



Tentative conclusions

- Measurements of ice-extent, useful for supporting human activities and monitoring climate change, is assured through the GMES Sentinel programme.
- Medium data rate communications will be assured through largely non-European systems – Iridium or Gomets
- The planned Canadian PCW constellation could meet European requirements for meteorology.
- Because of the low traffic density in the Arctic, effective monitoring of vessel traffic will be assured by present or planned commercially operated satellites carrying AIS receivers.

these conclusions still require reviewing



Gaps

- The main satellite for measuring ice thickness – Cryosat – is an experimental research satellite. No successor is planned. Ice thickness is not only a highly important parameter for monitoring climate variation but is also important in ensuring safe working conditions.
- High bandwidth communications will not be available without further action. Collaboration with Russian or Canadian programmes might be considered.
- High reliability navigation through the European Geostationary Navigation Overlay Service (EGNOS) is not possible in the Arctic because of the inability of geostationary satellites to reach above 70°N.

these conclusions still require reviewing



cost of observation

	total cost	years	annual cost	Arctic use	Arctic cost
Envisat	€2300M	5	€460M	30%	€138M
Cryosat	€140M	3	€47M	70%	€33M
Sentinel	€2700M	10	€270M	10%	€27M

Northeast passage



- Should EU policy prepare for this route?
 - shorter distance to Asia
 - security of supply



2011 milestones



- proposal for Regulation on GMES
- Communication on Space Policy
- Progress Report on the Arctic (June)

comments and contributions welcome

