SPACE AND THE ARCTIC

Workshop Stockholm, 20 – 21 Oct. 2009
sponsored by the EC, ESA and EUMETSAT

Dr. Tillmann Mohr

Day 1, Monday
19 October 2009

18.00 - 21.00
Ice breaker reception
Steamer in Stockholm archipelago

Day 2, Tuesday
20 October 2009

08.00 - 09.30
REGISTRATION at WTC

09.30 - 12.30
Plenary Session I -
Chair: Reinhard Priebe, EC/DG-MARE
Moderator: Göran Boberg, SNSB
WTC: Room New York

09.30 - 10.00
Opening of the Workshop - Olle Norberg, Director General, Swedish National Space Board
Introduction and aim of Workshop - Reinhard Priebe, Director responsible for the Arctic, EC/DG-MARE

10.00 – 10.30
Environmental challenges in the Arctic - Nicolaj Bock, EEA

10.30 – 11.00
Arctic marine transport and space - Lawson Brigham, University of Alaska Fairbanks, USA

11.00 – 11.40
Coffee Break

11.40 – 12.00
Space today and possibilities for the future
Volker Liebig, Director of ESA EO Programme

12.00 – 12.20
Observations of the Arctic: EUMETSAT's Contribution to Current and Future Programmes
Ernst Koenemann, Director of EUMETSAT Programme Development

12.20 – 12.30
Discussion

14.00-17.40 Thematic Session: Climate Change and the Arctic Room New York Chair & Rapporteur: **Tillman Mohr, Hugo de Groof**	14.00-17.40 Thematic Session: Transport & Security Room Manhattan Chair & Rapporteur: **Thomas Fagö, Bertil Håkansson**	14.00-17.40 Thematic Session: Sustainable Exploitation Room Paris Chair & Rapporteur: **Iain Shepherd, Ola Gråbak**
14.00–14.20 Sea surface temperature measurements over the Arctic based on Metop data Pierre Le Borgne, Meteo France, France Steinar Eastwood, met.no, Norway	**14.00–14.20** Satellite reception of AIS signals from vessels in the Arctic, Ghislain Ruy, Luxspace, Luxemburg	**14.00–14.20** Inuit society using Earth Observation based services Tom Hirose, Noetix, Canada
14.20–14.40 The International Polar Year - The contribution by Space Agencies and expected observational legacies Tillmann Mohr, Special Advisor to WMO, former EUMETSAT Director-General	**14.20–14.40** Transports in the Baltic Sea and needs for Northern sea routes Ulf Gullne, Swedish Maritime Agency, Sweden	**14.20–14.40** Reindeer husbandry and forestry – conflict mitigation in northern Sweden Karin Baer, Vilhelmina North Sami Community / Leif Jougda, Swedish Forest Agency , Sweden
14.40–15.00 Monitoring the cryosphere from space: research and operationalisation Ian Brown, Stockholm University, Sweden	**14.40–15.00** On oil spill service, CleanSeaNet Gunnar Pedersen, KSAT, Norway	**14.40–15.00** EO based services for climate change adaptation, Thomas Puestow Polar View, C-CORE
15.00–15.20 Circumpolar permafrost monitoring, Annett Bartsch, Vienna University of Technology, Austria	**15.00-15.20** SeaTrack Web - the Oil spill information system and extention to the Arctic, Cecilia Ambjörn, Swedish Meteorological and Hydrological Institute, Sweden	**15.00–15.20** Hydrological predictions for the Arctic environment, the needs of satellite data Berit Arheimer, Swedish Meteorological and Hydrological Institute, Sweden

15.40–16.00 Sustaining Arctic Observing Networks Volker Rachold, Executive Secretary, International Arctic Science Committee (IASC)	**15.40–16.00** Challenges to ice monitoring around Greeland Leif Toudal Pedersen, Danish Meteorological Institute, Denmark	**15.40–16.00** Russian space infrastructure applied to the Arctic Vasily Smolyanitsky Arctic and Antarctic Reasearch Institute & JCOMM, Russia
16.00–16.20 Recent accelerating changes in the sub Arctic environment and ecosystems Terry Callahan, Abisko Scientific Research Station, The Royal Swedish Academy of Sciences, Sweden	**16.00–16.20** European Ice Service Helge Tangen, European Ice Service, Met.no, Norway	**16.00–16.20** On Galileo for the Arctic Frank Udnaes, EC/DG Energy & Transport
16.20-16.40 Regional Modelling of Arctic climate in recent and possible future climates Ralf Döscher, Swedish Meteorological and Hydrological Institute/Rossby Centre, Sweden	**16.20–16.40** Navigating in Iceberg infested waters Scott Rogerson, International Ice patrol	**16.20–16.40** Serving the Arctic: Polar Communications and Weather (PCW) Mission Guennadi Kroupnik, PCW Mission Manager, CSA

16.40-17.00 ICESat's observations of Arctic sea ice freeboard/thickness and NASA's plans for ICESat-2, Jay Zwally, ICESat Project Scientist NASA Goddard SFC, USA	**16.40-17.00** The role of satellite technology in Arctic governance Richard Hall, KSAT, Norway	**16.40-17.00** Stockman Oil field, SDAG Edmond Coche, Stockman Development AG
17.00 - 17.20 Sea Ice change and climate IPY and ESA, Henri Laur, Head of ESA Mission management office	**17.00 - 17.20** ESA activities related to satellite communications for high latitude regions Frank Zeppenfeldt, ESA	**17.00 - 17.20** Challenges for fisheries enforcement and safety in the far north Gunnar Pedersen, KSAT, Norway
17.20-17.40 Rapporteur report & Statement Discussions Hugo de Groof, DG-ENV	**17.20-17.40** Rapporteur report & Statement Discussions Bertil Håkansson, SMHI	**17.20-17.40** Rapporteur report & Statement Discussions Ola Gråbak, ESA

Day 3, Wednesday
21 October 2009

09.00-12.00 Plenary Session II
Chair: Reinhard Priebe, EC/DG-MARE
Moderator: Jerome Bequignon, ESA
WTC: Room New York

09.00 – 09.15 Session Reports & Statement - Discussions
Rapporteurs

09.15 – 09.45 EU - Baltic Regional Strategy
Alexander Schenk, Ministry of Finance, Swedish Governmental Offices

09.45 – 10.15 The Potential of GMES in the Arctic
Mikko.Strahlendorff, EC GMES Bureau

10.15 – 10.45 Marine Core Services
Pierre Bahurel, Mecator, Coordinator, MyOcean project

10.45 – 11.15
Coffee Break

11.15 – 11.45 Progress since the Arctic Communication
Reinhard Priebe, EC/DG-MARE

11.45 – 12.00 Statement Conclusion and Workshop closing:
Jerome Bequignon, ESA

Conclusions (1)

1. The advances in Arctic sciences made possible by Earth observations have led to a better understanding of climate change and its consequences to the Arctic environment.

4. Current Earth Observation satellites provide good monitoring of sea-ice concentration and extent as well as the arctic land environment. The GMES Sentinel missions is a means to continue and improve operational sea- ice and iceberg monitoring and as input to essential climate variables. ESA polar orbiting satellites ERS-1 and 2 and Envisat, replaced and complemented by the planned Sentinel missions, will ensure continuity of observations.

Conclusions (2)

5. Meteorological satellites in geo-stationary orbits lack coverage in the far North. This not only restricts the accuracy of weather forecasts in the region but also limits information on climate change. Meteorological satellites in polar-orbit for monitoring the Polar Regions such as EUMETSAT Polar Satellite Programme including the Satellite Application Facilities, will contribute to an increased coverage of the Arctic.

6. It is essential to continue research and development of new satellite sensors complementary to in-situ observation infrastructure and surveys. By monitoring precise changes in the thickness of the polar ice caps and floating sea-ice the upcoming Cryosat-2 mission can answer essential questions on the changing Arctic environment. Enhanced sea-ice thickness measurements are also a key to effective and safe ice navigation in the future.

11. International partners are already planning special-purpose missions for Arctic communication and observation. Any European capability should complement and not duplicate these efforts.

Recommendations

b. 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)

d. ESA and EUMETSAT to review the coverage of meteorological missions and to identify the necessary priorities and technical solutions for weather forecast.

g. 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.

h. 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.

i. ESA to check the requirements of the Sustaining Arctic Observing Networks (SAON) for measurements from space.