

The MORSE Program



*9th Meeting of the
International Ice Charting Working Group
October 20-24, 2008 Luleå, Sweden*

SMHI

What Does 'MORSE' Stand For?

- **Morse is French for 'walrus' which is symbolic of the focus and the objectives of the program.**

- Walrus live in shallow water (i.e. coastal areas) on/near ice floes and their habitat encompasses the entire circumpolar basin.
- Walrus are experiencing significant pressures due to the changing Northern environment.
- Current sea ice trends may force them to stay on the coastlines during summer.



- **By analogy, the MORSE initiative is:**

Focused on understanding the information needs of Arctic coastal users and how Earth Observation in particular can contribute to improved monitoring and management of the Arctic coastal zone.



MORSE - Arctic Coastal Initiative



Introduction/Background

- Arctic coastal areas are a unique and important part of the Earth system from a historical, environmental, social, economical and political perspective.
- Environmental concerns and considerations over sovereignty as well as safety and security have sparked and renewed interest in the Arctic at local, national and international levels.
- Given the importance of the Arctic coastal zone to human endeavour and the sensitivity and susceptibility of the entire Arctic to global climate change, it is imperative to monitor, observe and understand the processes affecting these vast and thinly populated areas.

Earth Observation satellites can provide a cost effective means of obtaining information in the vast, barren and often inaccessible Arctic areas and their coastal zones.



MORSE - Arctic Coastal Initiative



Focus

- The MORSE Initiative focuses on the information needs of Arctic coastal users in government, non-governmental, municipal, industrial and scientific organizations.
 - ‘User Pull’ approach
 - Must fit within existing mandate of stakeholders
 - Multi-level effort converging towards common objectives
- Emphasis is on those needs that can be satisfied, in whole or in part, by Earth Observation (EO) data from satellites.
- Jointly managed by the Canadian Space Agency (CSA) and European Space Agency (ESA).



MORSE - Arctic Coastal Initiative



Targeted End-user Partners

- National Departments of Environment and Meteorology
- National Ice Services
- First Nations
- National Departments of Fisheries and Oceans
- National Departments of National Defence
- National Geological Surveys
- Government Research Institutions involved in Arctic and Polar research
- National Departments of Natural Resources
- National Departments of Transport
- Universities
- National and international Arctic research and knowledge networks
- Industry (e.g. Oil & Gas, EO service providers, transportation, etc.)
- Provincial, territorial and local governments and northern communities
- Non-governmental organizations



MORSE - Arctic Coastal Initiative



Scope

- MORSE will foster the assessment, development, and exploitation of the broad spectrum of capabilities offered by existing CSA, ESA and ESA 3rd party satellite missions and will:
 - Open a dialogue with End-Users to understand their needs and requirements
 - Demonstrate how space based measurements can contribute to and support Arctic coastal issues and activities through new and innovative EO applications
 - Provide institutions and companies access to new EO products and services
 - Foster the development of Canadian and European EO expertise that is directly linked to and in support of climate change, environmental security, economic development, sovereignty, and the people in the Arctic.



MORSE - Arctic Coastal Initiative



MORSE Arctic Coastal Themes

- 1. Mapping, Characterization and Changes with Time of Arctic Coastal Areas**
 - Cartographic information
 - Characterization and physical changes due to coastal processes and dynamics
- 2. Environmental Monitoring of Land, Water and Air in Arctic Coastal Areas**
 - Environmental monitoring of coastal transition zone
 - Includes physical, chemical and biological issues to detect trends and short-term changes
- 3. Sustainable Economic Development of Natural Resources in Arctic Coastal Areas**
 - Mapping and monitoring to support economic activities including the exploitation of natural resources and also transportation, by land, water and air
- 4. Safety and Emergency Response in Arctic Coastal Areas**
 - Monitoring to improve safety in the coast zone and to support emergency response to both natural and man-made conditions
- 5. Security and Sovereignty in Arctic Coastal Areas**
 - Monitoring to support the protection of humans, wildlife and property and the terms of the United Nations Convention on the Law of the Sea (UNCLOS)



MORSE - Arctic Coastal Initiative



Implementation (1)

- **MORSE will be conducted and managed by:**
 - ESA Data User Element (DUE) program, and
 - CSA Earth Observation Applications and Utilization (EOAU) User Niche Program.
- **Multi-year funding starting in 2009 under the respective frameworks and programs.**
 - In Canada, sources of financial support include the Canadian Space Agency Government Related Initiatives Program (GRIP), EOADP and the Grants & Contributions funds (see www.space.gc.ca)
 - ESA funding will be provided under the DUE and the EO Innovator programs (see dup.esrin.esa.it).



MORSE - Arctic Coastal Initiative



Implementation (2)

1. Identification of End-User Communities
2. End-User Consultation and Definition of their Information Needs
3. Development of Partnerships with End-User Organizations
4. Development of Products and Services, and Demonstrations towards Operationalization
5. Outreach and Sharing of Results



MORSE - Arctic Coastal Initiative



EO Data Availability & Sharing

- Earth observation (EO) data required for the implementation of the projects will be made available by CSA and ESA.
- The data available includes:
 - Canadian: RADARSAT-1 and RADARSAT-2
 - European: Envisat, ERS-1 & -2, Metop, Meteosat, SMOs
 - ESA 3rd Party Missions: e.g. ALOS, SPOT, etc.
- Data distribution will comply with the relevant mission data policies.



MORSE - Arctic Coastal Initiative



MORSE User Consultation Workshop

- St. John's, NL November 12-13, 2008
- Keynote Presentations
 - Dr. Rob Heubert, Centre for Military and Strategic Studies, U of Calgary
 - Thomas Puestow, C-CORE, Polar View
- Five (5) Thematic Sessions
 - 5-6 presentations
 - Open forum discussion
- Concurrent poster displays
- Concluding Discussion Session
 - Key findings
 - Prioritize User Needs
 - Map out high priority information needs and products/services



MORSE - Arctic Coastal Initiative



Post-Workshop

- CSA and ESA parallel Requests for Proposals (RFPs) and Invitations to Tender (ITTs), respectively
- Multi-year funding will be available to support these developments.
 - CSA, ESA, and ESA 3rd party data will be made available at no cost to the project teams.
- Goals →
 - Develop and demonstrate products and services that satisfy the Canadian and European End-User requirements and that will later fulfill those requirements operationally.
- The MORSE reporting framework will focus on joint CSA/ESA outreach activities and sharing of information and results.
- The activities under each agency will be pooled and coordinated in order to provide a harmonized reporting on Canadian and European contributions, results, and achievements.



MORSE - Arctic Coastal Initiative



For More Information...

<http://www.morsearctic.net/index.php>



Canada
Canadian Space Agency / Agence spatiale canadienne



esa



MORSE - Arctic Coastal Initiative

