National Ice Center
Operations Technical Advisor
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Advancement of Operational Products and Scientific
Research Opportunities Through International Partnerships

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National Ice Center

- **Mission**: provide the highest quality timely, accurate, and relevant snow and ice products and services to meet the strategic, operational, and tactical requirements of U.S. national interests across a global AOR.

**Tri-agency Organization**

- US Navy
- NOAA
- US Coast Guard

**International Partnerships/Collaborations**

- International Arctic Buoy Programme (IABP)
- International Ice Charting Working Group (IICWG)
- JCOMM Expert Team on Sea Ice (ETSI)
- North American Ice Service (NAIS)
  - Canadian Ice Service (CIS)
  - USCG International Ice Patrol (IIP)
North American Ice Service

“Transform individual organizational strengths into a unified source of information”

- Capitalize on regional expertise
- Share resources
- Share technology
- Share science
North American Ice Service

- Capitalize on regional expertise
  - Collaborate on ice analysis and forecasts
  - Jointly support operations in Great Lakes, Beaufort Sea, Canadian Arch, and Baffin Bay
  - Provide tactical support in support of UNCLOS in waters north of Alaska
  - Improve/revise products in response to changing customer need
  - Provide expert input to international committees on sea ice coding and terminology
  - Standardize training to ensure harmonization of analysis and products
Share resources

- Share ALOS imagery
- Share SAR imagery (in accordance w/ licensing agreements)
- Share chart production – virtually increases manpower
- Exchange ice drift models
- Collaborate on sea ice coding and terminology issues for harmonization issues, reducing redundancy of effort
- Collaborate on developing training materials to standardize training of analysts
North American Ice Service

- Share technology
  - Ingestion software for RADARSAT 2
  - Host and maintain NAIS Website
  - Develop Common Production System – POLARIS
  - Share expertise of personnel:
    - ESRI Contractors
    - Programmers
    - Scrum Master
  - Provide FTP for imagery
  - Develop and implement contingency plans
North American Ice Service

- Share science
  - Validation of Polar Ice Prediction System
  - Great Lakes modeling initiative – NIC ice edge initializes
  - Use of NIC concentration products to initialize models
  - Use of new imagery resources in operational setting
  - Interactive Multi-Sensor Snow and Ice Mapping System
  - Seasonal ice buoy and open ocean drifting buoys
  - International Polar Year

USCGC HEALY conducts operations in the Arctic

New L-band SAR Data Improves Ridge Detection

R1 Copyright MDA PALSAR
North American Ice Service

**Impediments.....**

- Intellectual property rights
- Projection differences
- Technology differences
- Presentation of data
- Scientific content
- User acceptance
- Remote locations
- Center specific practices
- Language/Cultural barriers
- “Buy-In” from involved persons

**Solutions.....**

- Management conviction
- Realization of increasingly global environment
- Changes in Arctic ice extent
- Concept of stretching resources through international partnerships
- Education/Training
- Interest in sharing expertise
- Regular telecon, face to face meetings in order to keep things moving....

“What seemed pretty straight forward at the beginning became rather complex as we progressed.....”

MF Gauthier
Chief of Forecast Operations
Canadian Ice Service/NAIS
Future

- Provide high quality operational data for safety of navigation
- Advance harmonization to more areas
- Keep products relevant
- Electronic Navigation Charts
- Broaden the collection of sea ice data to support Polar Science
- More complex and detailed ice information
- Transition emerging science and technology into operations
- Validated forecast methods for Arctic sea ice
- Increased support to Arctic Science missions
- Strengthen and expand current ties with international research community
In Conclusion:

The ice services have realized that the issue is too big to handle individually.

The National Ice Center and ice services around the world, have maintained active, ongoing relationships in order to standardize sea ice analysis in order to provide the ”data” needed to improve scientific research and modeling efforts.

Feedback from users of the data needed in order to ‘pinpoint” exact parameters that would be of most use in future science community.

Not enough to simply have the data – significance is in the use of data.

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