

ASL Environmental Sciences is an employee-owned science and technology company providing innovative solutions for global environmental challenges since 1977.

ASL has internationally recognized expertise in Remote Sensing, Oceanography, and Acoustic Instrumentation. Our highly qualified scientists, engineers, and analysts have the diverse expertise required to provide a comprehensive understanding of the environment.

We have a long history of research and development in cooperation with the Canadian Space Agency, Governments, Universities, and Industry partners.

Additional consulting services we provide to our clients include:

- Flow Measurement
- Sediment Transport
- Numerical Modeling
- Mooring designs
- Wave Measurement & Analysis
- Fish and Zooplankton Detection
- Design and Manufacturing of Underwater Acoustic Instrumentation



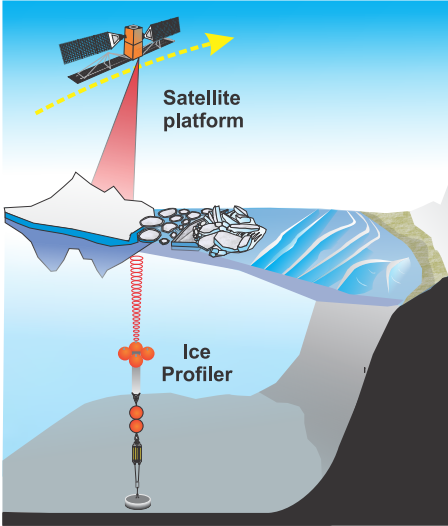
CHOIRS: Characterization of Hazardous Ocean Ice using RADARSAT and ice profiling Sonar

This research project combines two technologies: the “view from above” using RADARSAT-2 satellite imagery and the “view from below” using ASL’s renowned acoustic instrumentation. Together they provide an exciting, comprehensive view of sea ice, and allow validation of information products such as draft and type.

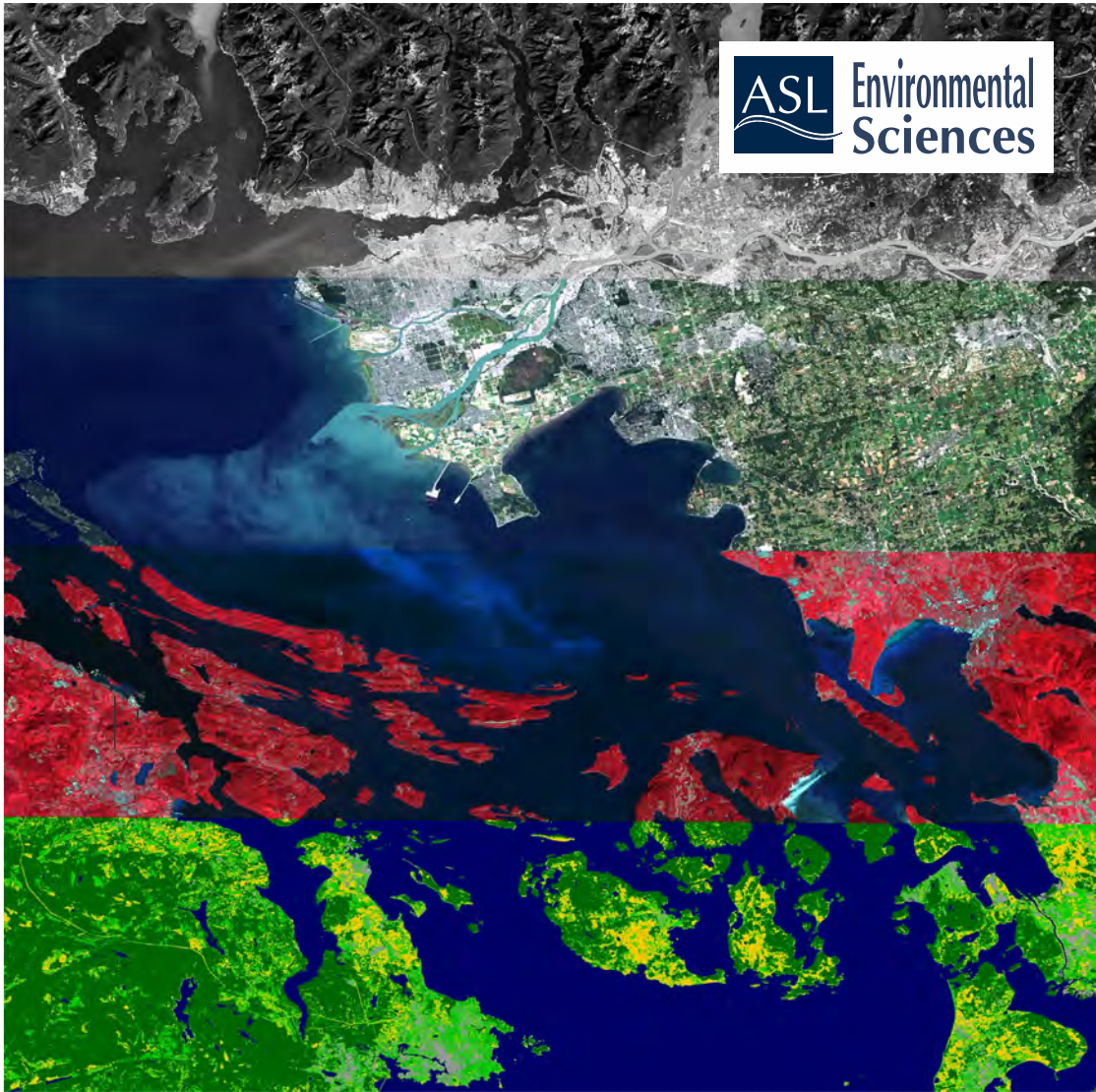
RADARSAT-2 image of sea ice in the Beaufort Sea overlaid with a profile of ice draft from the ASL Ice Profiling Sonar.



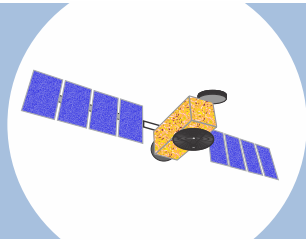
RADARSAT-2 Data and Products © MacDONALD, DETTWILER AND ASSOCIATES LTD. (2011) All Rights Reserved. RADARSAT is an official mark of the Canadian Space Agency



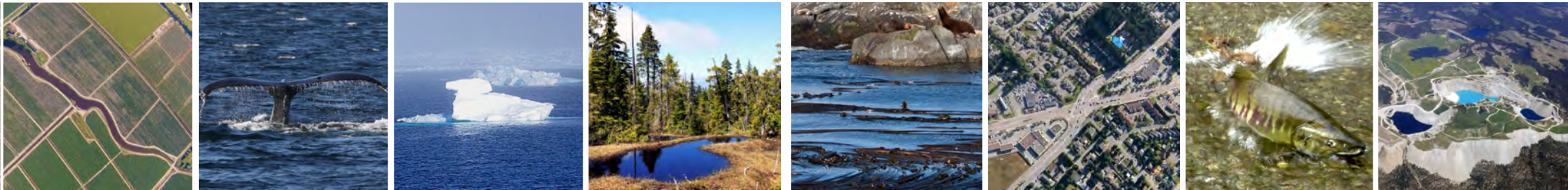
Cover Image: Landsat 8, September 12, 2013 USGS
From Top to Bottom:
Panel 1: Band 8 Panchromatic
Panel 2: Bands 432 (Natural Colour)
Panel 3: Bands 543 (Colour IR)
Panel 4: Unsupervised Classification (5 classes)



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Understanding our
Environment
Applications of Remote Sensing



Providing integrated analysis of the environment through our expertise in Remote Sensing technology

Our Expertise

ASL helps you implement science-based solutions tailored to your mapping and monitoring requirements. With over 35 years of global experience across a wide array of projects, our Remote Sensing scientists are able to build the knowledge base needed to make informed decisions.

Our goal is to enhance the understanding of your environment. We **identify** and **assemble** the relevant data. We **integrate** on-the-ground observations and scientific analysis. We **produce** the practical and accessible information that presents a more comprehensive view of the landscape and ecosystem.

Advantages of Remote Sensing Technology

- Repeatable and consistent coverage on a local-to-global scale
- Provides large area coverage while reaching hard-to-access locations
- Cost effective and timely mapping

Science tailored to your needs

- Extend *in situ* sampling by adding spatial context to traditional data
- Implement advanced data analysis techniques including data fusion and long time-series analysis
- Develop the required project-specific software and algorithms

Mapping what you CAN see

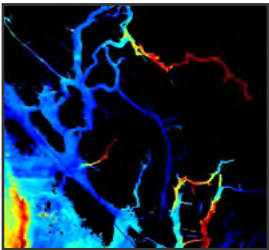
- Human impacts on the landscape
- Plant health and distribution
- Distribution and patterns of features on land and water
- Water colour, currents, and waves

Mapping what you CAN'T see

- Cumulative Impacts
- Trends and rates of change
- Moisture content
- Thermal signatures
- Mineral potential from Short Wave Infrared imagery (SWIR)

Aquatic Environment

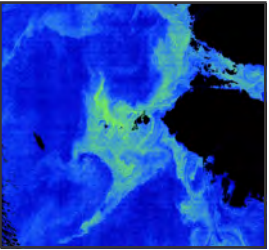
Water Quality



Mapping of:

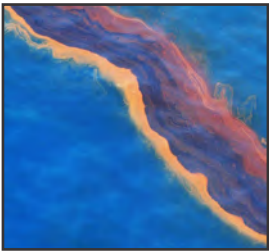
- Chlorophyll and pigments
- Dissolved organics
- Surface suspended sediments
- Surface temperature

Coastal Habitat



- Create maps of near shore and inter-tidal vegetation
- Estimate marine species populations, including mammals, seabirds, and fish
- Examine relationships between chlorophyll, plankton, fish, and seabirds

Oil Spills



- Hazard detection and characterization
- Map distribution and estimate thickness of oil spills
- Assist resource targeting during spill events

Ice



- Multi-sensor characterization of hazardous ice
- Analyze time-series ice data products for:
 - Resource development
 - Infrastructure and shipping safety
 - Environmental assessment

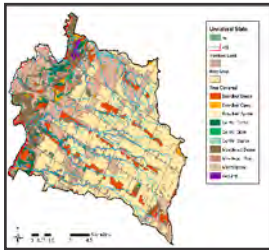
Terrestrial Environment

Land Cover



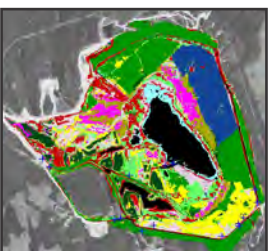
- Identify and map type, abundance, and distribution of land cover
- Detect specific cover types of interest, based on spectral signatures (e.g. lichen)

Land Use



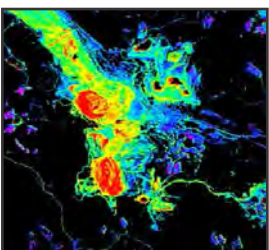
- Create detailed baseline maps at high resolution
- Utilize wide variety of baseline data
- Generate GIS-compatible data products

Reclamation



- Identify complex trends of vegetation change over time
- Help locate and understand areas of variable vegetation growth
- Assess industrial effluent, tailings and coolant outflow

Mineral Potential



- Cover large areas at a lower cost compared to ground-based surveys
- Characterize waste rock or tailings composition
- Locate mineral alterations including:
 - Iron oxides
 - Siliceous rocks
 - Carbonates
 - Sericite
 - Alunite
 - Kaolinite