



Natural Resources  
Canada

Ressources naturelles  
Canada

# Canada

## Seabed Mapping and Research Initiatives – Canadian Perspective



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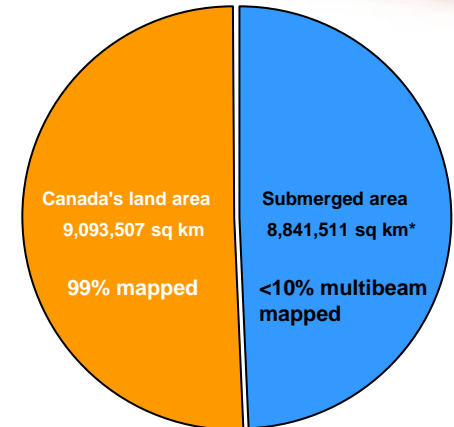
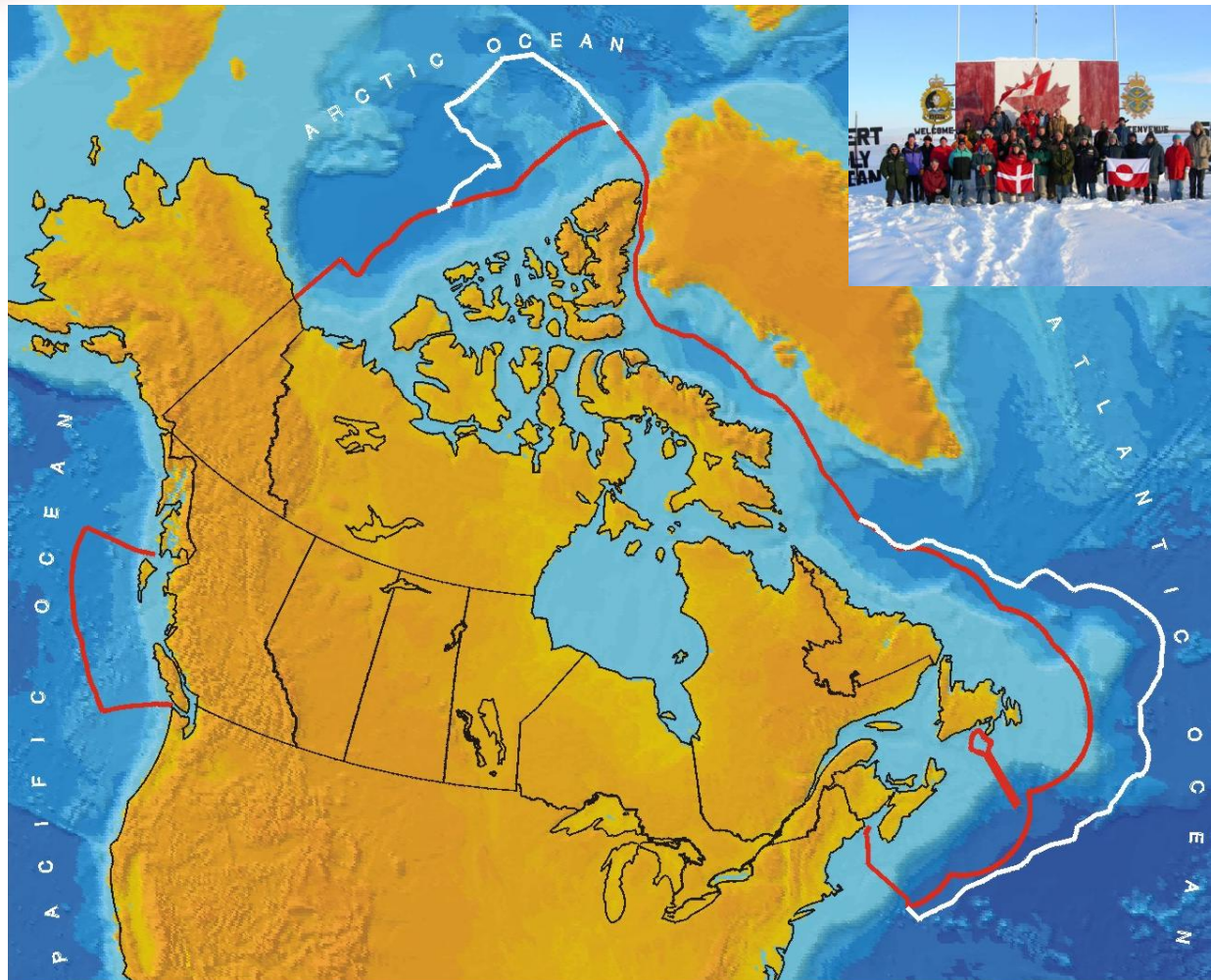


Government  
of Canada

Gouvernement  
du Canada



# Canada's Submerged Lands



At 243,792 kilometres, Canada's shoreline is the longest in the world.



\*Estimate including potential extended EEZ, contiguous zones, internal and territorial waters.





# Mapping of Canada's Submerged Lands



Products	Estimated progress	Roles
Navigational charts	100%	CHS (DFO)
Multibeam mapping	<10%	CHS/NRCan
Geological maps (1:50 000 scale)	<5%	GSC (NRCan)
Benthic habitat maps	<1%	DFO/NRCan

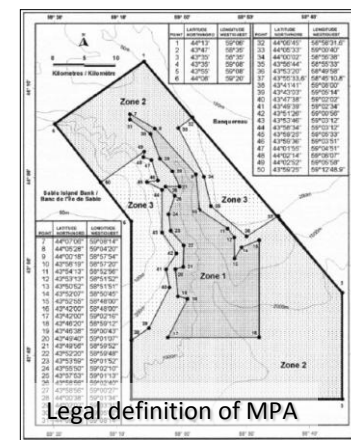
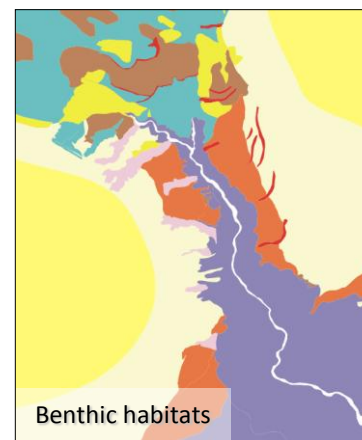
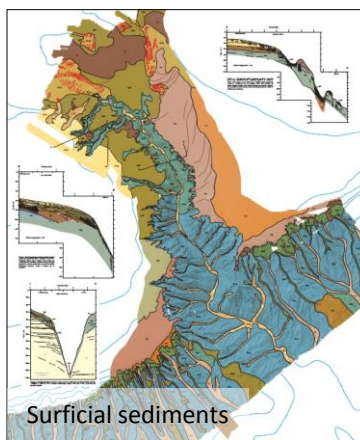
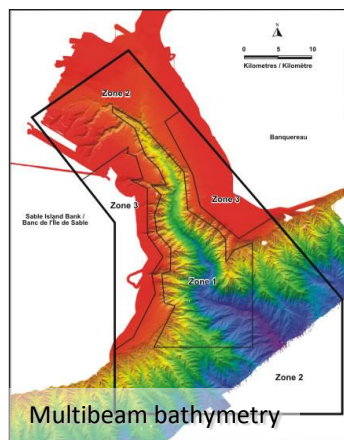
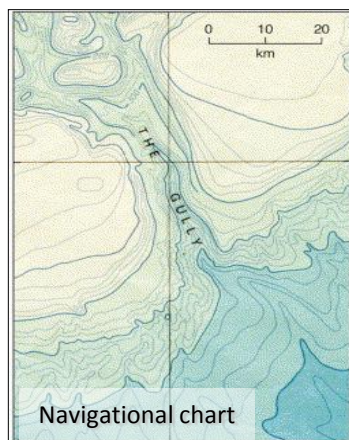


## Partners in Seabed Mapping

**Federal agencies:** NRCan, DFO, DND, CHS, Parks Canada, EC

**Academia:** Arctic Net, Dal, HMRI, MUN, UQAM, UNB, UVIC, UBC

**Private sector:** Oil&Gas, Fishery, SME (co-funding and mapping on spec)



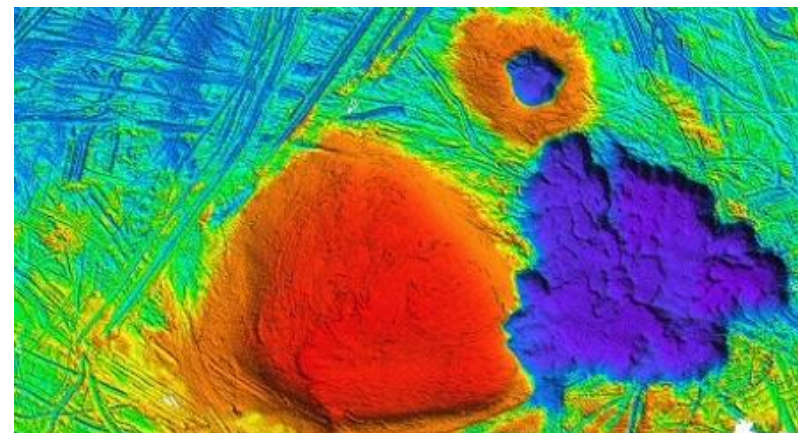
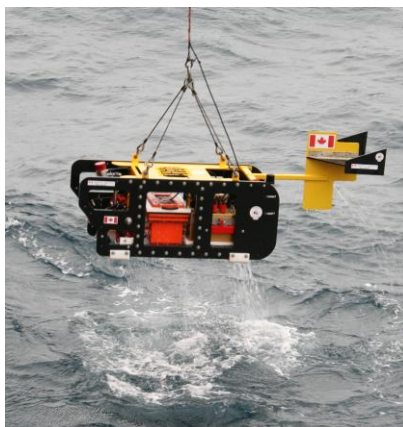
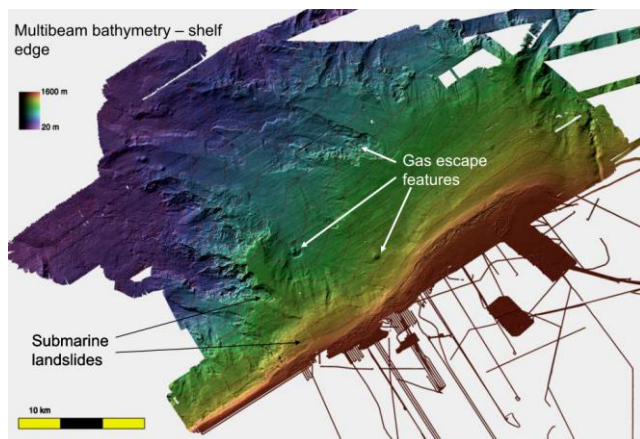
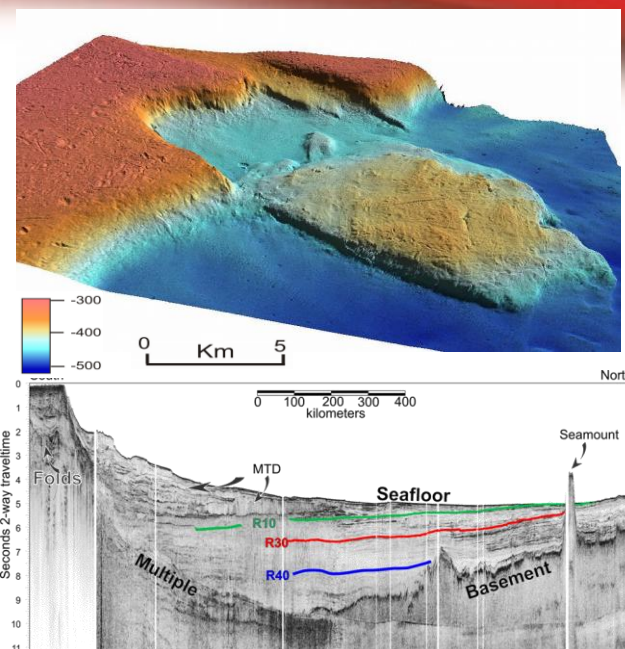


# Marine Research at NRCan/GSC

**Marine Regional Geological Framework:** Offshore bedrock and basins, formation, evolution, hydrocarbon plays, crustal research, tectonic framework, stratigraphy, and continental margins;

**Coastal, shelf and deep water studies:** Quaternary geology (surficial, subbottom, habitat), sedimentology, hazards, marine minerals, geochemistry, and coastal zone

**Marine technology development:** Technology for acoustic, magnetic and optical data acquisition, novel techniques for physical and remote seabed sampling and support of field survey work.

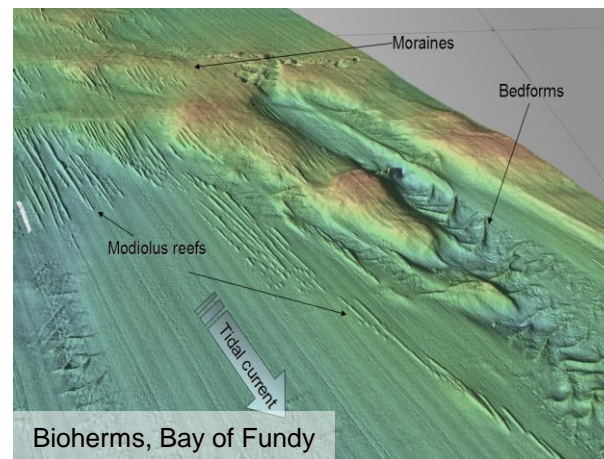
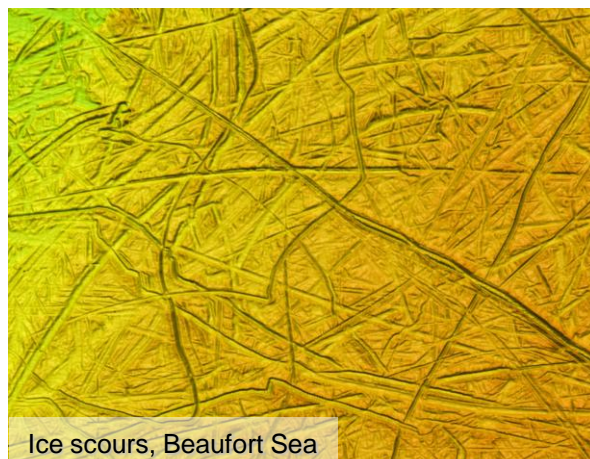
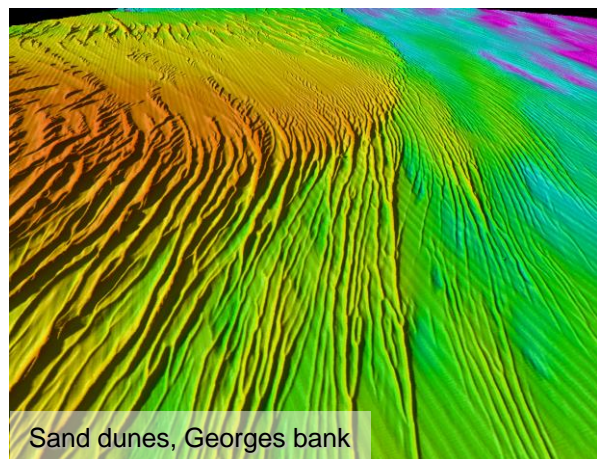
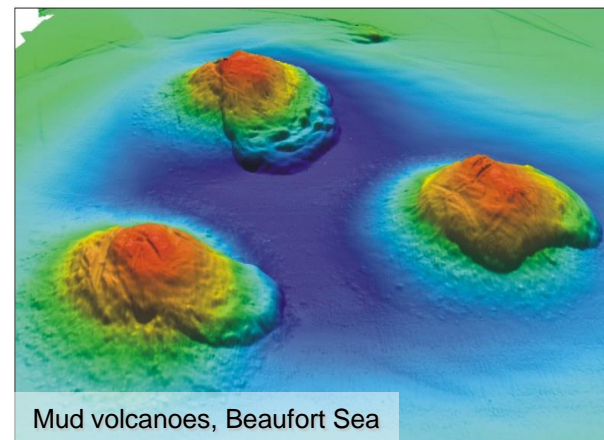






# Seabed Mapping at GSC

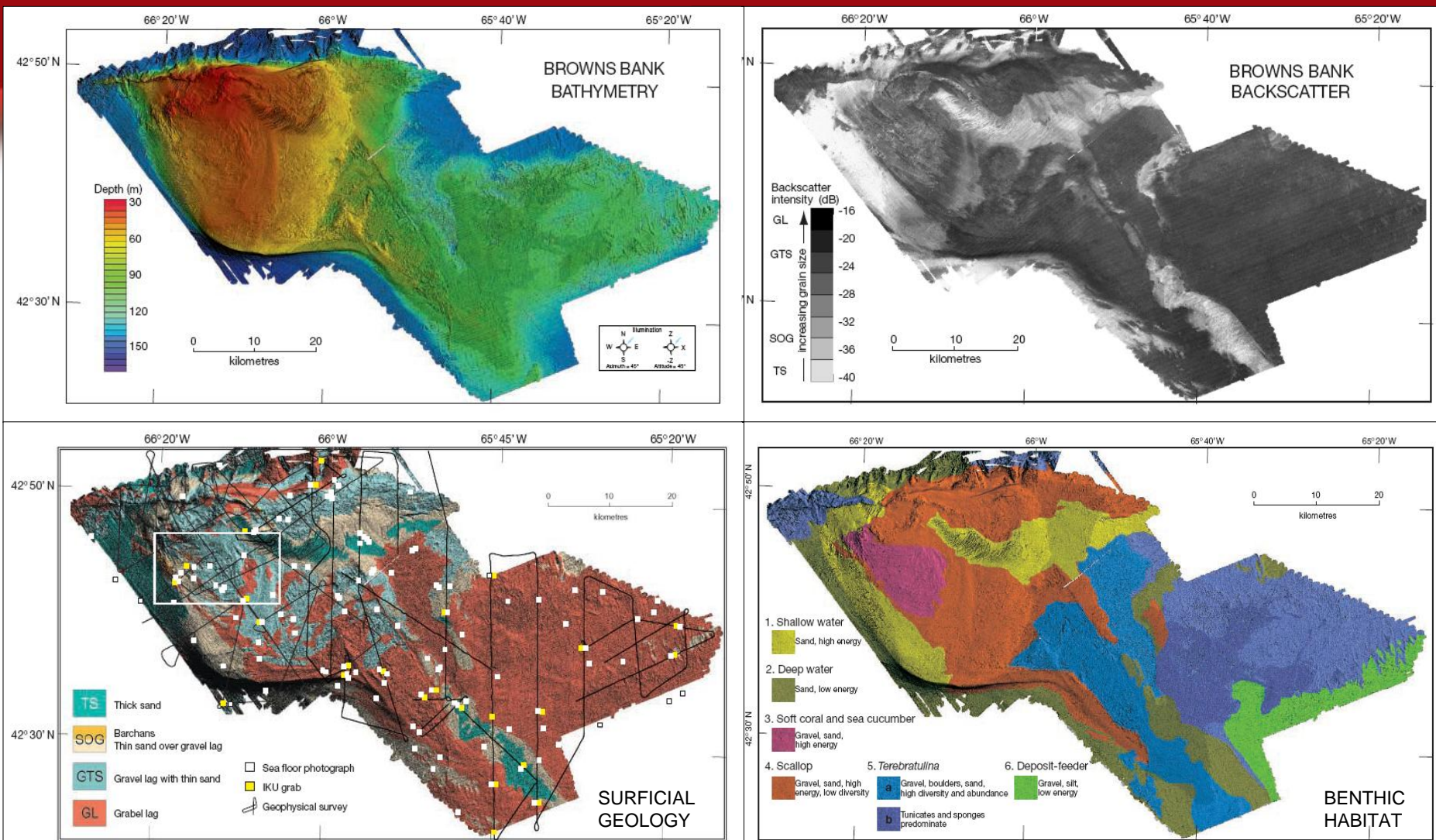
- GSC role since 1842 has been mapping Canada's land mass
- Early adopters of breakthrough multibeam mapping technology
- Pioneered seabed habitat mapping in 1990s
- Established new standards for offshore seabed maps
- Established first new series in 30 years: "A-series maps" in 2005



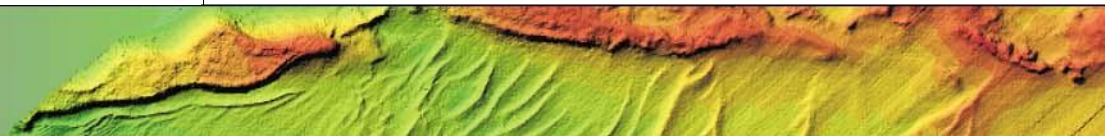




# Four Thematic Map Layers

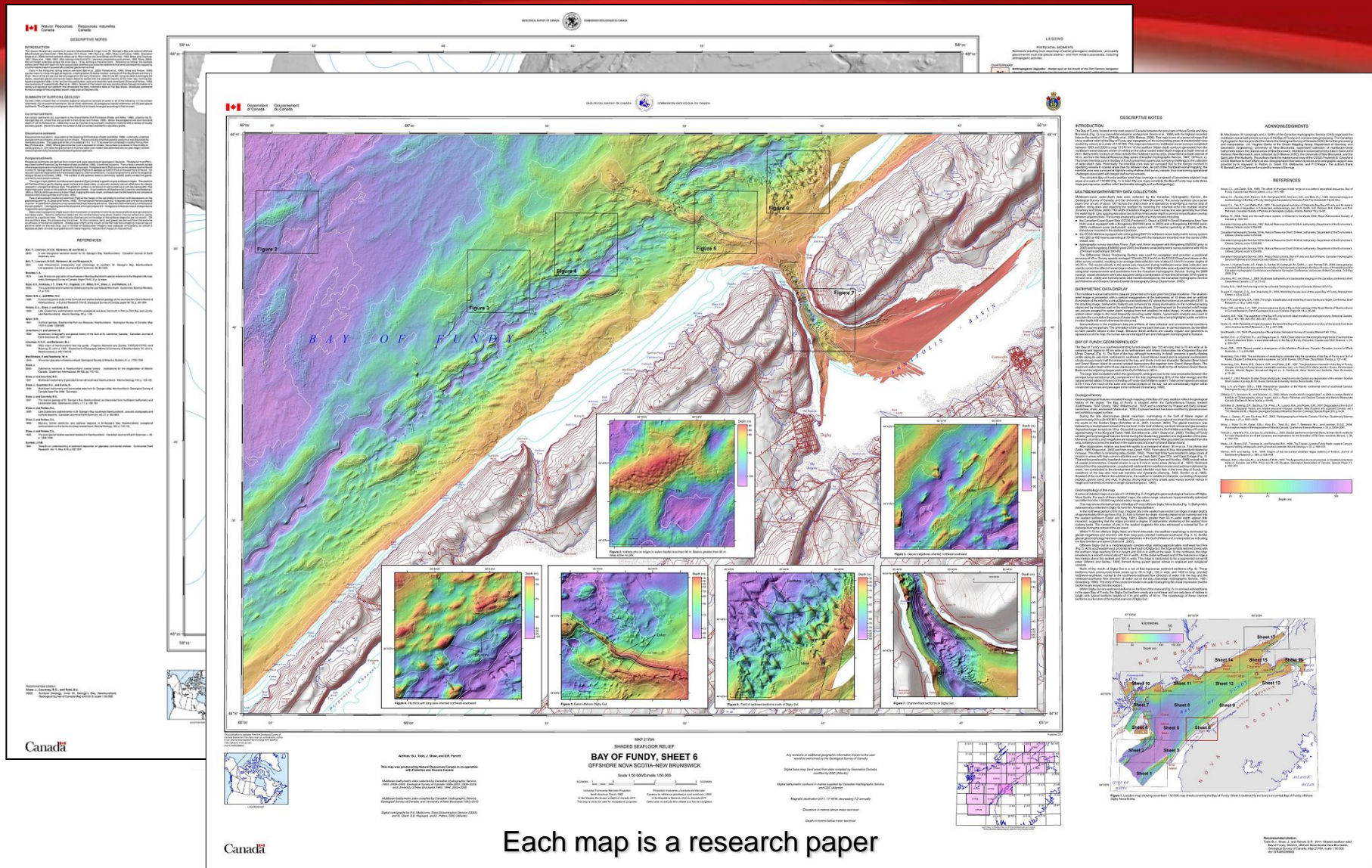


Four map sheets per mapped area: bathymetry, backscatter, geology and benthic habitat





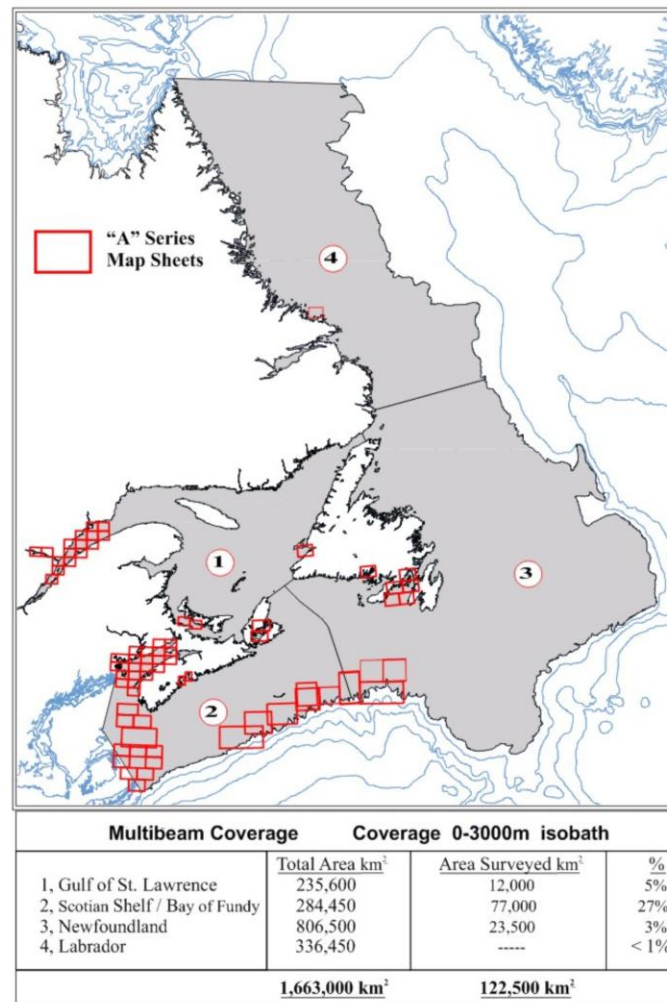
Each map is a research paper





# Challenges

- Large area of Canada's seabed;
- Conditions in the Arctic environment;
- Significant investment in infrastructure required;
- Data volume (collection and storage) requires integration at National level;
- Policy and mandate alignment with other marine research partners/departments is needed;
- Current economic challenges and Federal Budget;
- At the national level seabed mapping is uncoordinated, & lacks a unified long term vision.





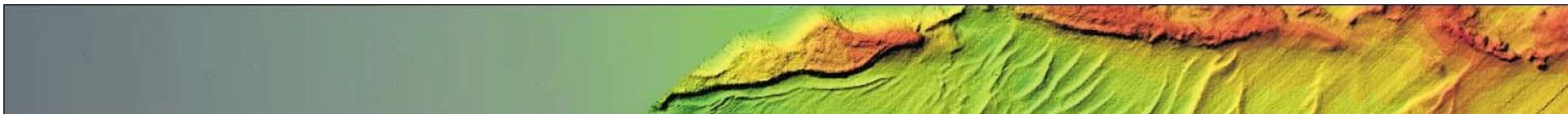


# Draft Proposal: Targeted Integrated Mapping Strategy (TIMS)

**Maximise return on investment in Ocean mapping** by targeting GOC strategic priorities and providing synergy between departments, which will help **streamline ocean governance** process, **safeguard Canada's Ocean assets** and **facilitate economic growth**.

*“One visit – many measurements”* principle

- Adopt a Government of Canada approach to advance long-term strategic objectives and provide better linkage between collaborating departments
- Integrate scientific knowledge, research expertise, and resources across Government departments, academia and private industry
- Deliver Seabed morphology, geology, habitat and natural resources as digital, information-rich maps
- Delay of mapping leads to lost opportunities for Canada and Atlantic/Arctic partners.





# Recommendations for Further Collaboration

1. **Establish a Canada-US-EU Atlantic Seabed Mapping Working Group**
2. **Initiate formal exchange of expertise (e.g. lab visits, cruise participation, work assignments)**
3. **Provide collaboration and training opportunities – students, post docs, junior scientists, workshops**
4. **Act in advisory roles (e.g. national program reviews, policy alignment, publications)**
5. **Develop a collaborative program or a project (thematic/regional).**







# Thank You!



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