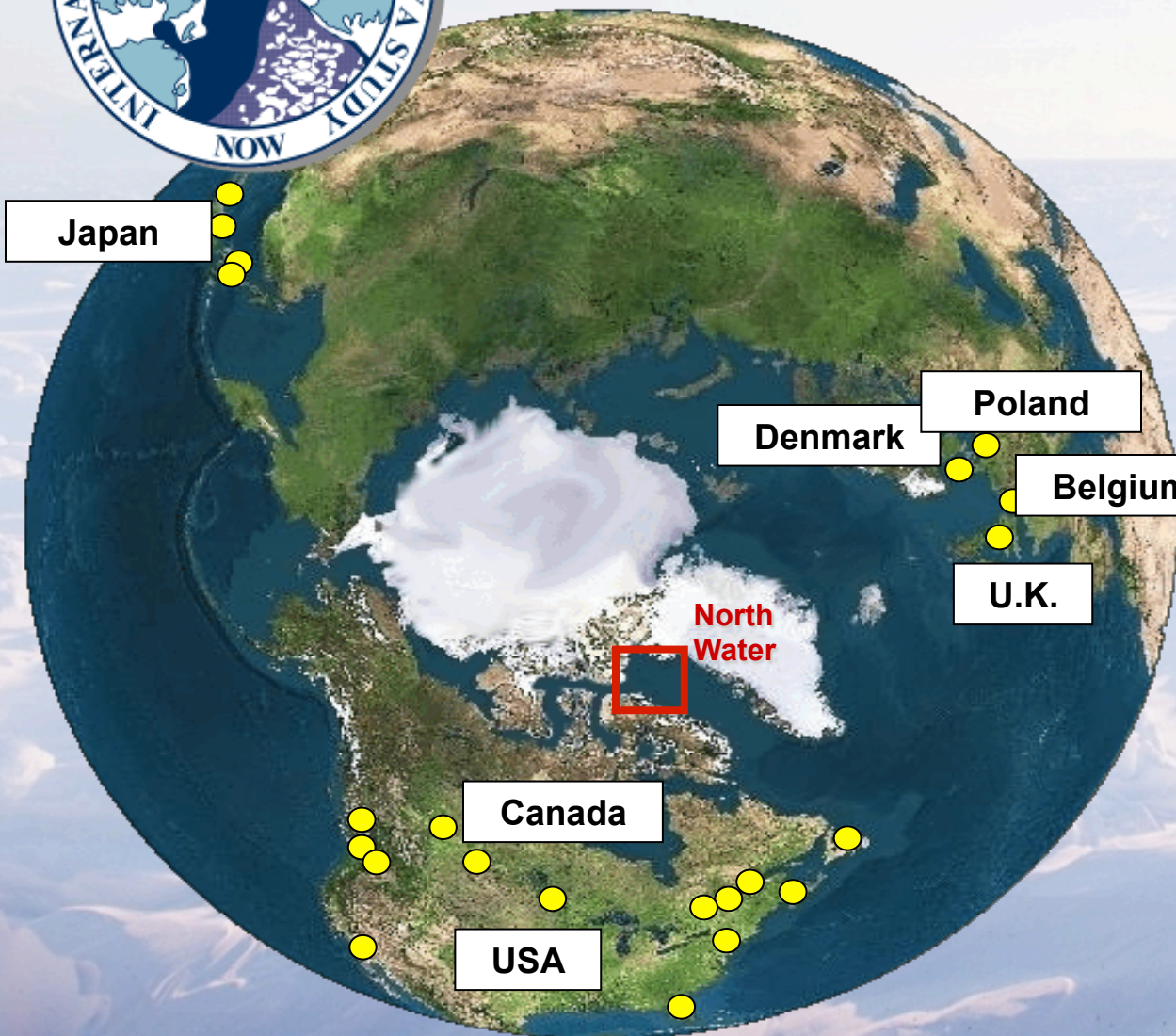




# International North Water Polynya Study (NOW) (1997-2001)



**NSERC Research Network (10M\$/ 5 y)**

**In Canada:**

- 43 PIs from 10 Canadian universities & 4 Federal departments

**Abroad**

- > 30 PIs from 8 countries

**Over 200 graduate students & technicians**

**CCGS Louis St-Laurent (1997)**

**NGCC Pierre Radisson (1998-1999)**



The CCGS *Amundsen*: a Canadian research icebreaker for international collaboration in the study of the changing Arctic





# CASES 2003-2004 OVERWINTERING EXPEDITION

Year-round multidisciplinary study to better understand the effect of sea-ice variability on the flux of carbon & contaminants in the Mackenzie Shelf/Amundsen Gulf ecosystem

- ONE-YEAR EXPEDITION
- 29 000 PERSON-DAYS AT SEA
- > 200 SCIENTISTS FROM 8 COUNTRIES
- ENORMOUS AMOUNT OF DATA
- Two dedicated Special issues of scientific journals
- Journal of Marine Systems (Vol .74, 3-4, 2008)
- JGR-Oceans (Vol. 113, C3, 2008)
  
- A dedicated compendium of results book



AT THE TIME: LARGEST EXPEDITION YET EVER LAUNCHED TO STUDY THE CHANGING ARCTIC MARINE ECOSYSTEM



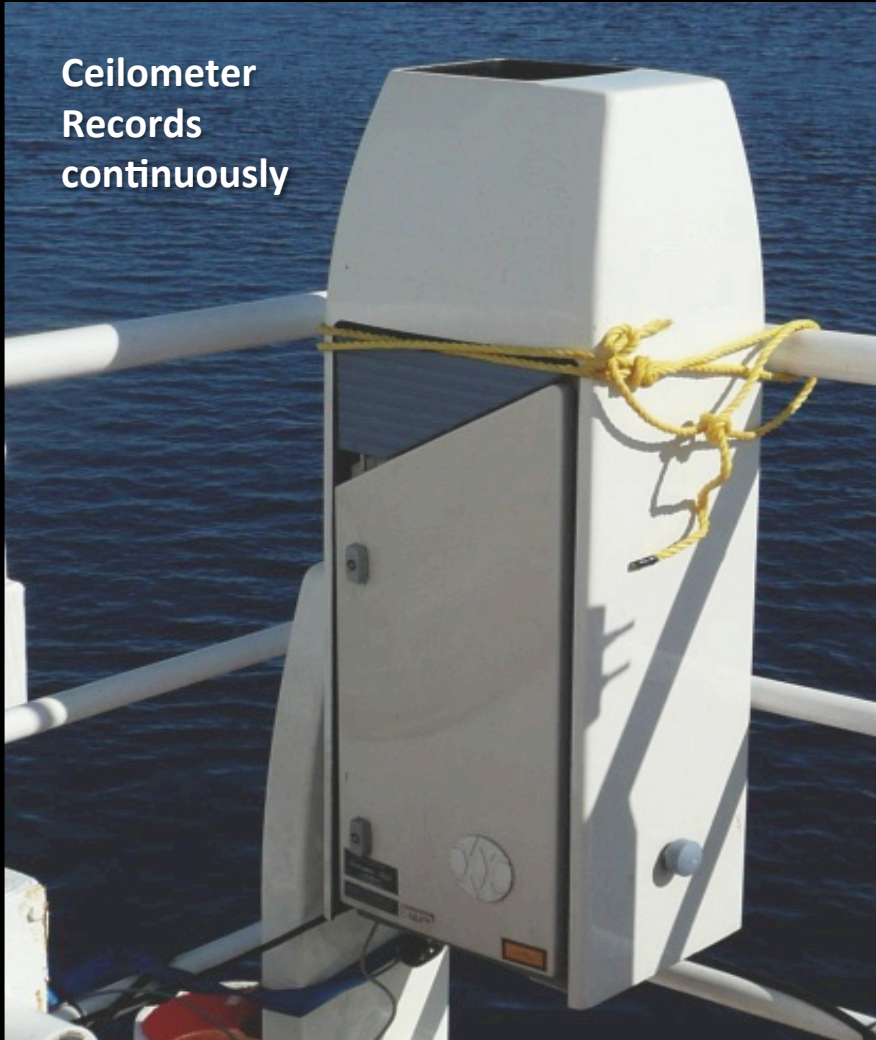




Microwave scatterometers and Radiometers



**Ceilometer  
Records  
continuously**



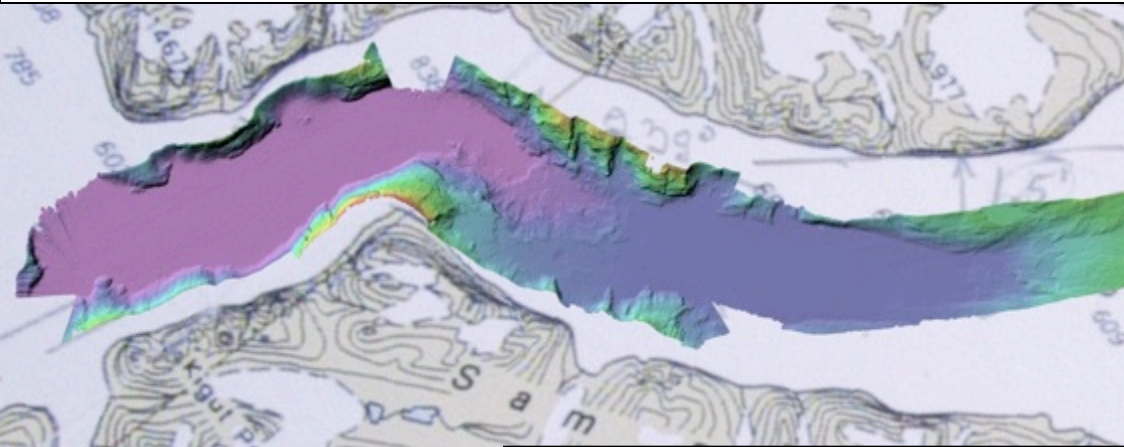
**MWRP  
Profiles Continuously  
Horizontal scanning  
When near the ice edge**



**All Sky Camera  
Records every 15 min**

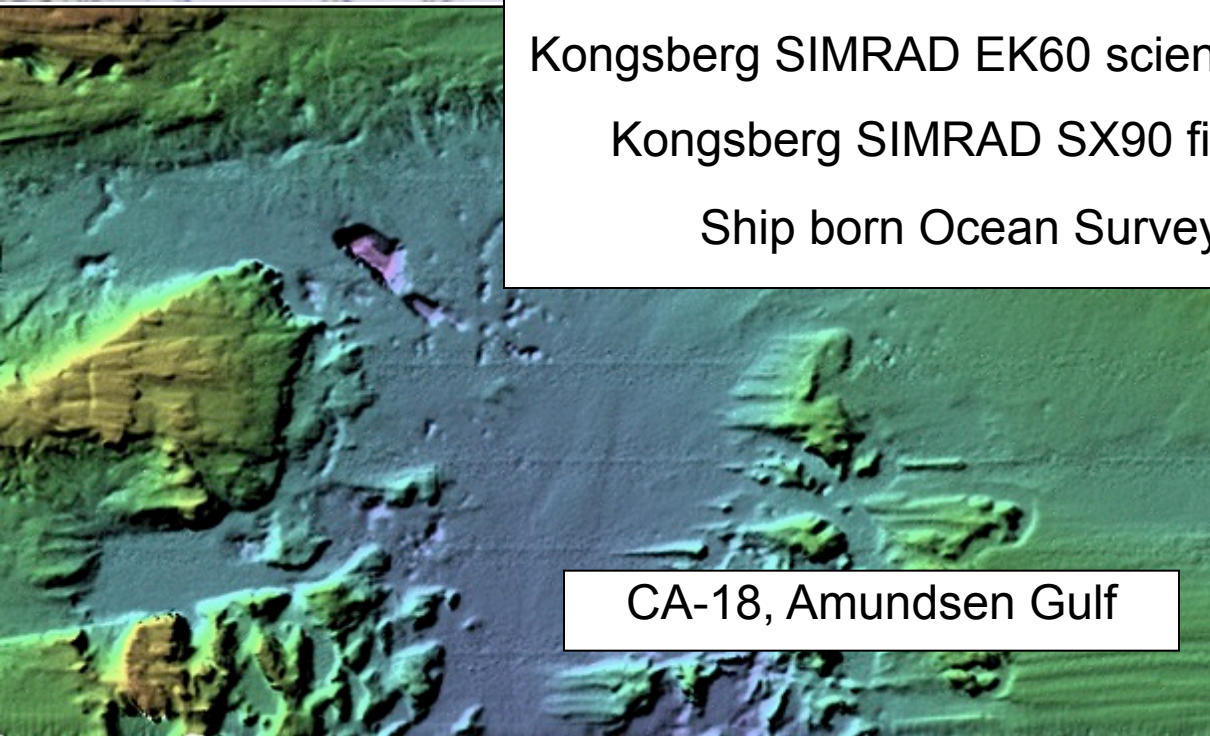
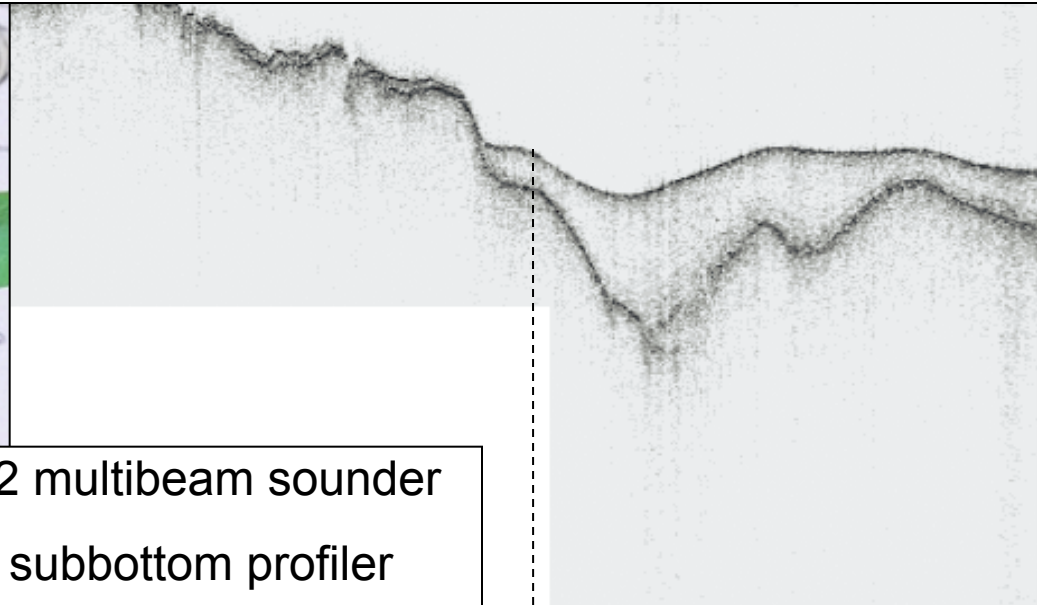


# Hull mounted active acoustics

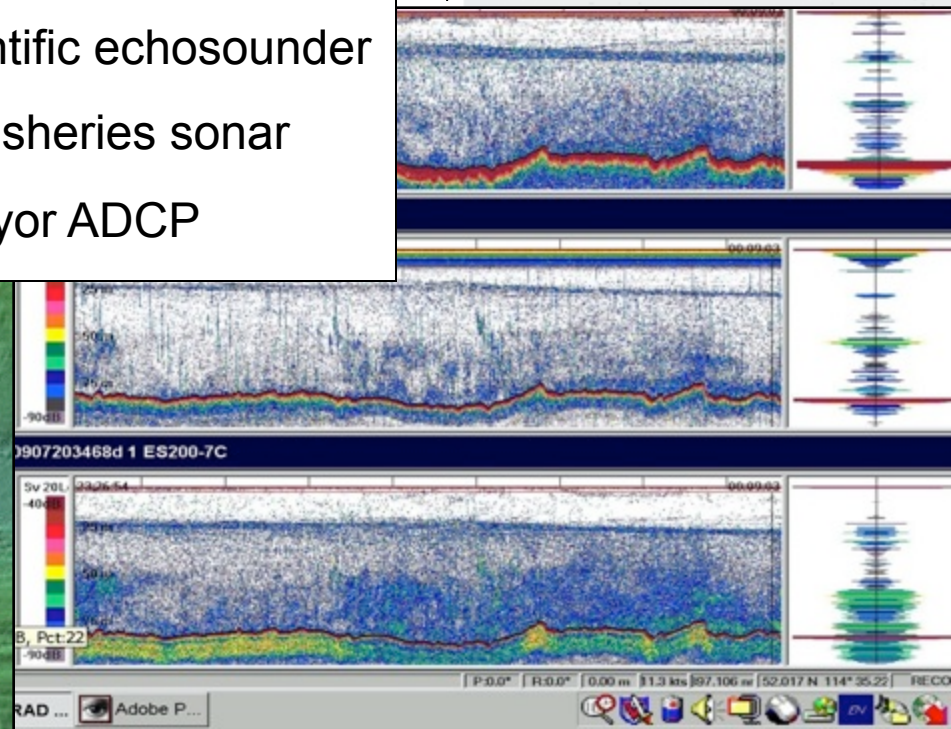


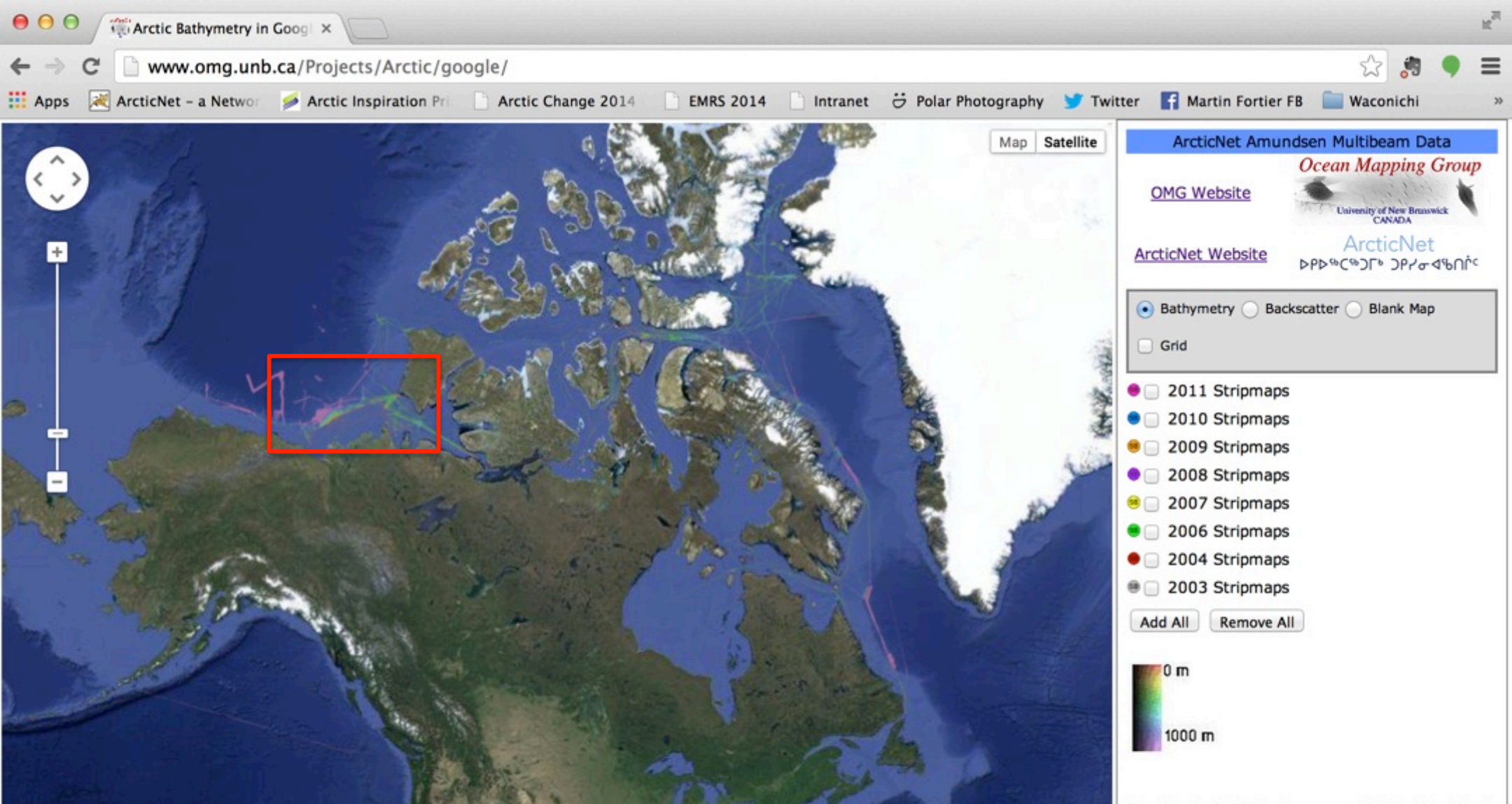
Sam Ford Fjord,  
Baffin Island

Kongsberg SIMRAD EM302 multibeam sounder  
Knudsen K320R 3.5 kHz subbottom profiler  
Kongsberg SIMRAD EK60 scientific echosounder  
Kongsberg SIMRAD SX90 fisheries sonar  
Ship born Ocean Surveyor ADCP



CA-18, Amundsen Gulf





All Multibeam Bathymetry and Backscatter Data available on Ocean Mapping Group (UNB) website ([www.omg.unb.ca](http://www.omg.unb.ca))

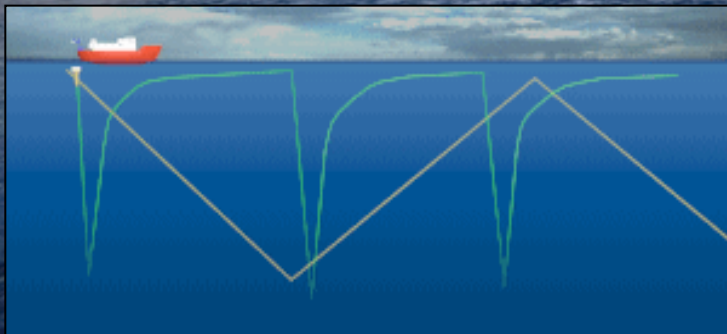
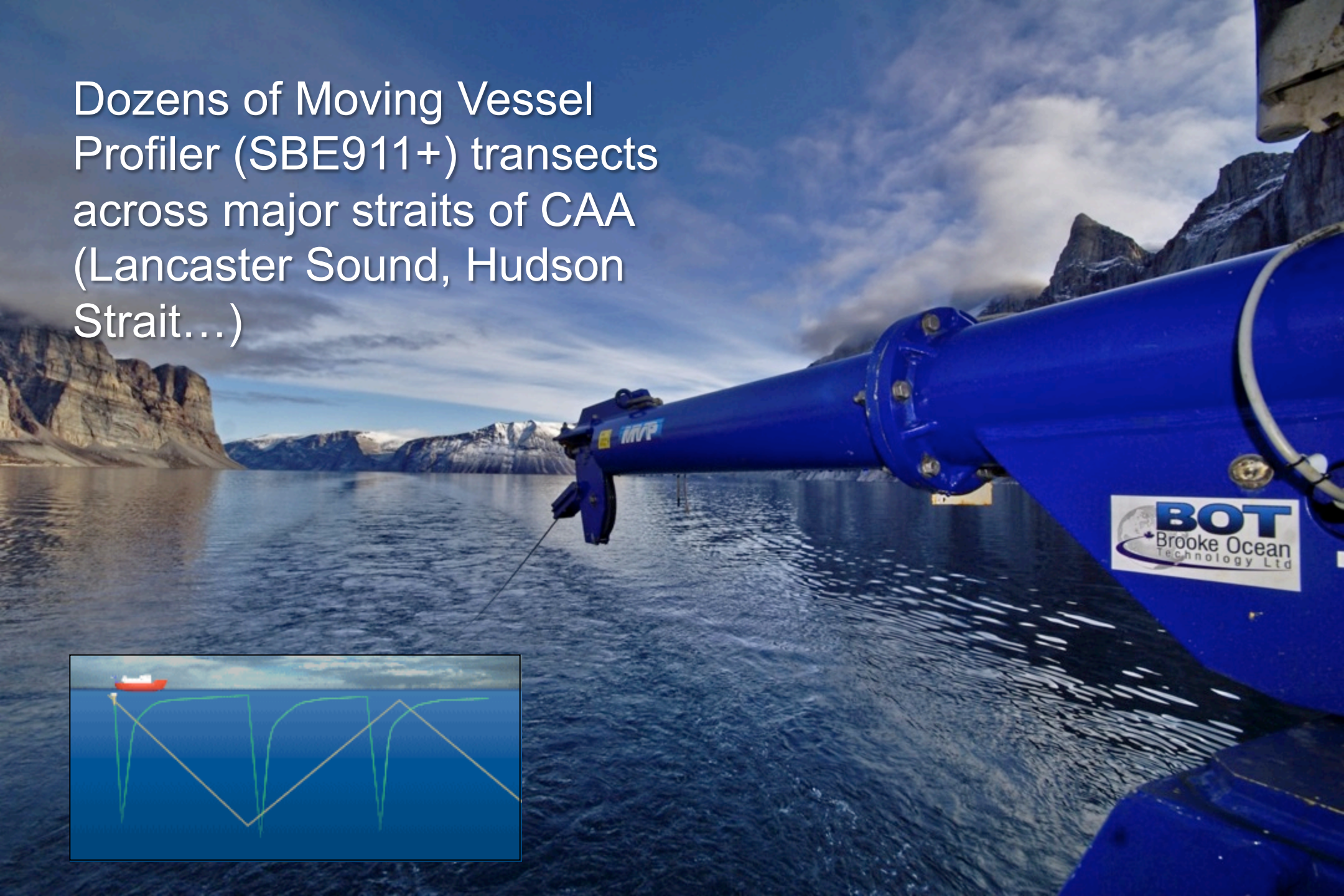
# Over 3300 CTD-Rosette casts in Canadian Arctic waters since 2003

## Seabird Carousel Rosette with SBE911+ CTDs

- Temperature
- Salinity
- pH
- Oxygen
- Nutrients
- Light
- Turbidity
- Currents



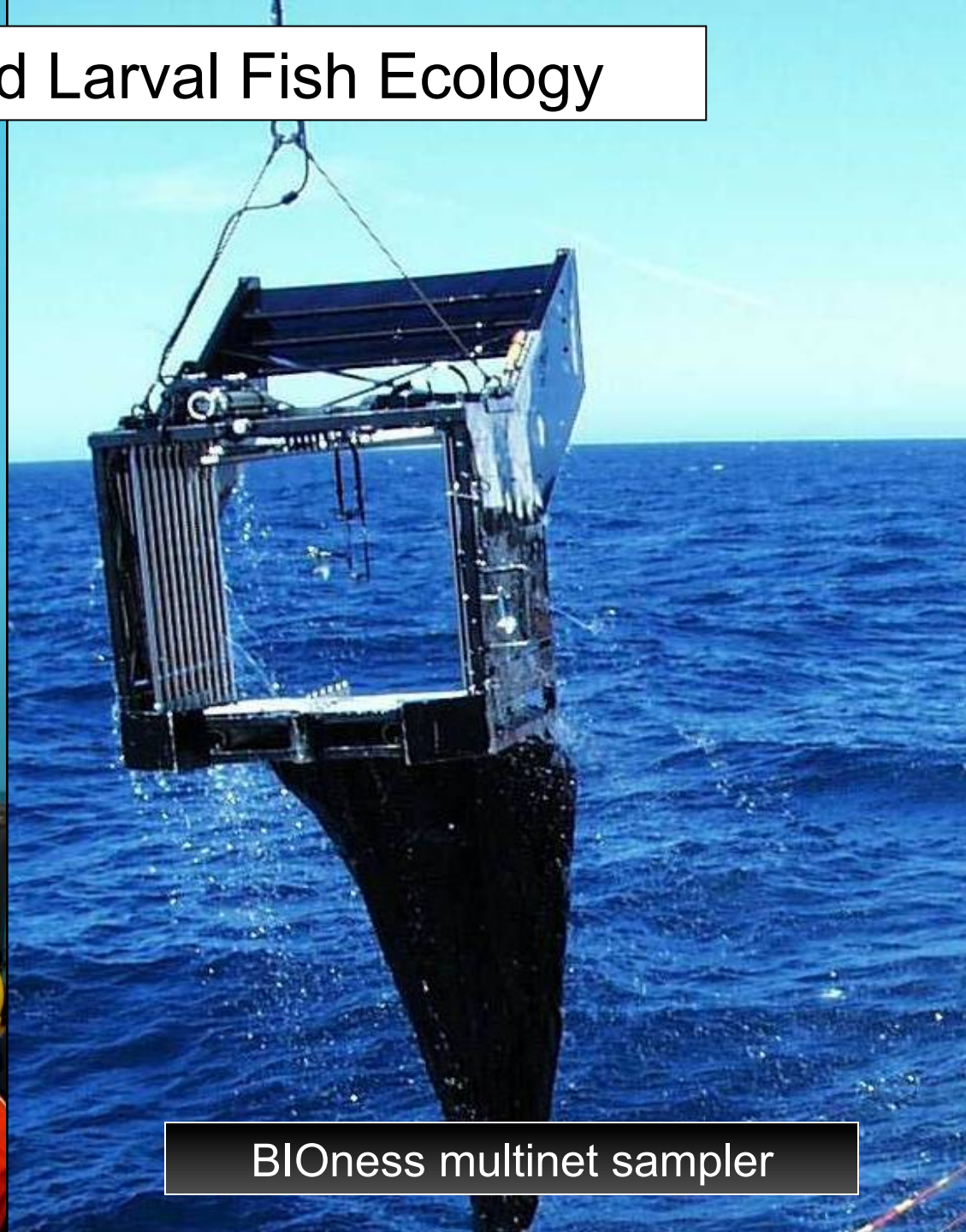
Dozens of Moving Vessel Profiler (SBE911+) transects across major straits of CAA (Lancaster Sound, Hudson Strait...)



# Zooplankton and Larval Fish Ecology

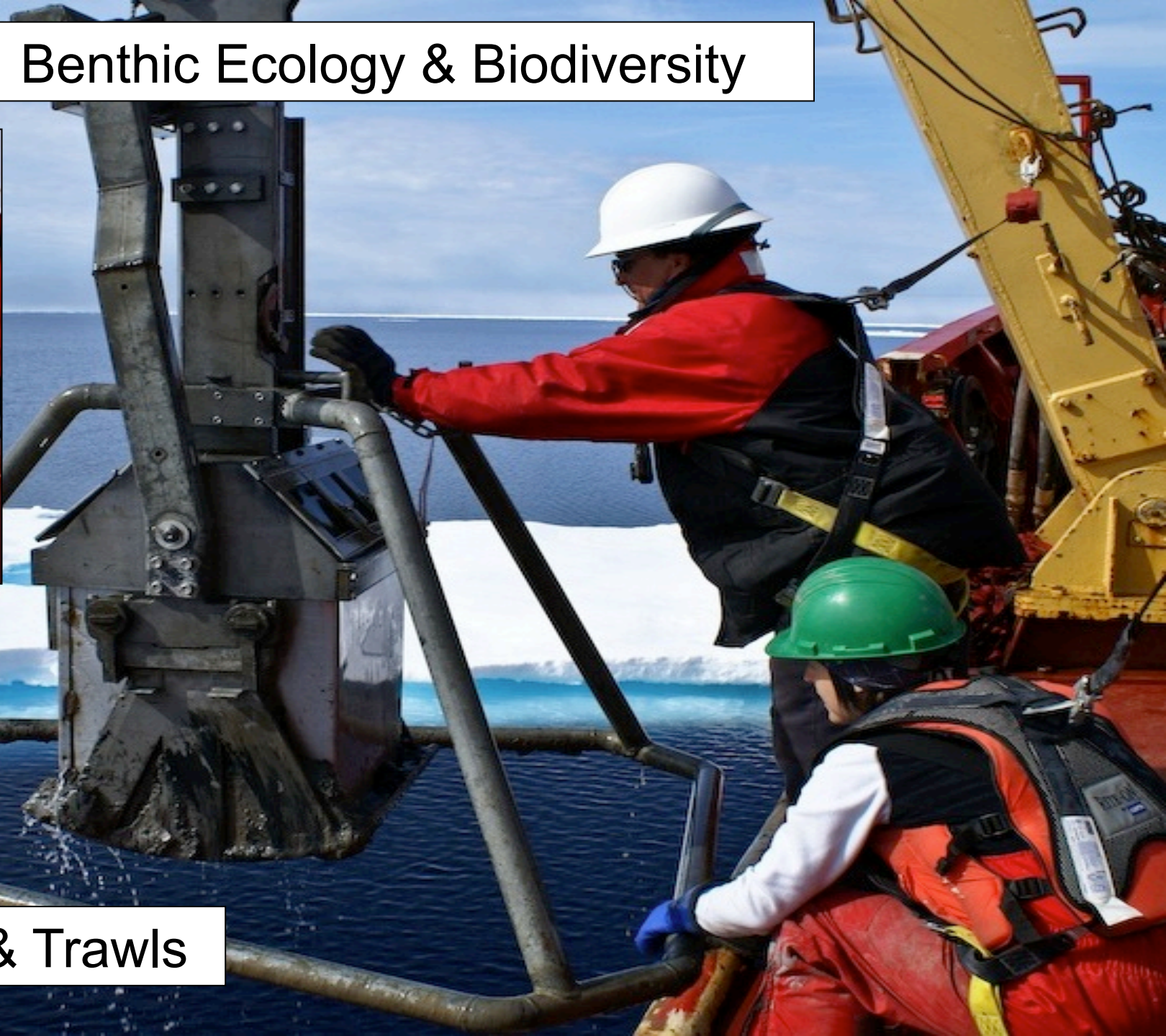


Hydrobios multinet sampler



BIOness multinet sampler

# Benthic Ecology & Biodiversity

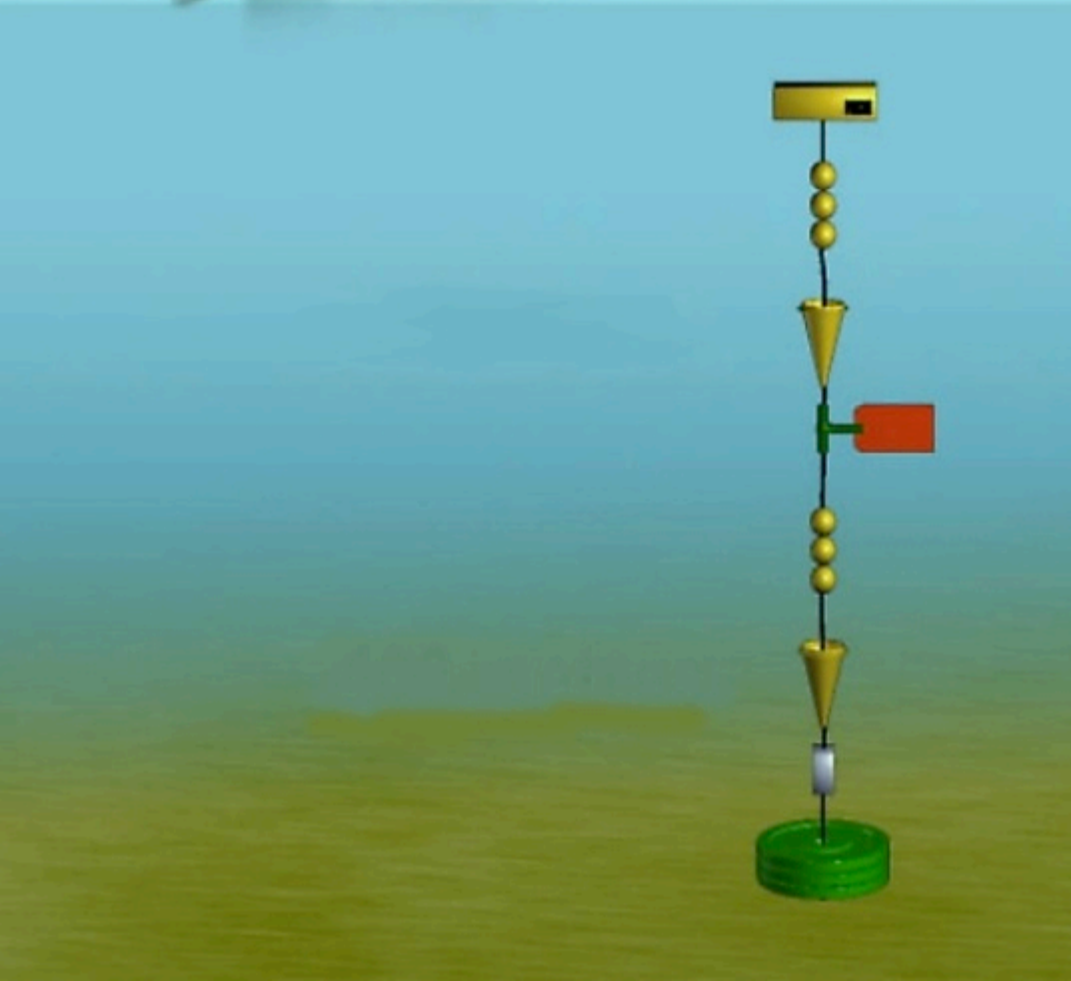
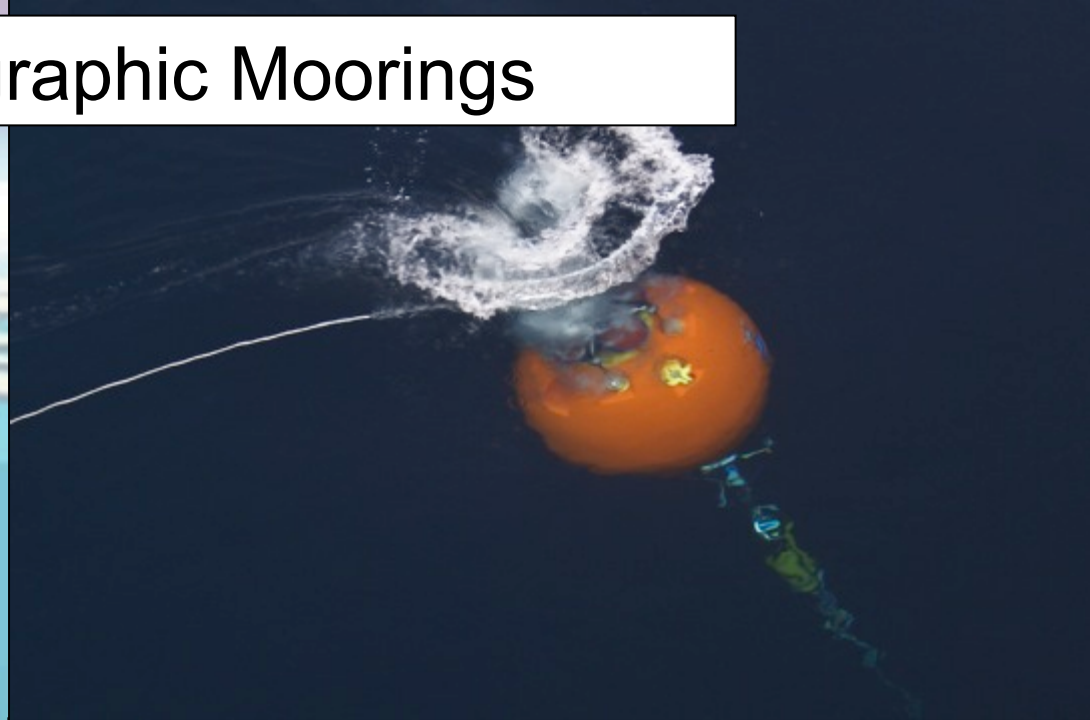


Box Corers & Trawls

# 10m Piston Coring Operations

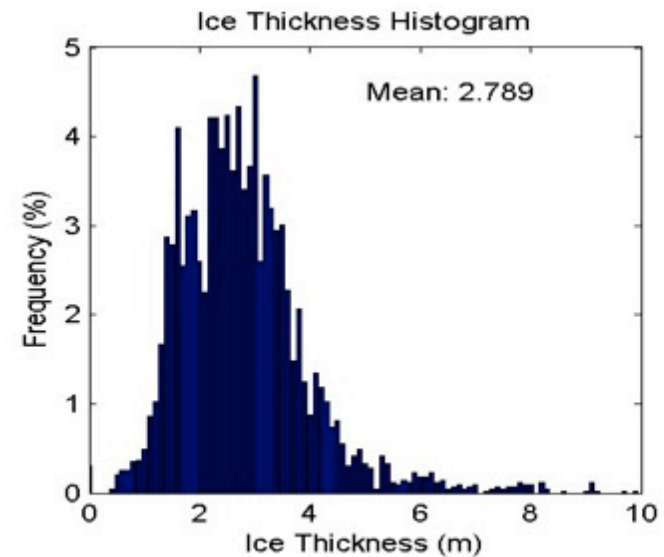
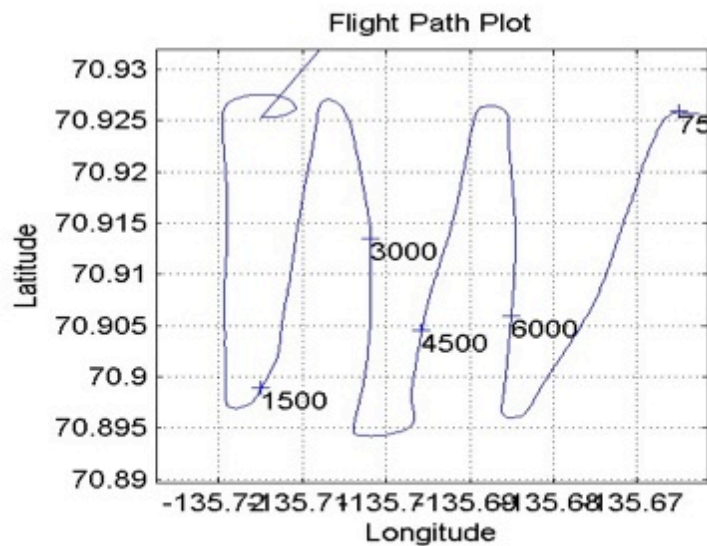
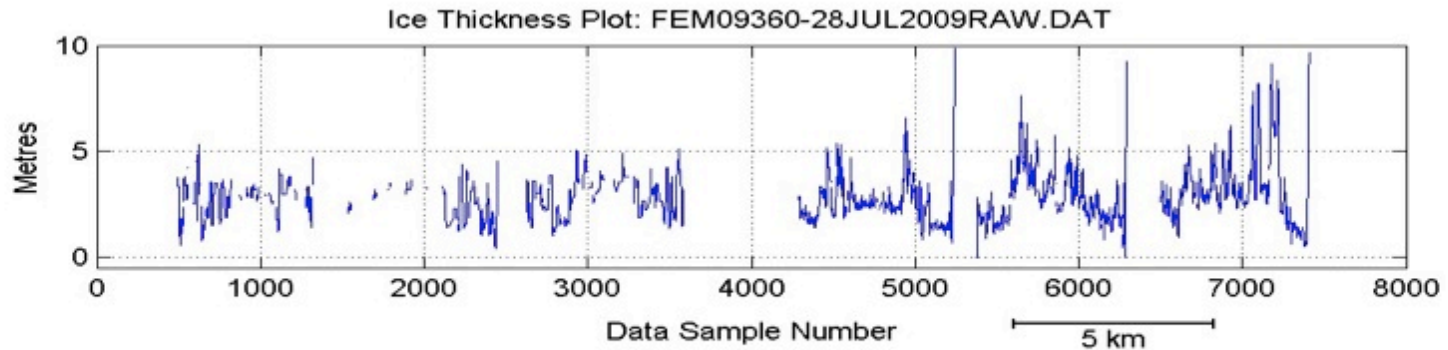


# Subsurface Oceanographic Moorings



# Sea Ice Thickness and Roughness

## Helicopter-based EM induction system (or IcePic)



Hundreds of on-ice sampling stations during CASES and CFL programs



# Sea Ice Dynamics



Deployment of :

- Ice motion satellite beacons
- Ice mass balance buoys
- Ice dynamics studies



# Extreme Ice Features

Ice island fragments or heavy/old multi-year ice flows



2010 Petermann Ice Island  
Fragment PII-B (90km<sup>2</sup>; up to  
200m thick)

# IPY-Circumpolar Flaw Lead System Study (2007-11)

Countries with Institutions participating in CFL:



Canada, USA, China, Spain, Germany, Sweden, Norway, Russia, Belgium, France, Great Britain, Netherlands

\$40M, 4 years

\$11M in new CFI funds

International lead- Pan-AME

Strong northern partnerships

11 month field program

First time!

370 investigators

102 Senior Scientists

122 graduate students

46 technicians

35 Schools on Board

41 media


Countries of origin of CFL researchers and media:



Canada, USA, China, Spain, Switzerland, Germany, Sweden, Norway, Russia, Belgium, France, Great Britain, Netherlands, Finland, Scotland, Poland



# BEAUFORT REGIONAL ENVIRONMENTAL ASSESSMENT

[Home](#)[Research](#)[Working Groups](#)[News](#)[Resources](#)[Publications](#)[About](#)[Contact](#)[Members](#)

Building a strong knowledge base for informed decisions on oil and gas activity.

## Who We Are

The Beaufort Regional Environmental Assessment (BREA) is a multi-stakeholder initiative to sponsor regional environmental and socio-economic research that will make historical information available and gather new information vital to the future management of oil and gas in the Beaufort Sea.

The BREA will help ensure governments, Inuvialuit, and industry are better prepared for oil and gas exploration and development in the offshore by building upon the regional information base for the Beaufort Sea. This will support effective and efficient regulatory decision-making by providing the necessary scientific and socio-economic information to all stakeholders.

[Read More...](#)

## How We Help

BREA funds targeted research projects that will improve management of oil and gas activities in the Beaufort Sea. Projects may fall under different categories such as research, monitoring, baseline data collection, modelling, data mining and/or synthesis. [Read more...](#)

## Working Groups

The BREA Working Groups implement specific program components and ensure that information contributes to the regulatory requirements for offshore oil and gas activity. Working Groups have been established to address the following: Cumulative Effects, Climate Change, Socio-Economic Indicators, Oil Spill Preparedness and Response, Waste Management, and Information Management. [Read more...](#)

[www.beaufortrea.ca](http://www.beaufortrea.ca)

# Providing major access to the Arctic for the Canadian and international scientific community since its inauguration in 2003

- 1500 days of dedicated scientific operations over 10 years or 150 days per year on average
- Supported 2 major international overwintering studies in the Beaufort Sea (CASES & CFL)
- Supported science teams from 15 countries
- Visited all Canadian coastal Inuit communities as part of an international Inuit Health Survey

