MEMORIAL UNIVERSITY

MEOPAR

MARINE ENVIRONMENTAL OBSERVATION PREDICTION & RESPONSE NETWORK

The Observation Core

Brad deYoung
Memorial University

MEETING THE CHALLENGES OF OUR CHANGING OCEAN

Core Components

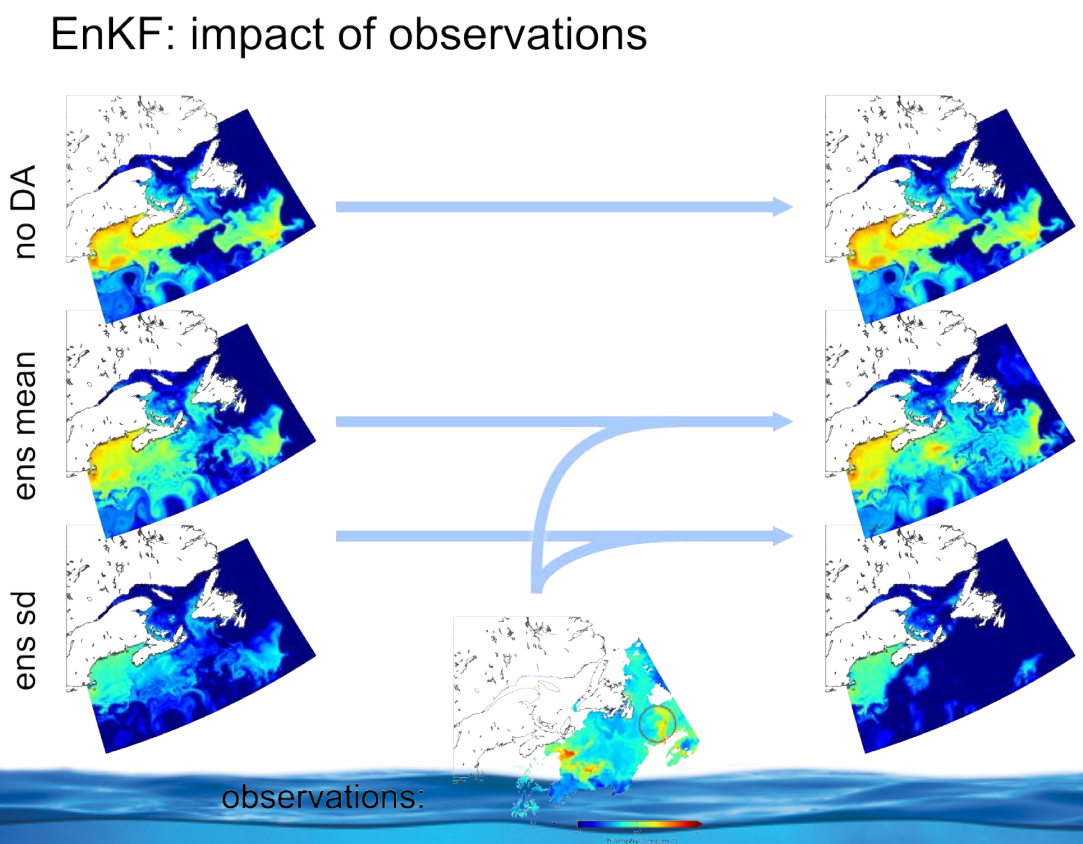
To develop and enable ocean technology for MEOPAR and the wider ocean community

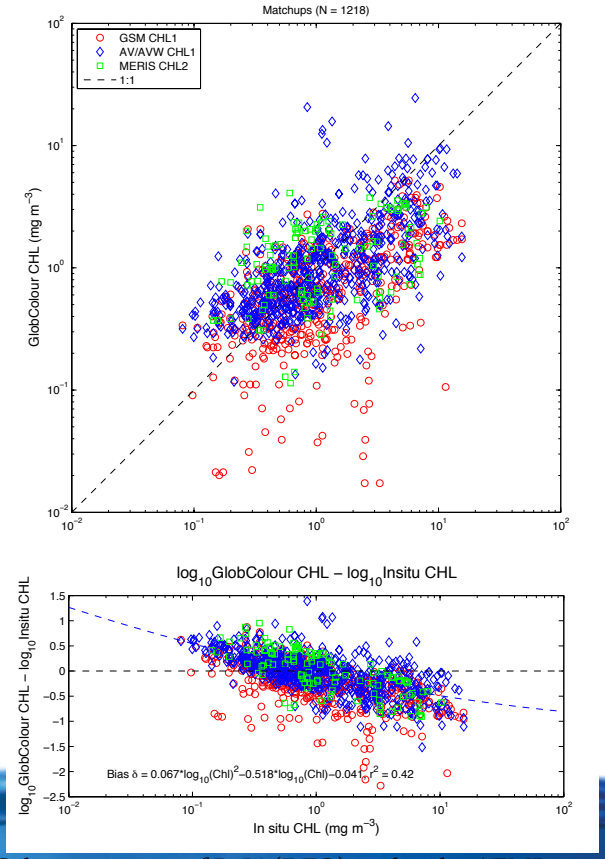
- Remote Sensing – M. Babin – Universite Laval
- CODAR Coastal Radar – B. deYoung – Memorial University S. Pecknold DRDC
- Ocean Data View – D. Wallace – Dalhousie University
- Dorado Vehicle Development – D. Wallace – Dalhousie University
- Vertical Profiler Development – B. deYoung & R. Bachmayer – Memorial University
- Community Initiatives
  - Ocean Gliders Canada
  - IAOOS and SmartAtlantic

- What's next?

Takuvik-Meopar: Satellite products

Delivery of times series of Chlorophyll-a concentration (Chl-a) and Sea Surface Temperature for data assimilation in … . Computation of regional error budget for chl-a concentration. PI: K. Fennel, Dalhousie, Halifax, NS

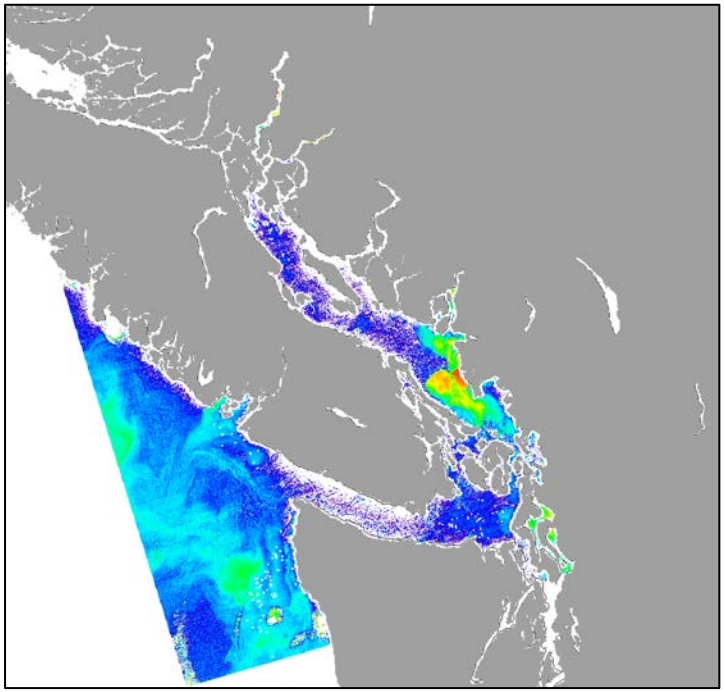




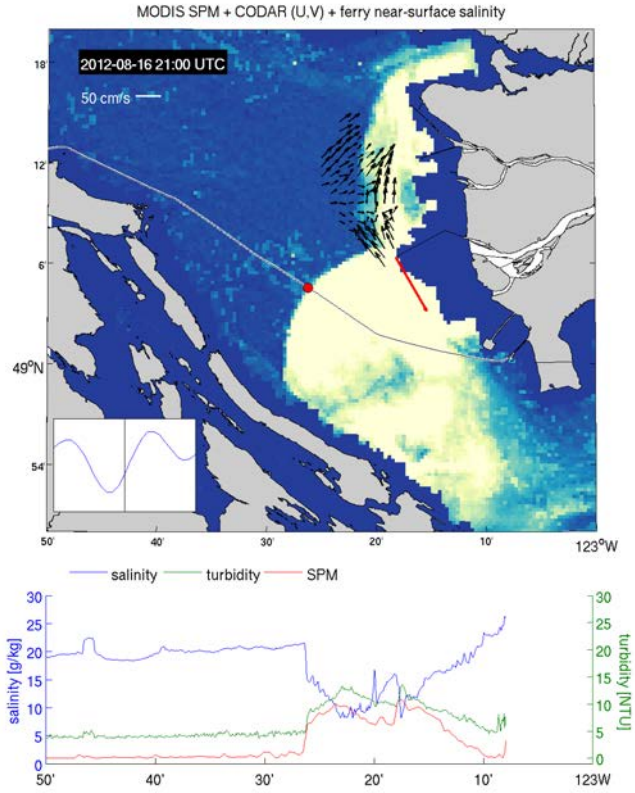
HPLC data, courtesy of B. Li (DFO) under the AZMP program

Takuvik-Meopar : Satellite products

Times series of high resolution satellite images of Suspended Particulate Matter in the strait of Georgia, characterisation of the Fraser River Plume.
PI: Rich Pawlowich, UBC, Vancouver, BC

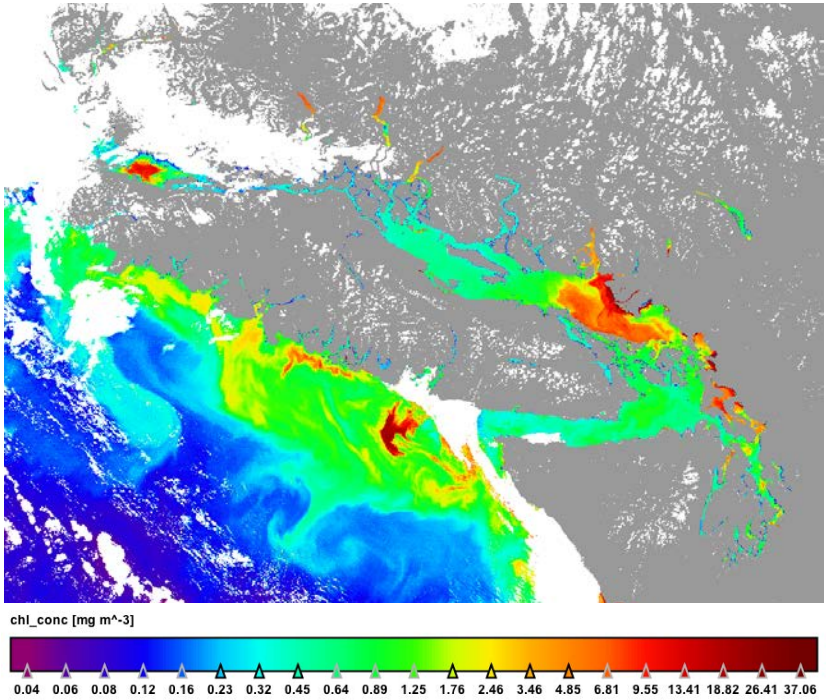


MODIS 250m resolution, suspended particle matter 16-08-2012

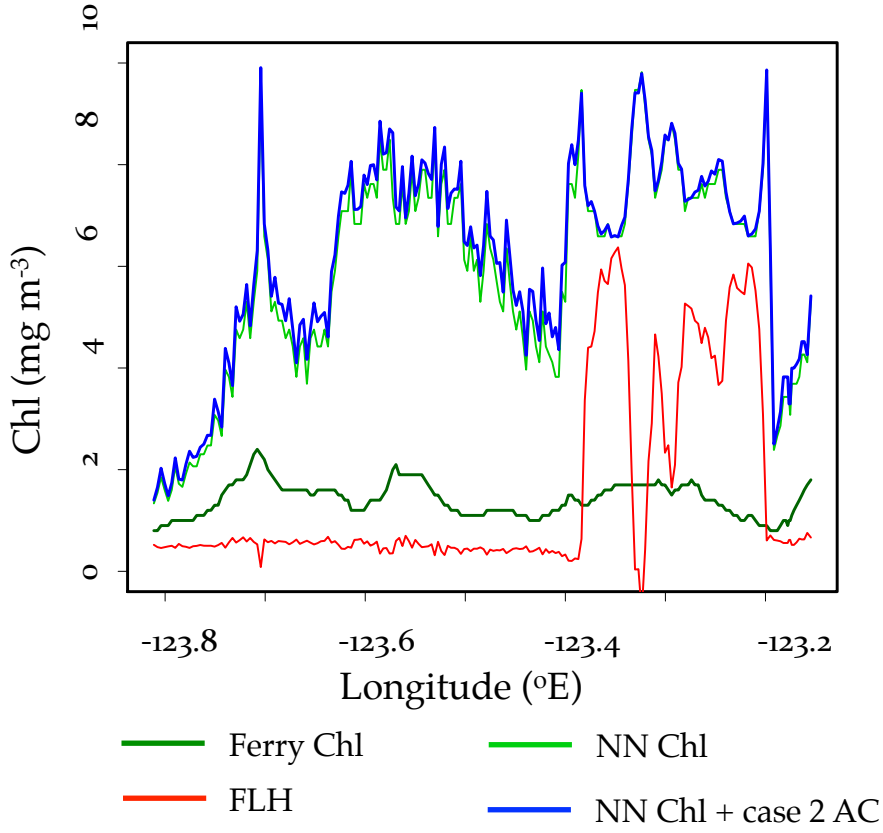


Takuvik's MEOPAR: Satellite products

Performance assessment of chlorophyll-a algorithm in the Strait of Georgia.
PI S. Allen, UBC, Vancouver, BC.



Chl (mg m^{-3})

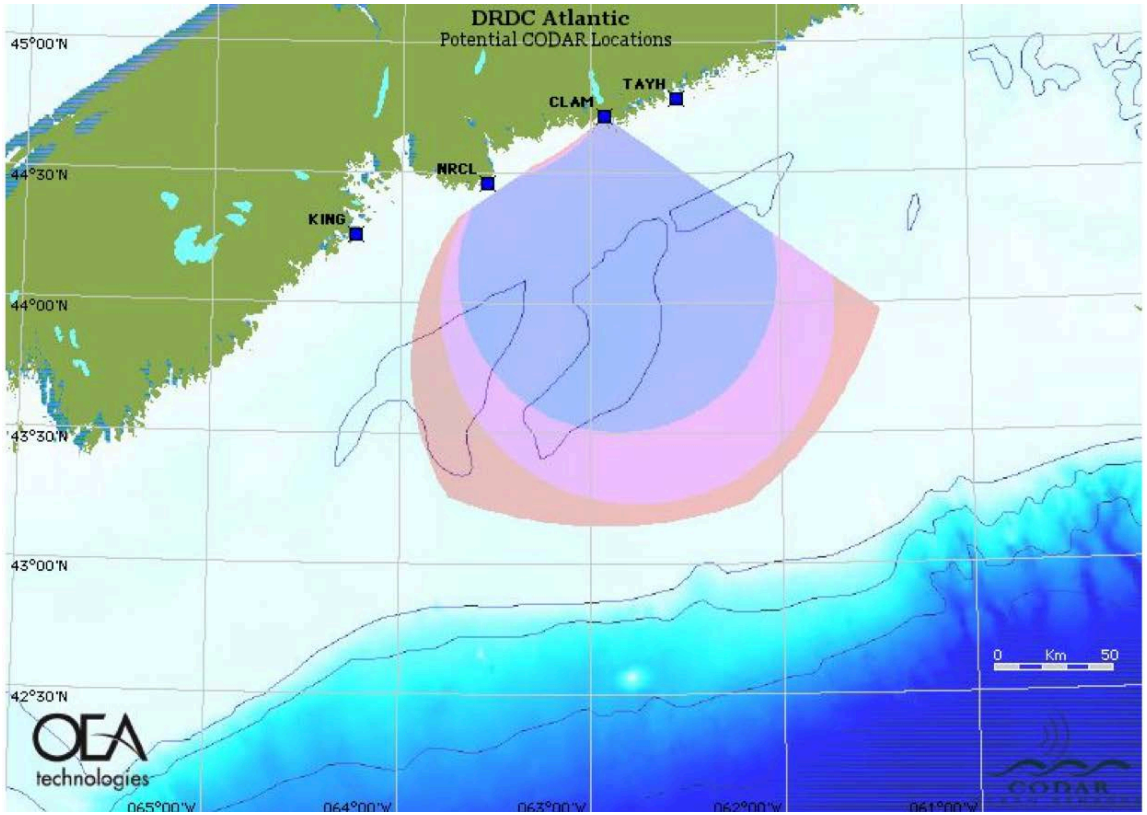


Need to develop and validate a local algorithm

Codar – Halifax Deployment

Partnership between Dalhousie and Memorial Universities and Defense Research Development Corporation and partnership with OEA Texhnogies

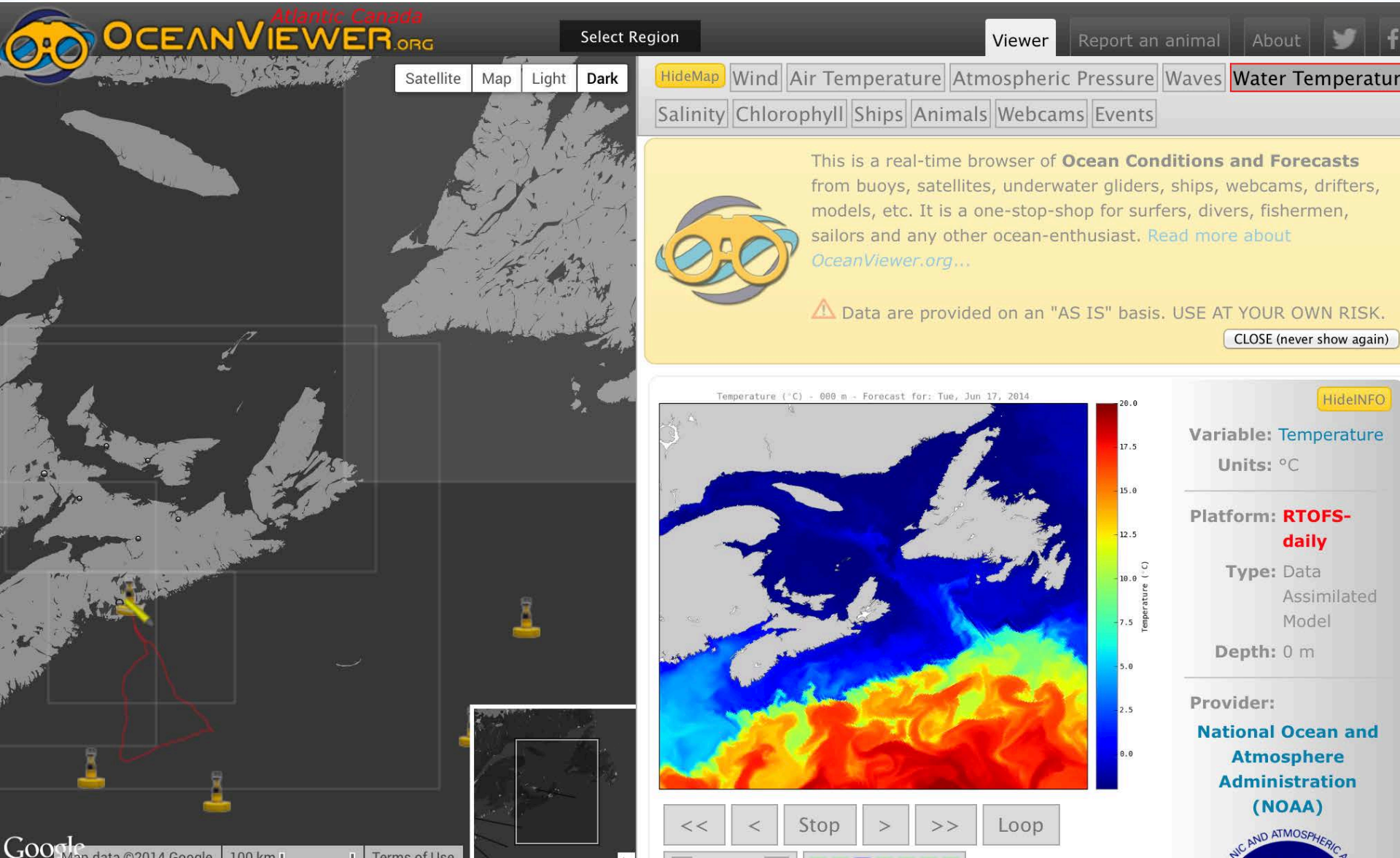
Brad deYoung
Jinyu Sheng
Brian Whitehouse



Ocean Data Viewer

Dalhousie – Doug Wallace, Diego Ibarra

DALHOUSIE UNIVERSITY
Inspiring Minds



Dorado Project

Doug Wallace, Chris L'Esperance

DALHOUSIE UNIVERSITY
Inspiring Minds

- Construct automated, miniature gas chromatograph capable of measuring tracer compound SF_5CF_3
- Install in Dorado ASV together with underway T, S, pCO2 and fluorescence sensors
- Test ability of Dorado vehicle to measure and map a deliberately introduced tracer "patch"
- Prepare for tracer dispersion study on the Scotian Shelf

Autonomous *Surface* Vehicles

e.g. for Mine Counter Measures

DEFENCE R&D DÉFENSE

Autonomous *Surface* Vehicles

New Tools for Performing Ocean Experiments

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Inspiring Minds

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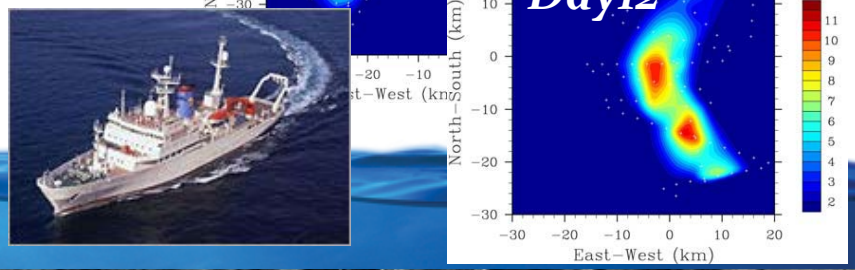
Rapid Environmental Assessments
Oil Dispersion Experiments
Models for Search and Rescue

„Fast-GC“to measure tracers (e.g. SF_6) in-situ

Open-Ocean Tracer Experiments



Tethered Vertical Profiler

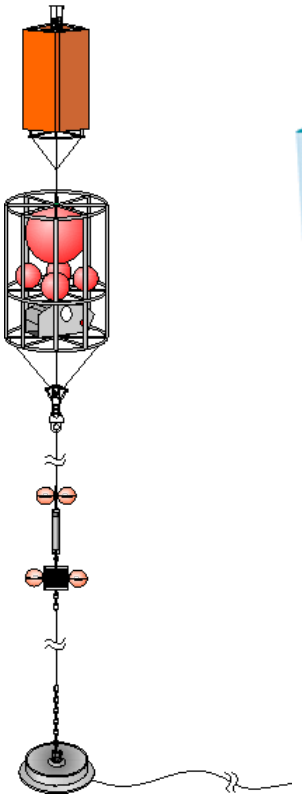
Joe Singleton, Brad deYoung, Ralf Bachmayer
Memorial University

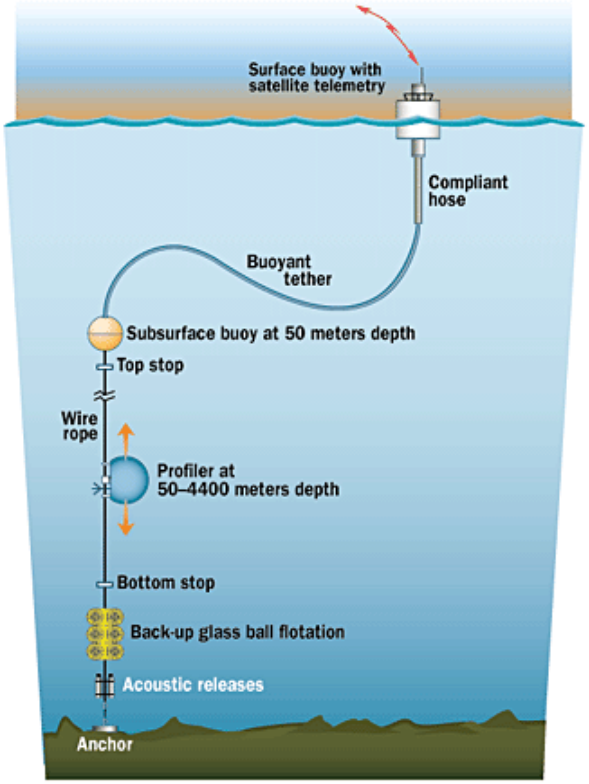
High resolution spatial and temporal data

- Periodic profiles
- Fixed location

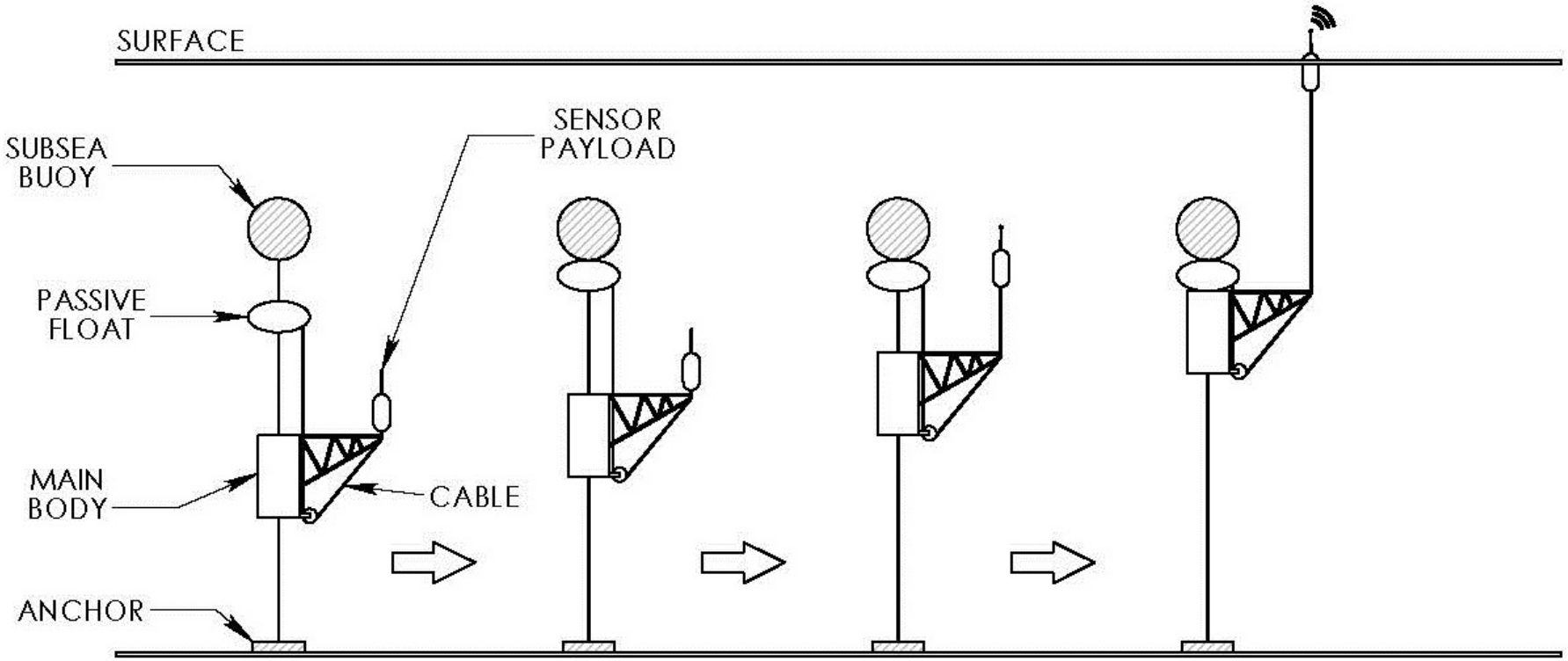
Two Standard Systems

- Dynamic Mooring Line
- Static Mooring Line

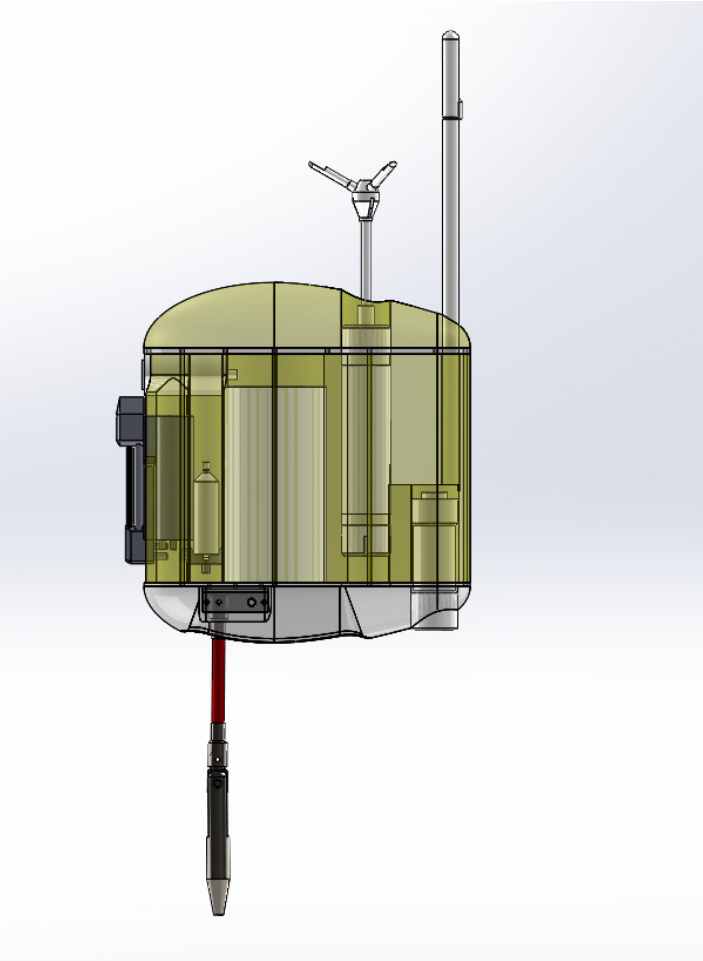


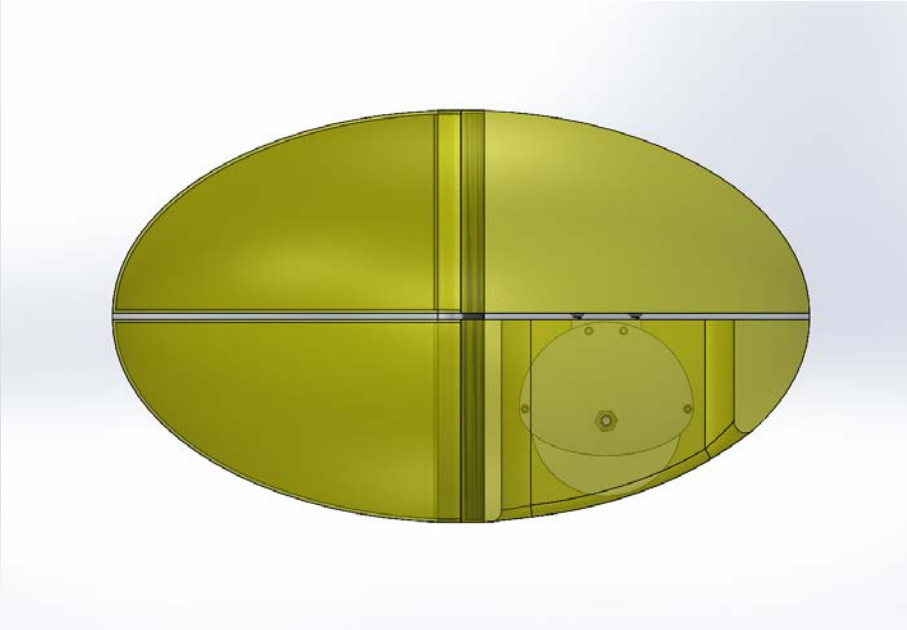


We are building a tethered ocean glider



Design Completed





Ocean Gliders Canada

- Coordinating glider activity across the country
  - Memorial University – AOSL
  - Dalhousie University – OTN
  - Universite Laval – Takuvik
  - UQAR
  - McGill
  - UBC
  - University Victoria – ONC

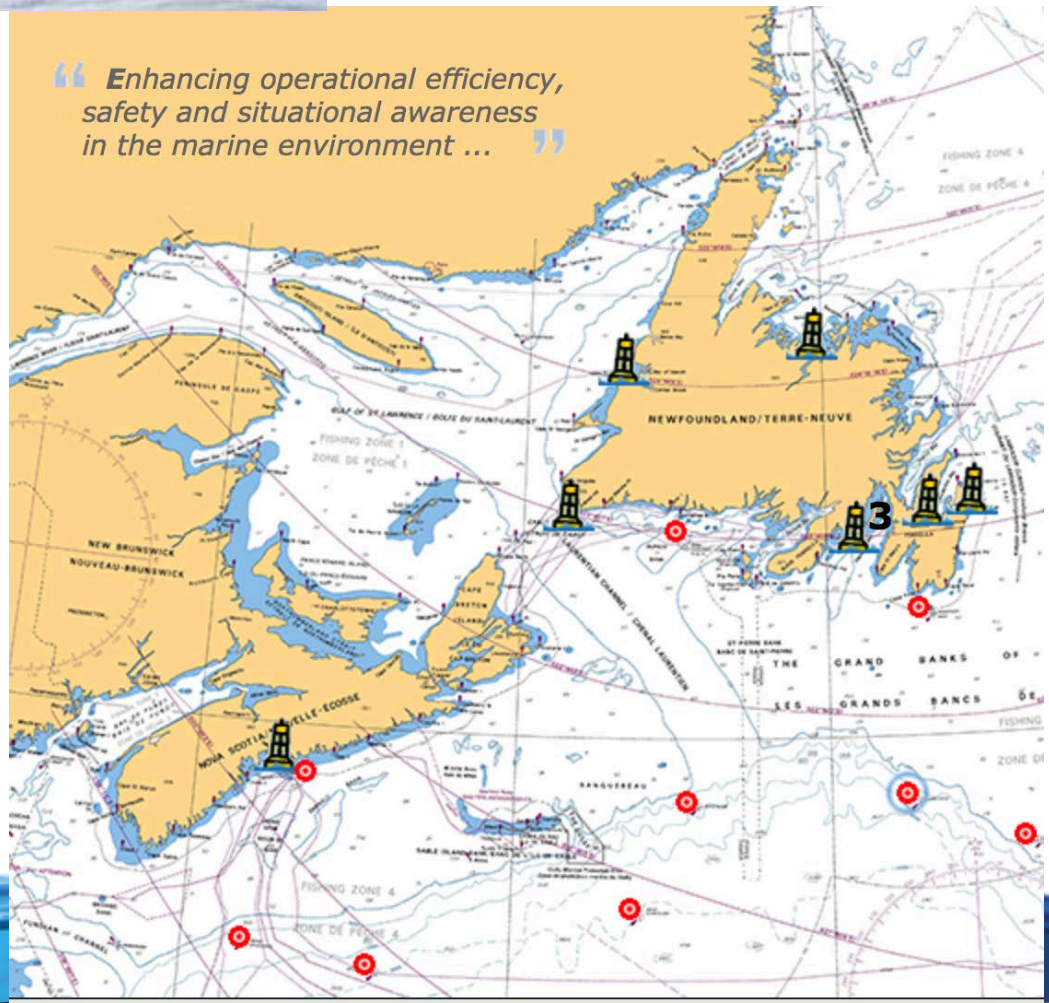
Sharing equipment, information, software, sensors, data, experience through a web center, meetings and workshops

Integrated Atlantic Ocean Observing System (IAOOS)

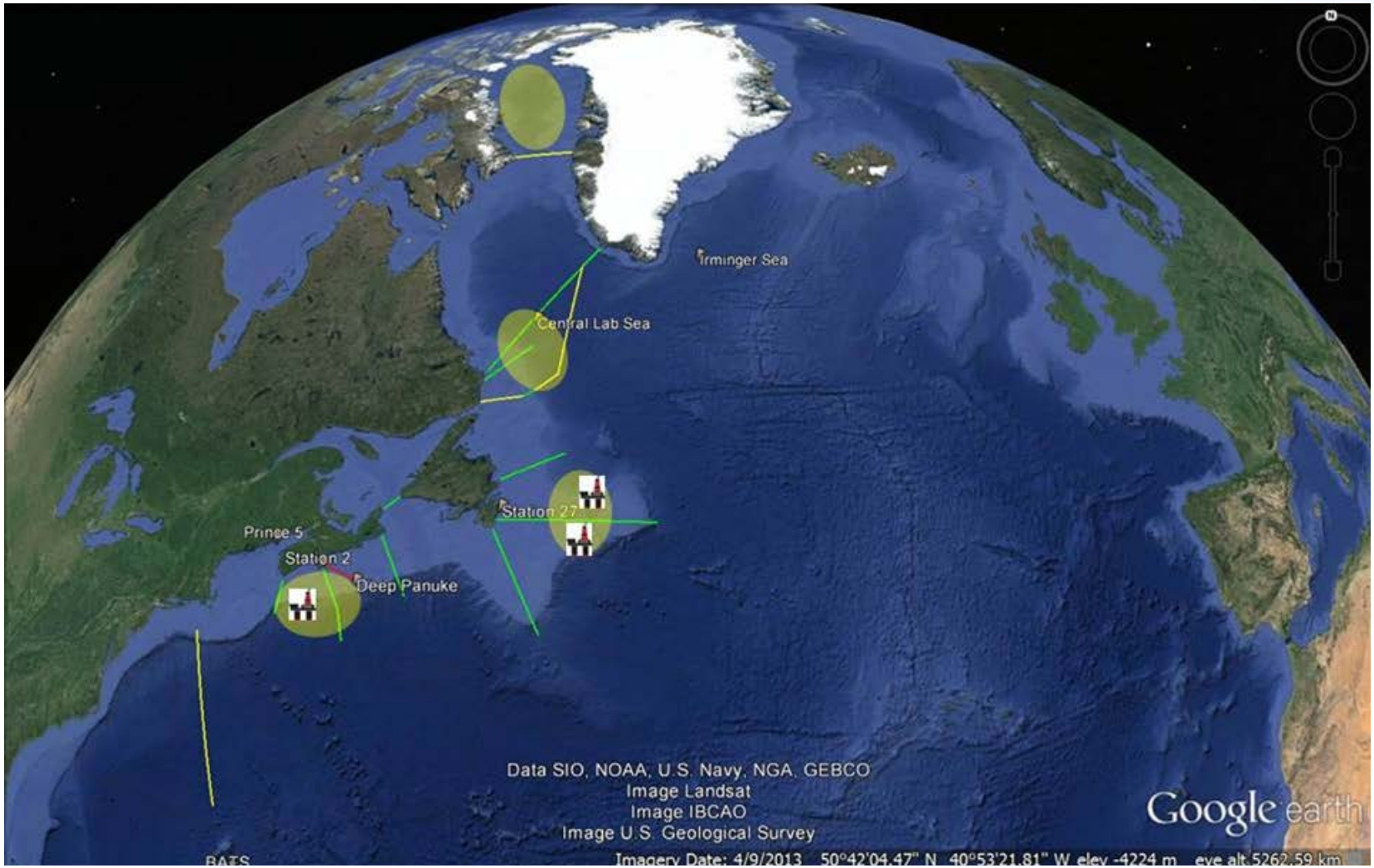
- Building on the Smart Atlantic Initiative
- Define requirements and opportunities for an Atlantic initiative to develop sustainable, integrated ocean observing
- White Paper to be delivered at the MTS/IEEE meeting in St. John's in December
- Developed through a process of workshops and meetings

Developing Atlantic Wide Framework

SmartAtlantic Alliance



Developing Atlantic Wide Framework



What is next?

- Work with newly funded teams to determine needs
- Get projects running
  - Codar
  - OGC
  - IAOOS
- Codar/drifter experiment 2015
- Plan for Scotian Shelf tracer/dispersion study 2016

Questions?

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www.meopar.ca

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Static Mooring Lines

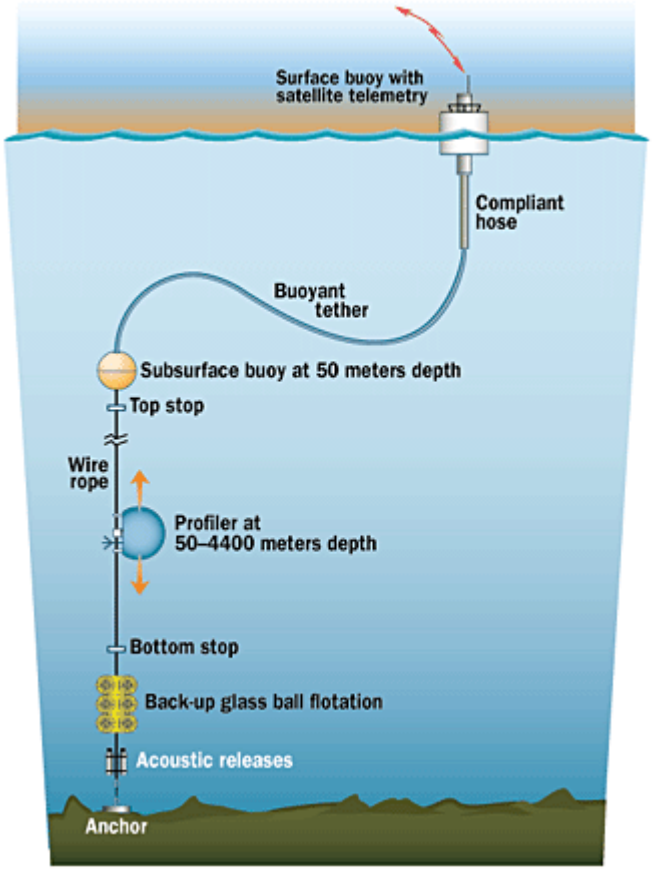
Wire Followers

Fixed mooring line to secure and direct the vehicle

Neutral Buoyancy

Bottom-subsurface or surface Surface-subsurface or bottom.

Drives (traction, buoyancy, ratchet)



Dynamic Mooring Lines

Winched

- Mooring line is payed in/out
- Winch is mounted on, the seafloor, a subsea platform, the vehicle or at the surface
- Net positive or negative buoyancy
- Cable management system