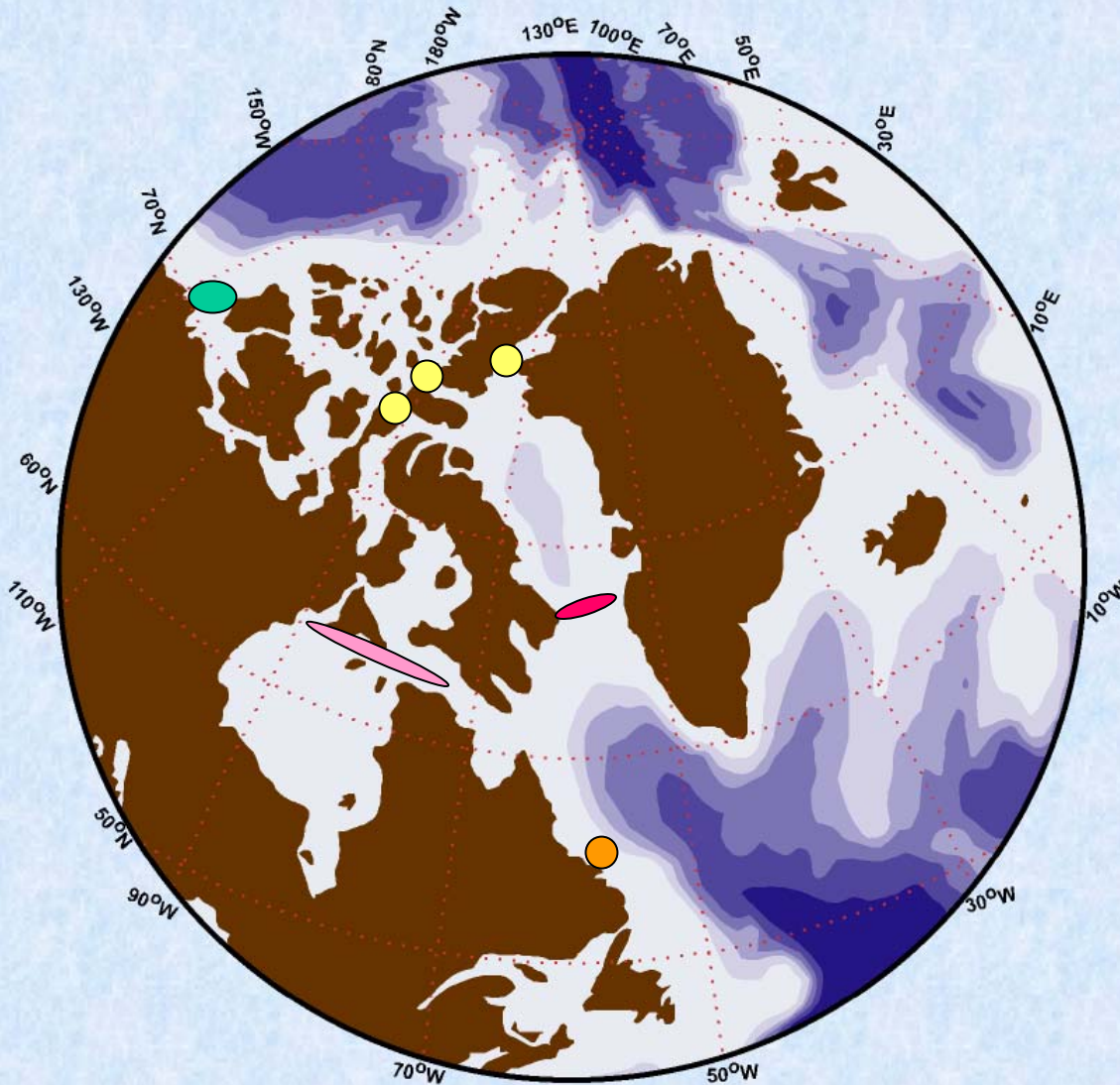
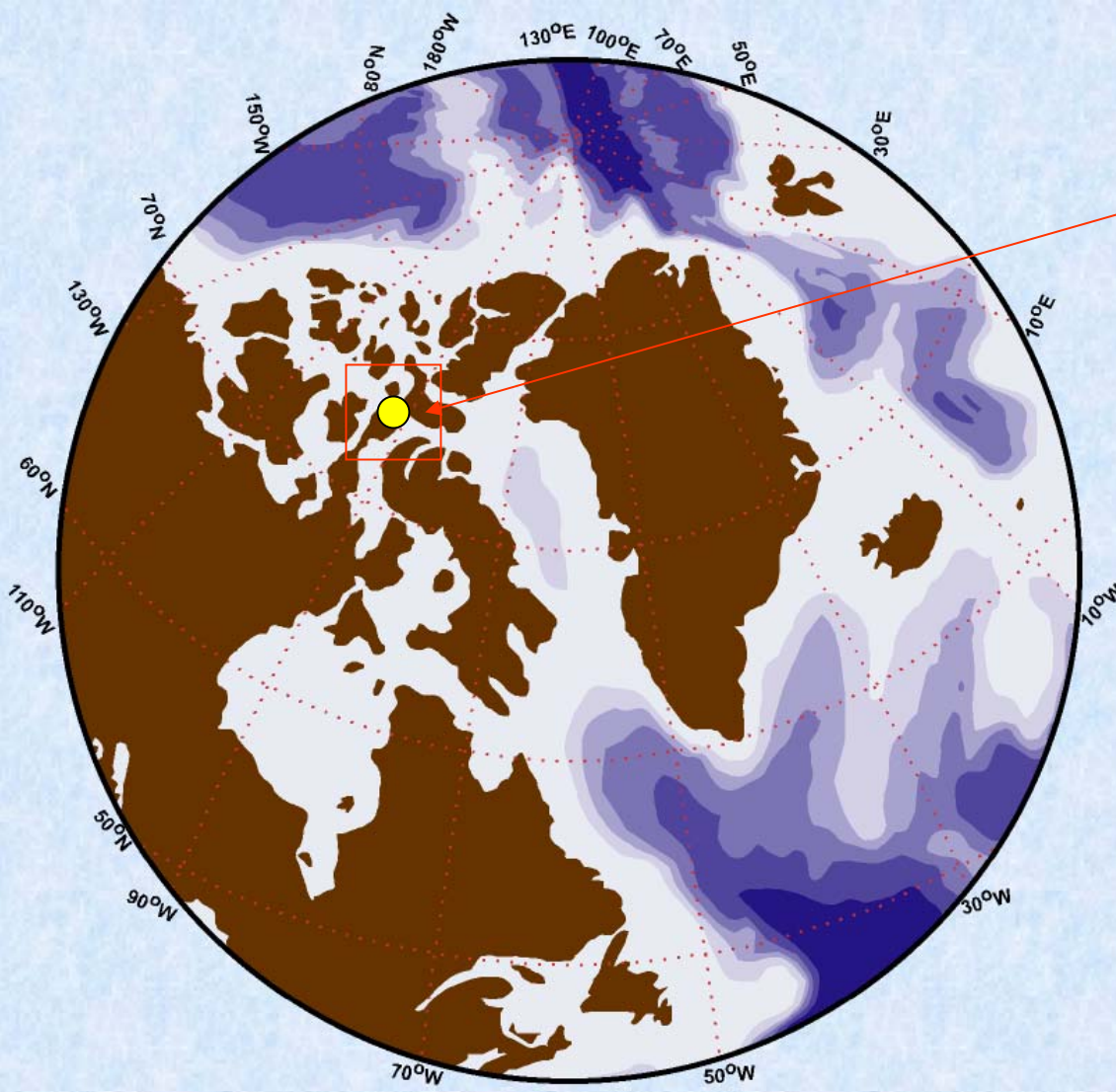


Moorings measuring volume, freshwater and heat transports entering the North Atlantic



ASOF-West Moorings

-  CASES
-  CATS
-  DAVIS Strait
-  Lab. Shelf
-  Hudson Bay



CATS/BIO

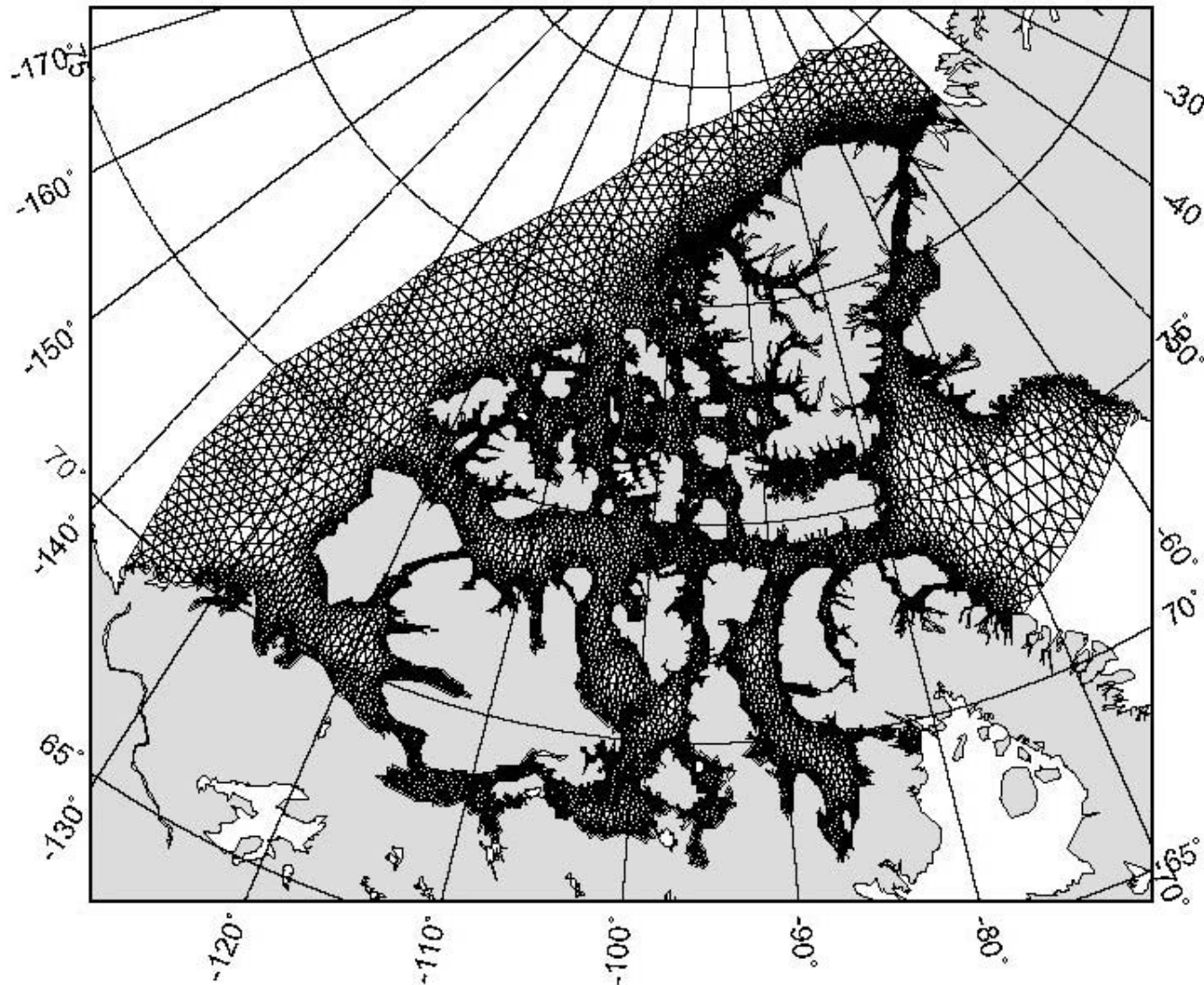
Barrow Strait and
Lancaster Sound

Moorings and
CTD Survey

since

August 1998

Bedford Institute of
Oceanography

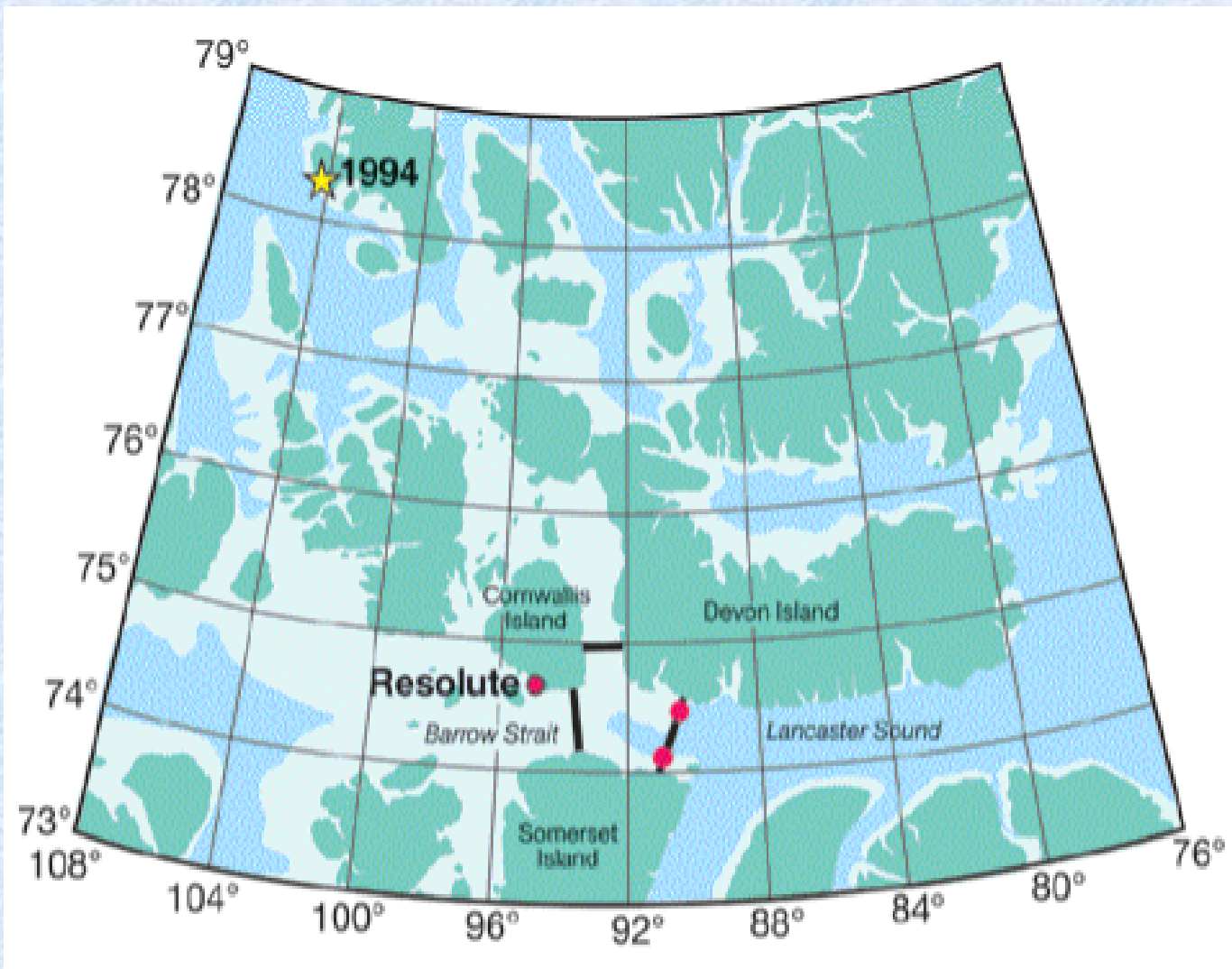


Diagnostic finite
element model

by

Nicolai Kliem and
Dave Greenberg

Horizontal triangular
mesh has 11859 nodes
and 20058 elements



CATS/BIO

Bedford Institute of
Oceanography

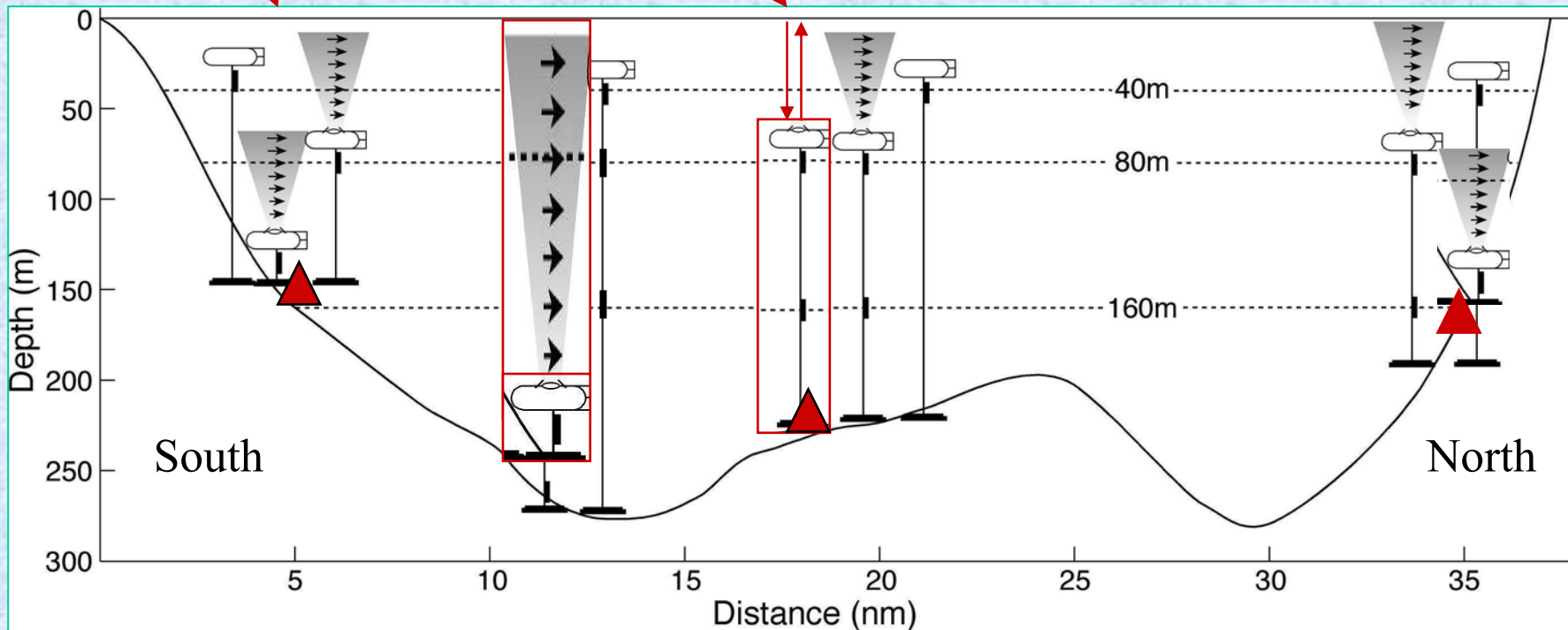
Barrow Strait and
Lancaster Sound






2003-2004 moorings

Also ICYCLER site

ULS



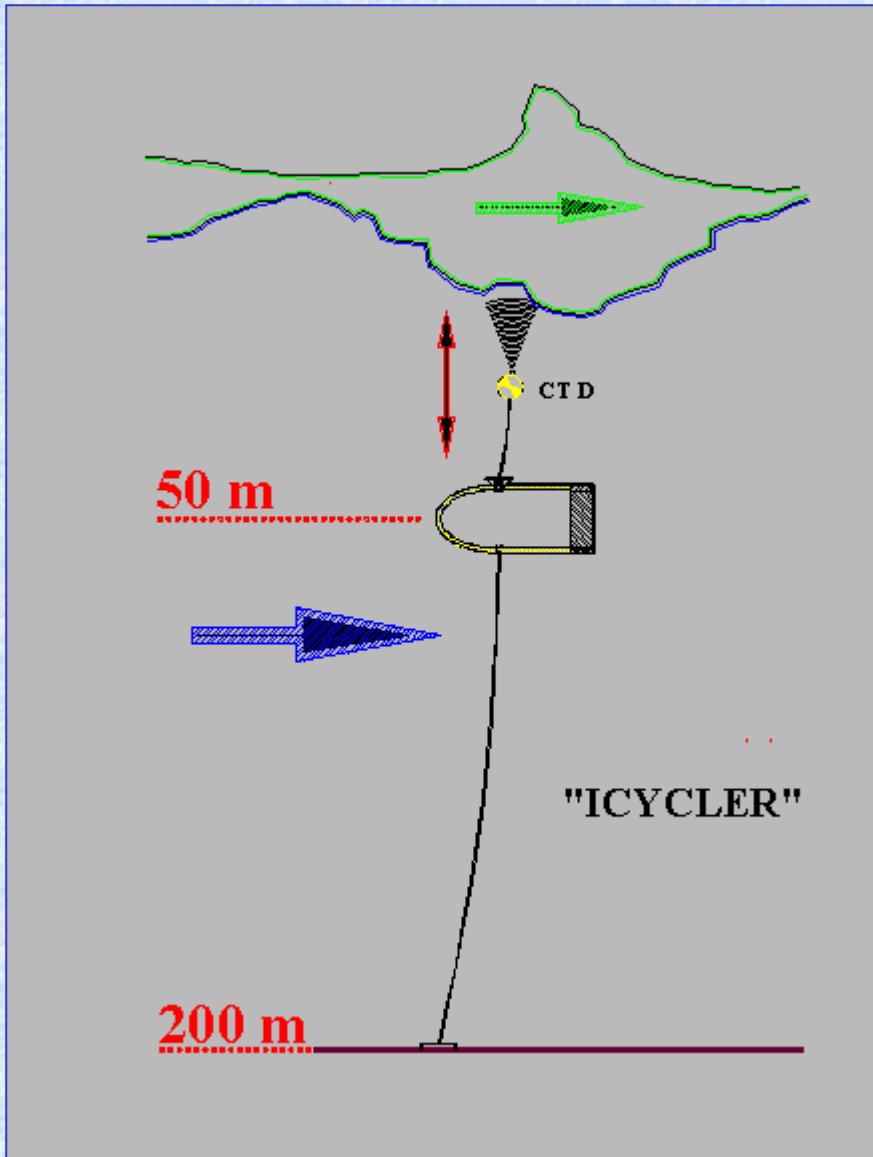
-  Tide Gauge Site (4) - UW-NOAA
-  ULS (1) - UW-NOAA
-  ADCP (1 LRange) - UW-NOAA

ICYCLER

*Instrumentation Development
of
Year-long
Surface layer CTD profiler
under a mobile ice-cover*

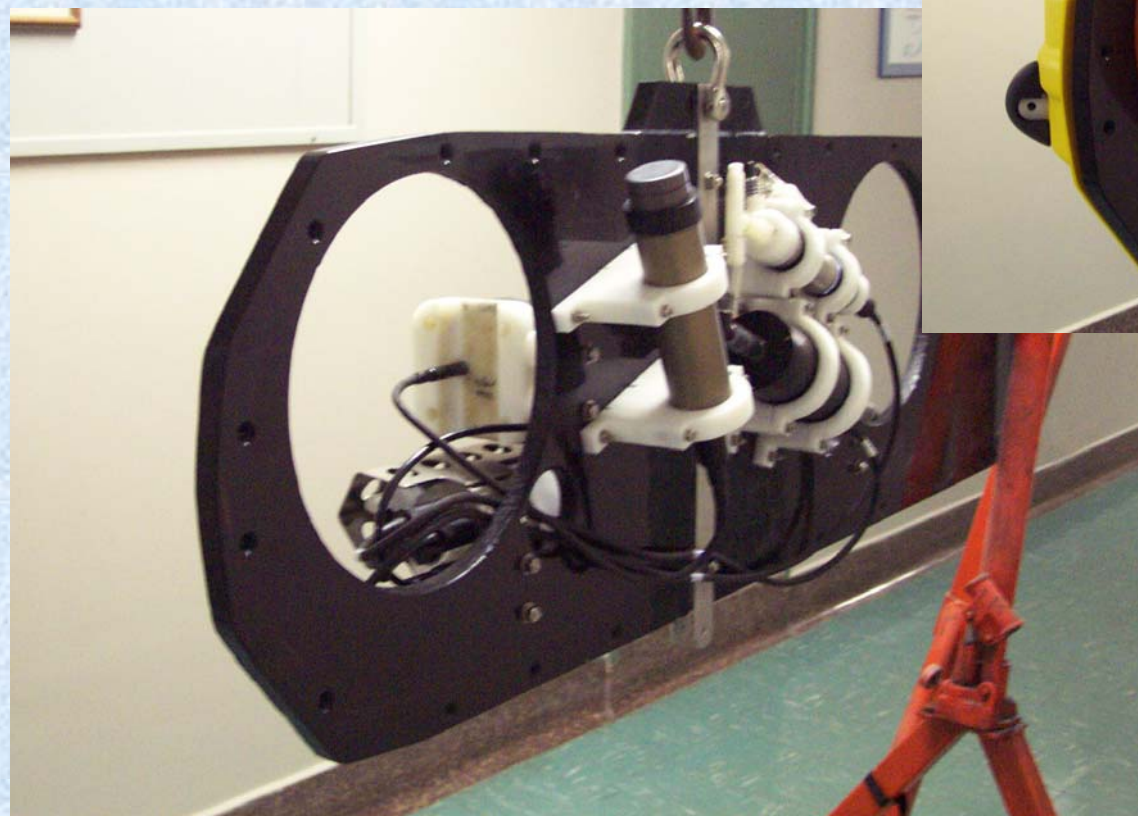
*to monitor with ADCP
oceanic surface layer
heat and freshwater fluxes*

*CTD (1/10 buoyancy of main
body) moves up 10 times as
main body moves down,
thus balancing forces.*

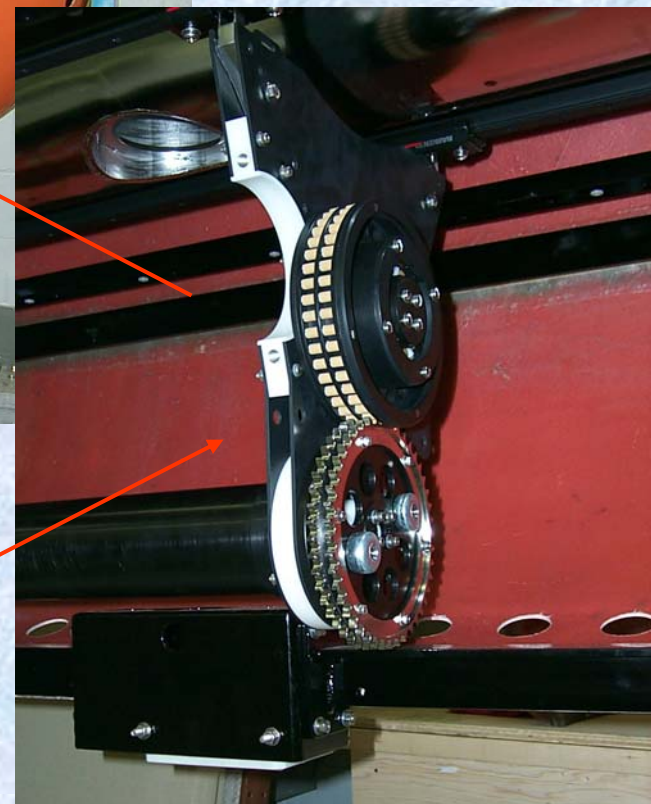
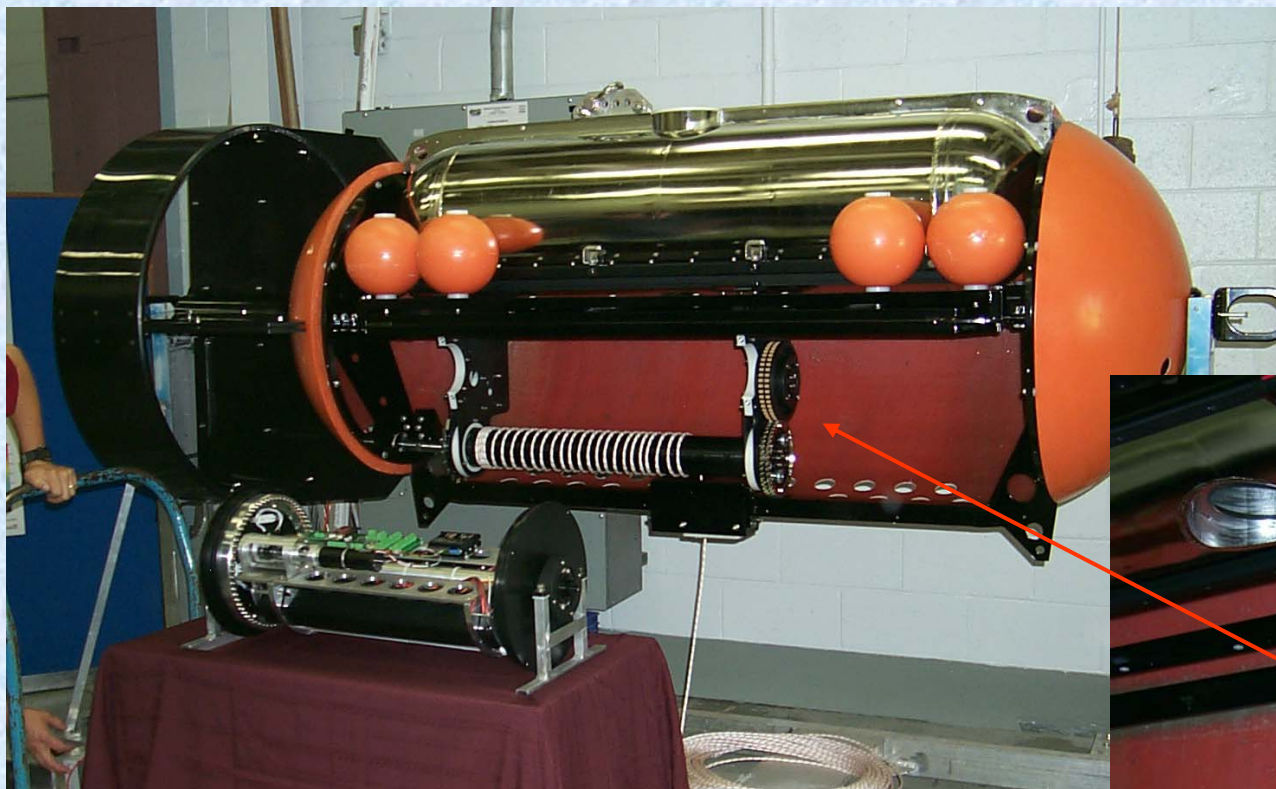




ICYCLER
Profiler



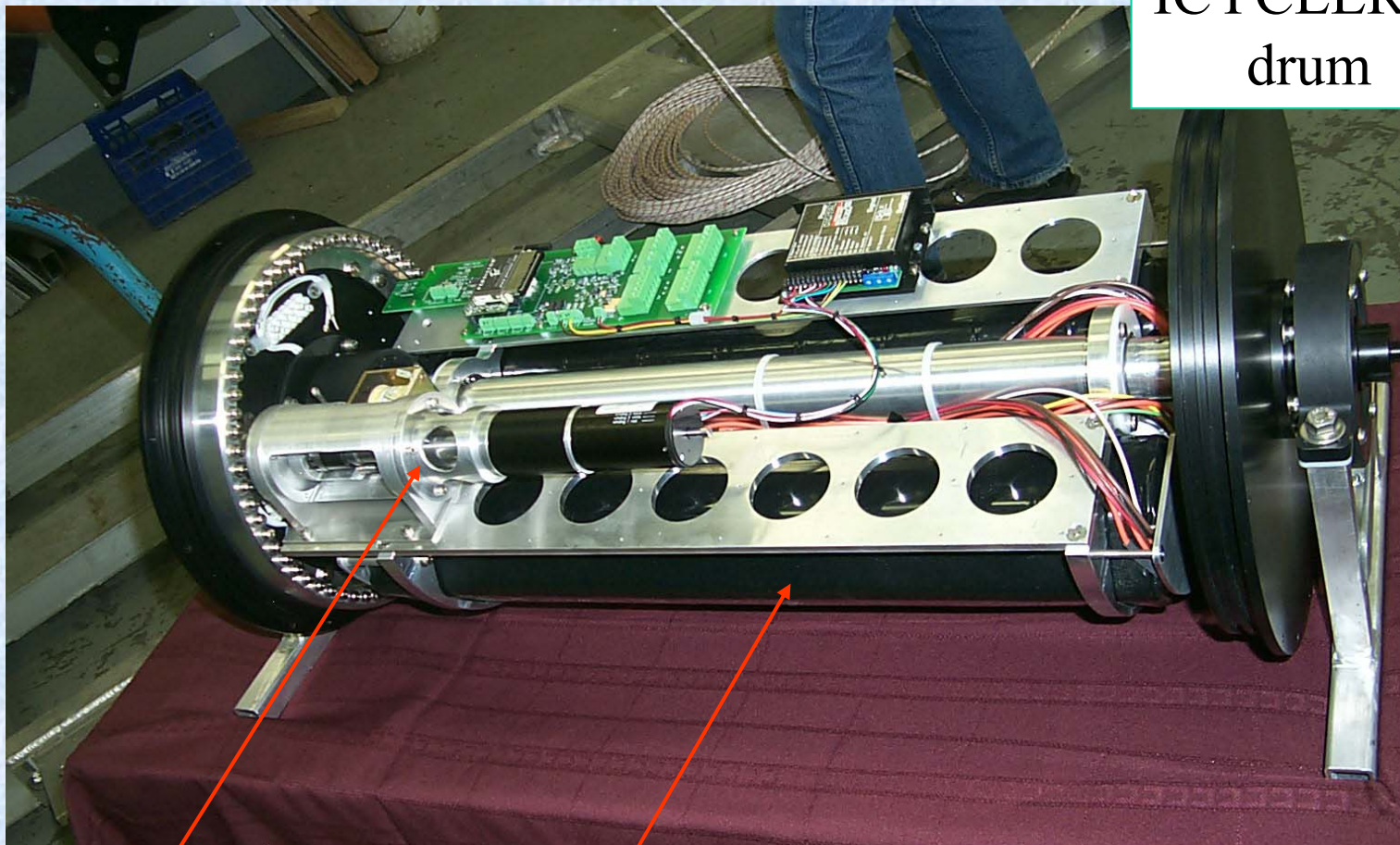
Datasonics Altimeter
Seabird 19+ CTD
Wetlabs Fluorometer



ICYCLER #2
new gear drive



ICYCLER#2
drum

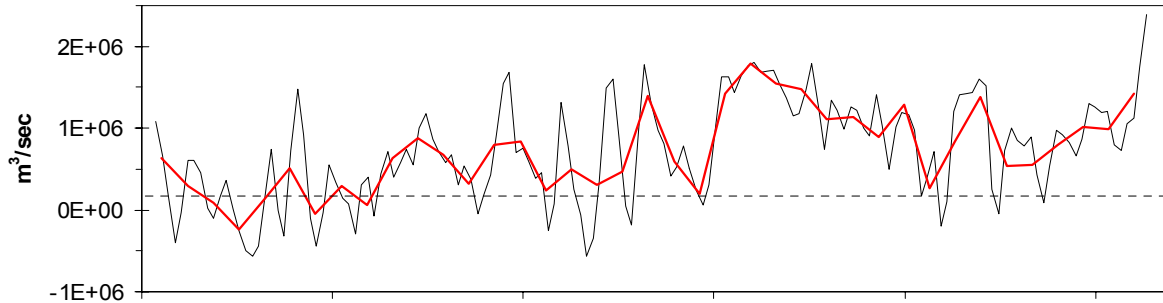


Motor heavy battery pack stabilizes motor position

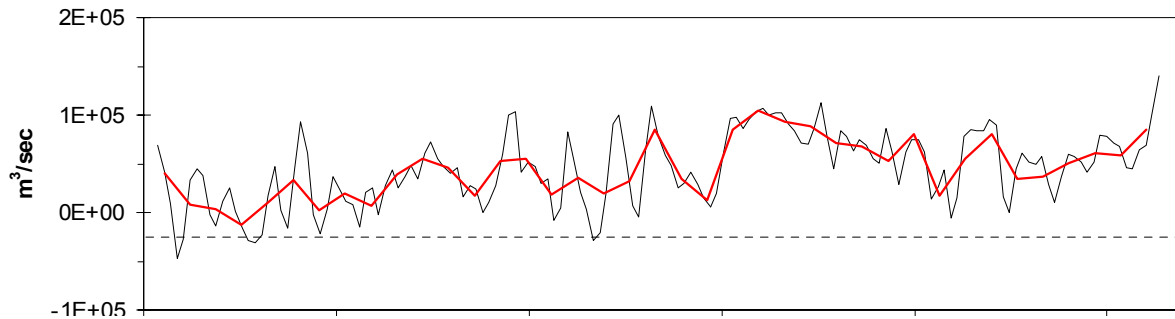
principle of a mouse tread-mill



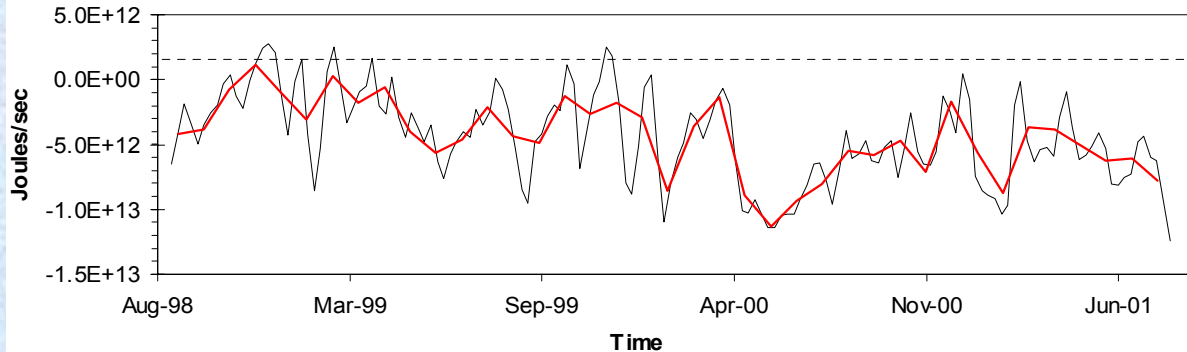
Volume Transport



Fresh Water Transport



Heat Flux



Transports through Lancaster Sound

seasonal weighted
2/3 southern site data and
1/3 northern site data



Lancaster Sound Mooring data shows:

- seasonal variability - 0.0Sv in fall 1998
 - 1.3Sv in summer 2000
- inter-annual variability (NAO or AO related?)
- volume flux = 0.4 to 1.0Sv in mooring year
- freshwater flux = 0.3 to 0.6×10^{-1} Sv in mooring year
- ice freshwater flux = 0.1 to 0.3×10^{-2} Sv mooring year

Transports through Canadian Arctic Archipelago

Mooring data shows that:

- a) $.75 \pm .25\text{Sv}$ through Lancaster Sound (3-yr average)

Models indicate that:

- b) Lancaster Sound contributes 35-45% of total transport

From the above the total transport through the Archipelago

$$= (1.9 \pm .6\text{Sv}) \pm .3\text{Sv} \quad (\pm .3\text{Sv} = \text{model uncertainty})$$

- c) Interannual and seasonal variability smaller in the two northern straits (H. Melling). $\pm .6\text{Sv} \rightarrow \pm .5\text{Sv}$

---> Estimated Archipelago Transport $1.9 \pm .8\text{Sv}$