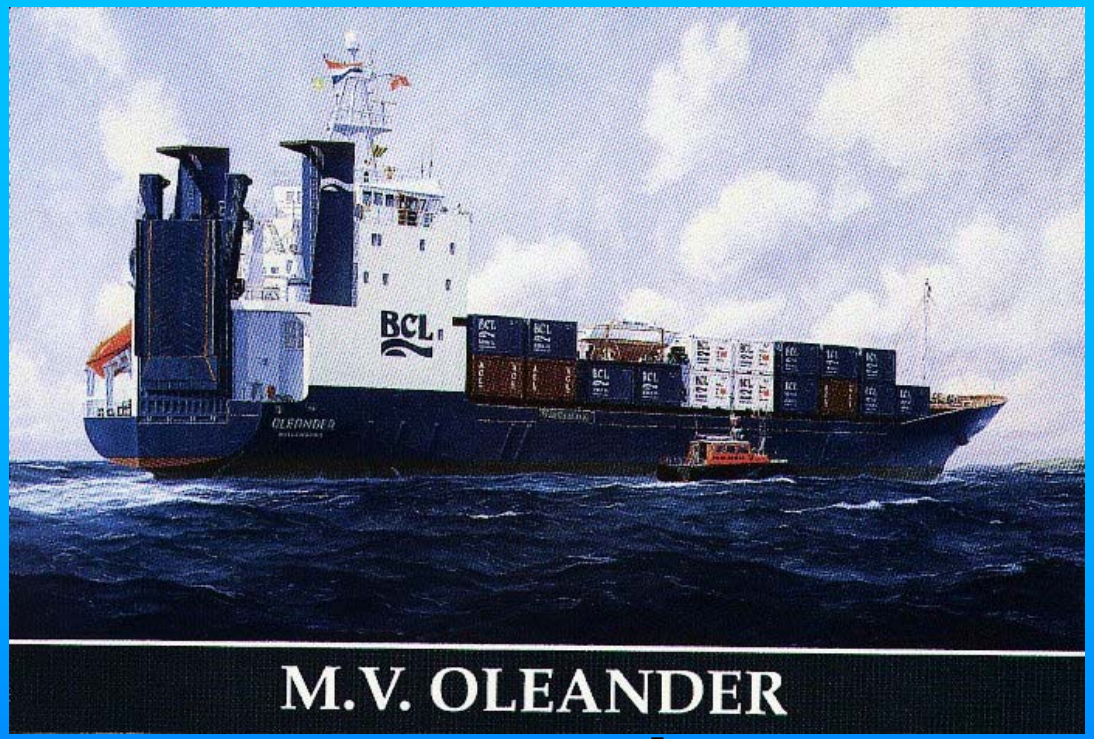
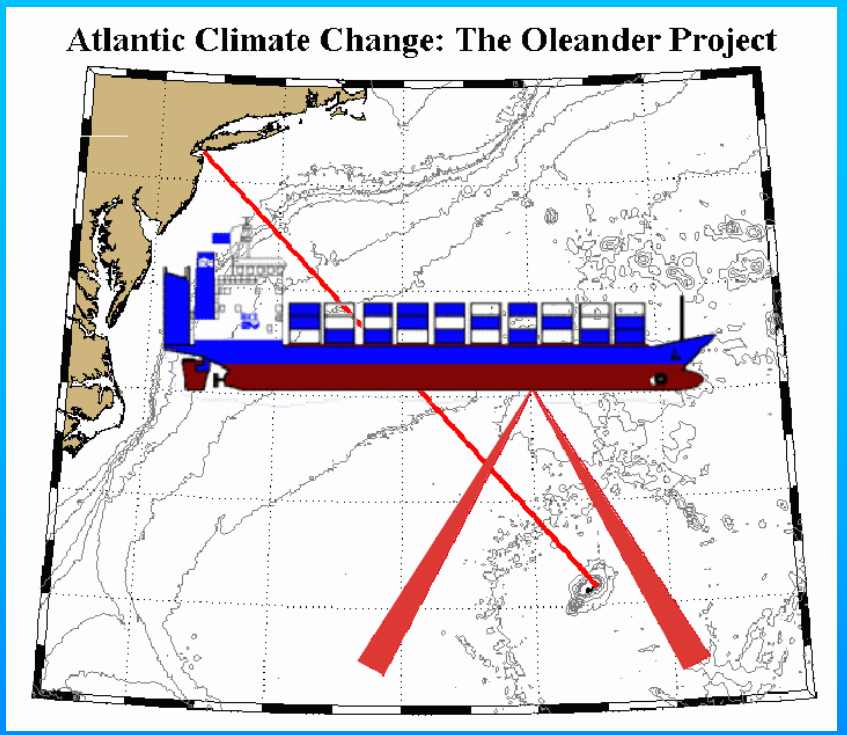
Remarks from Tom Rossby re OceanScope:

- JCOMM/SOT is more than welcome to the first OceanScope workshop. (IOC will be there with Javier Valladares.)
- We have not sent out a broadcast invitation because this is a working group, not a conference - but it is not a closed one.
- The key thing is to bring together expertise from the MM, science/observing community and instrumentation companies.
- focus is clearly on the water column - the area we all have so little skill in today.
- If there is anyone in particular who would like to attend, just let me know and I'll be happy to write.
- SCOR/IAPSO sees this as an opportunity to further skills (new technologies, sampling techniques, ...), not to compete with existing operations - quite the contrary, it wants to provide skills for improved future operations (especially into the water column).

Cheers, Tom



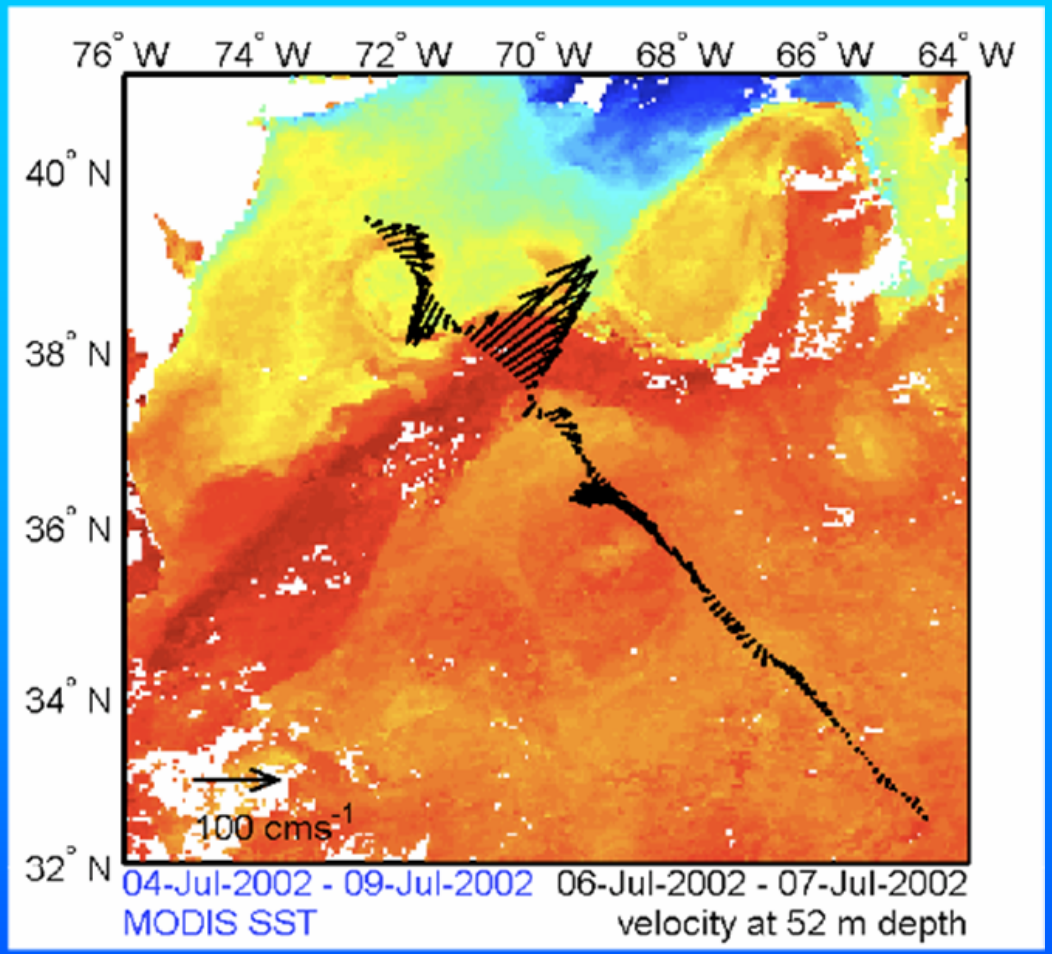


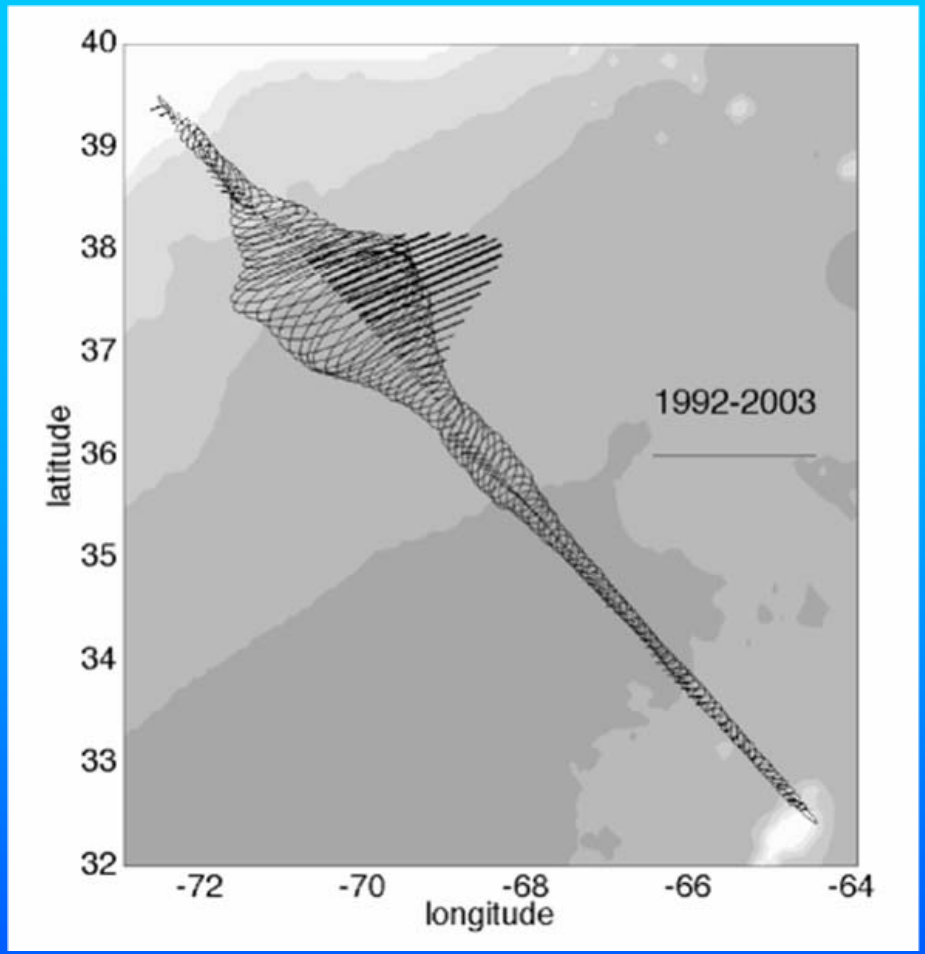
Tom Rossby, University of Rhode Island

Kathy Donohue (URI) and Charlie Flagg (SBU), co-PI's.

- The Oleander program to measures upper ocean currents.
- The program started in September 1992.
- We are now in the 17th year of continuous operation.
- Since fall 2004 we have been operating a 75 kHz ADCP.
- We monitor currents and transport on the shelf, the Slope Sea, the Gulf Stream and the Sargasso Sea.

The Oleander section: 1992 to today...

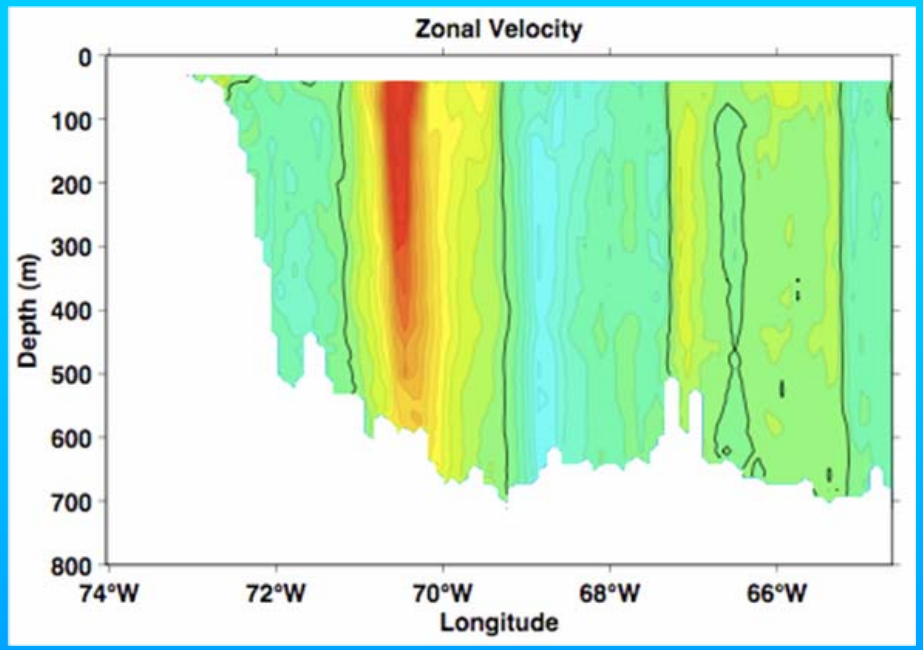




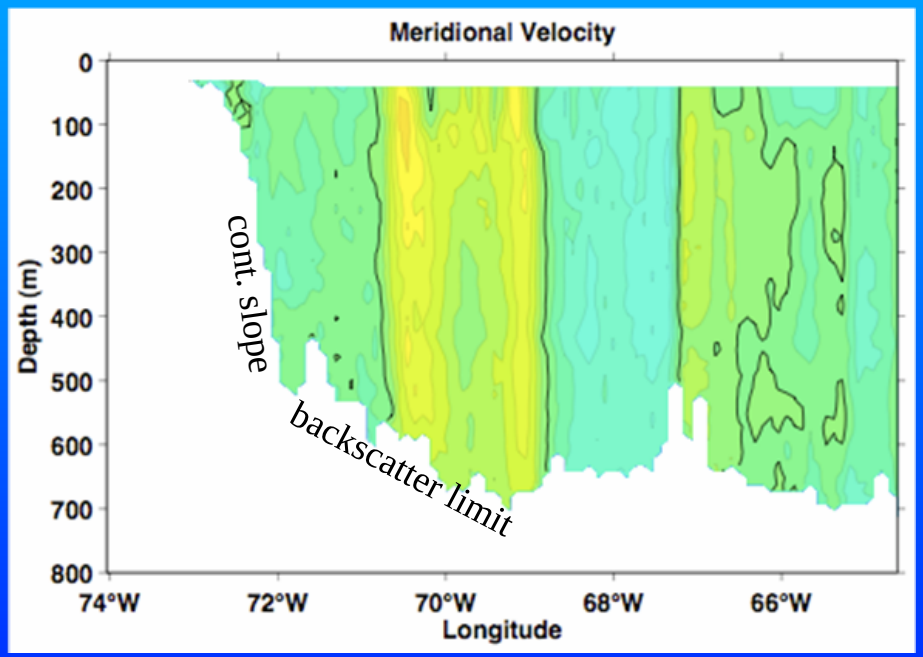
'snapshot'

11-year average

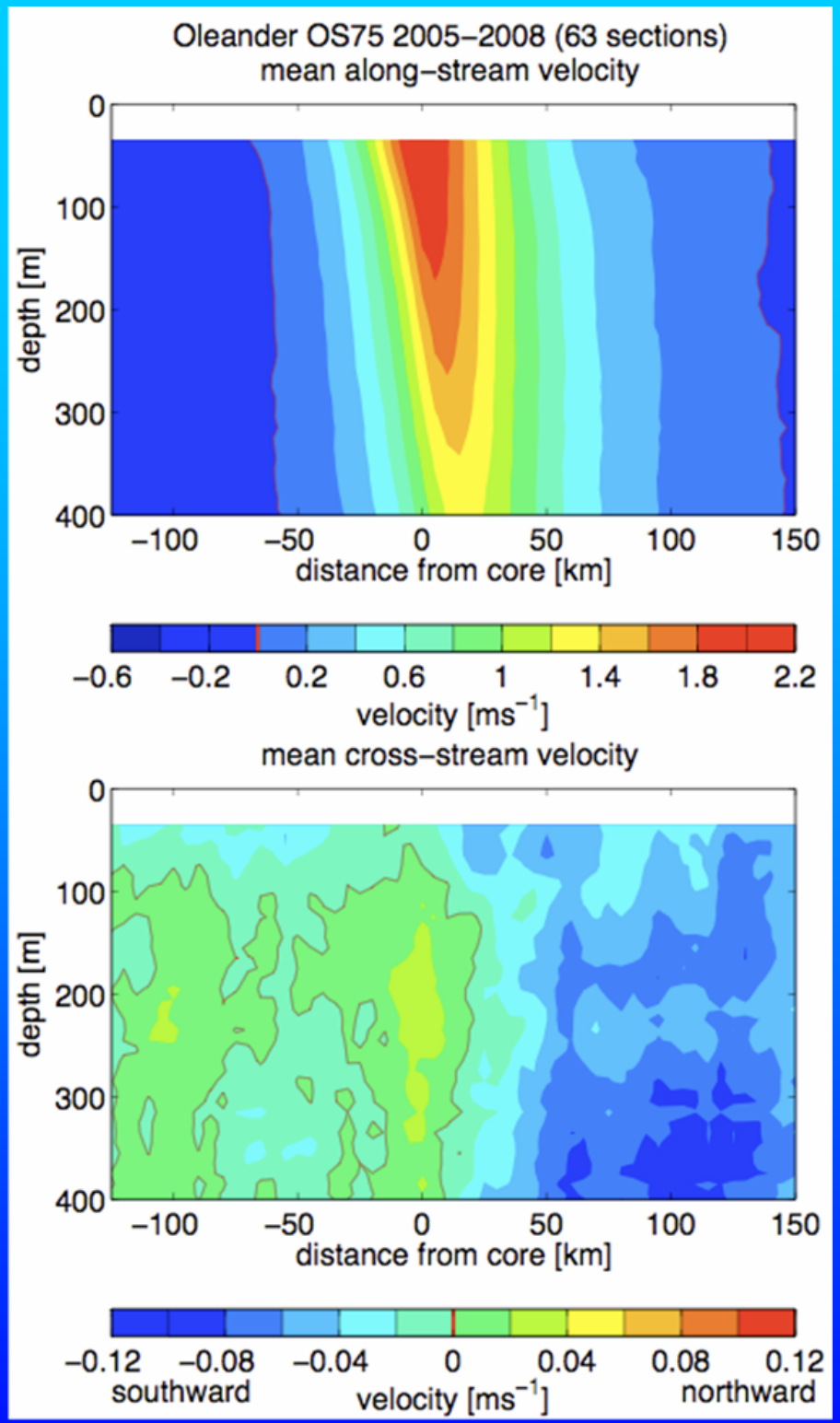
- The 150kHz ADCP measured upper ocean currents to ~250 m in GS.
- New 75kHz system reaches to ~600m.



Example of a good weather (no bubbles) ADCP section. The data are uploaded when the vessel docks in Port Elizabeth. We strive to serve the final product within a few days.



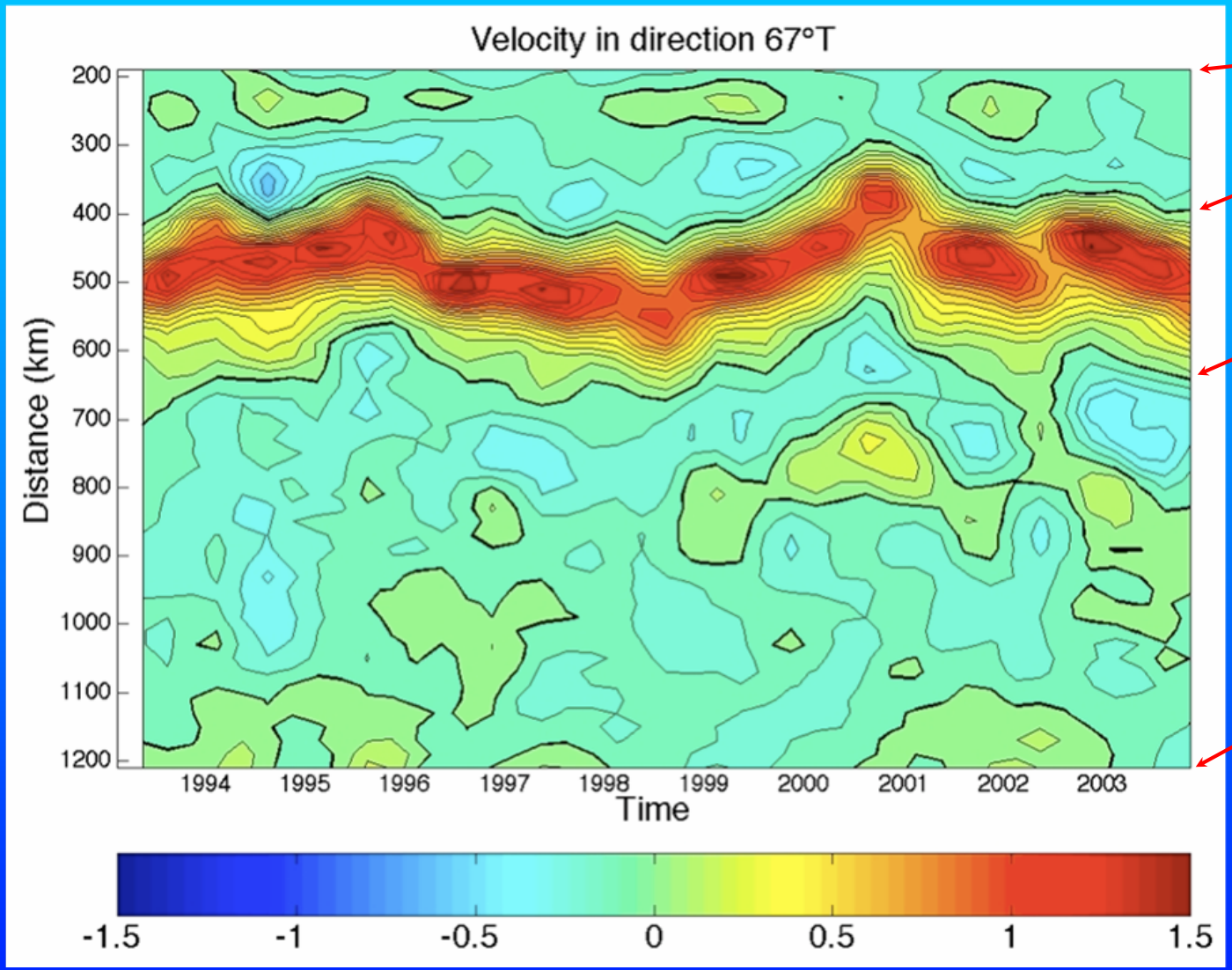
Direct measurements of currents provide highly accurate information on currents, their structure and space-time variability. In absolute units, no assumptions about geostrophy, and/or reference velocities.

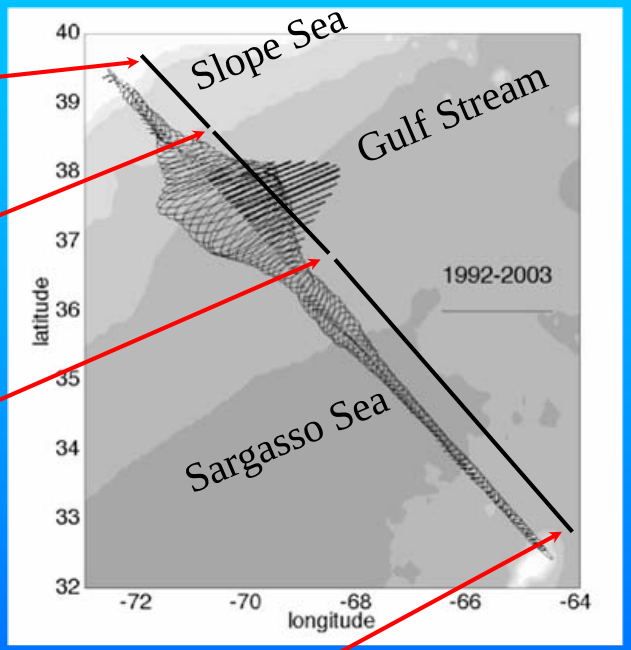


By averaging velocity in stream coordinates one finds that the stream is very tightly structured with a peak speed of just over 2 ms-1 near the surface. We find that the flow is diffluent (fluid leaving the stream on both sides) - most likely due to meandering of the current.

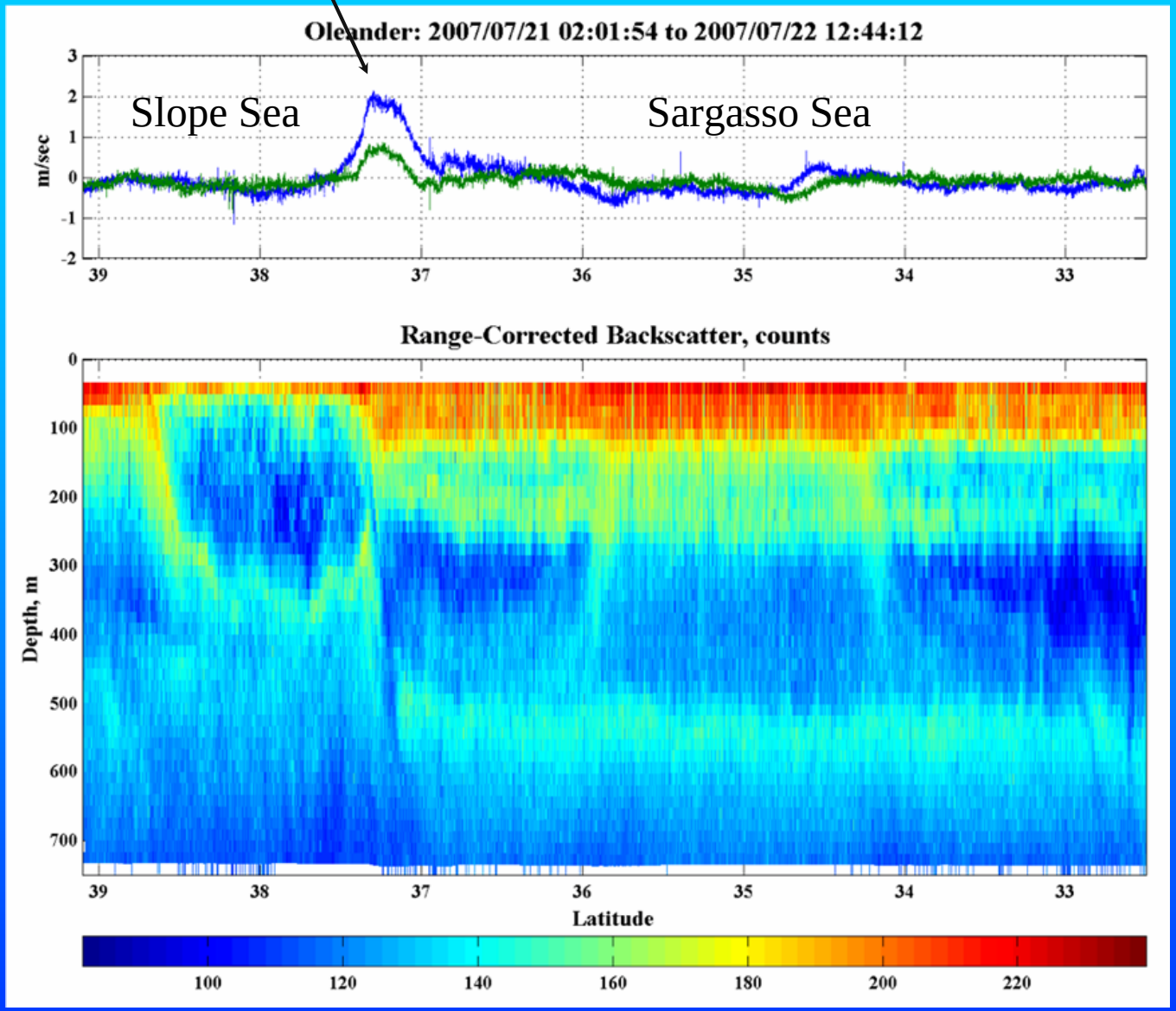
Through these repeat measurements extremely accurate estimates can be obtained.

This time-space diagram shows velocity in the direction of the mean GS between the shelf-break and Bermuda from 1993 to 2004. We are just about to update this figure.





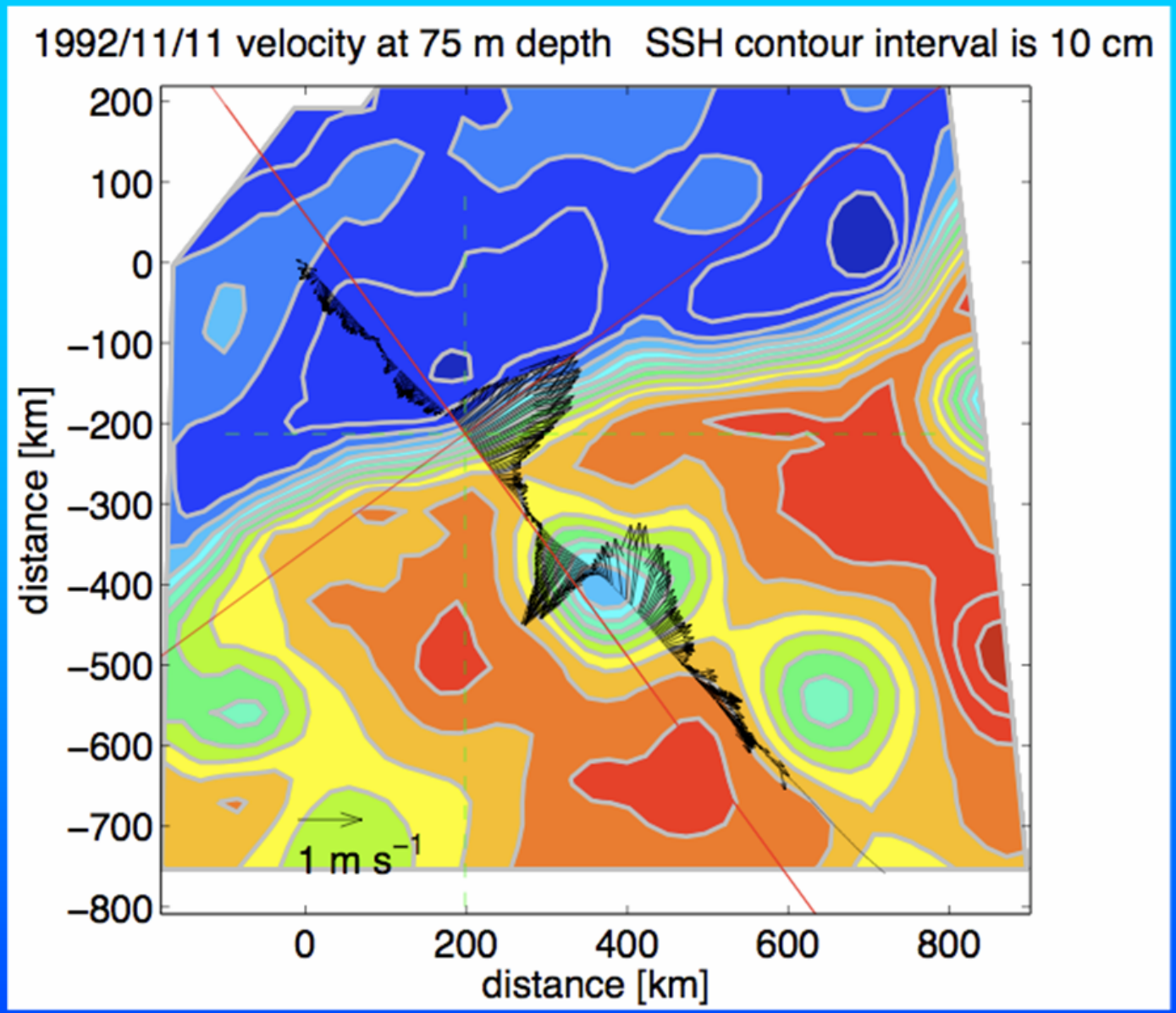
The Gulf Stream



Acoustic backscatter strength between the shelfbreak and Bermuda. Top panel shows currents, the lower one back-scatter intensity. Note the shoaling structure in the GS, the strong returns at certain depths, and the multiple layers of diurnal cycling.

C. Flagg, SBU

Given repeat sampling one will be able to study how these proxies of biomass vary over time.

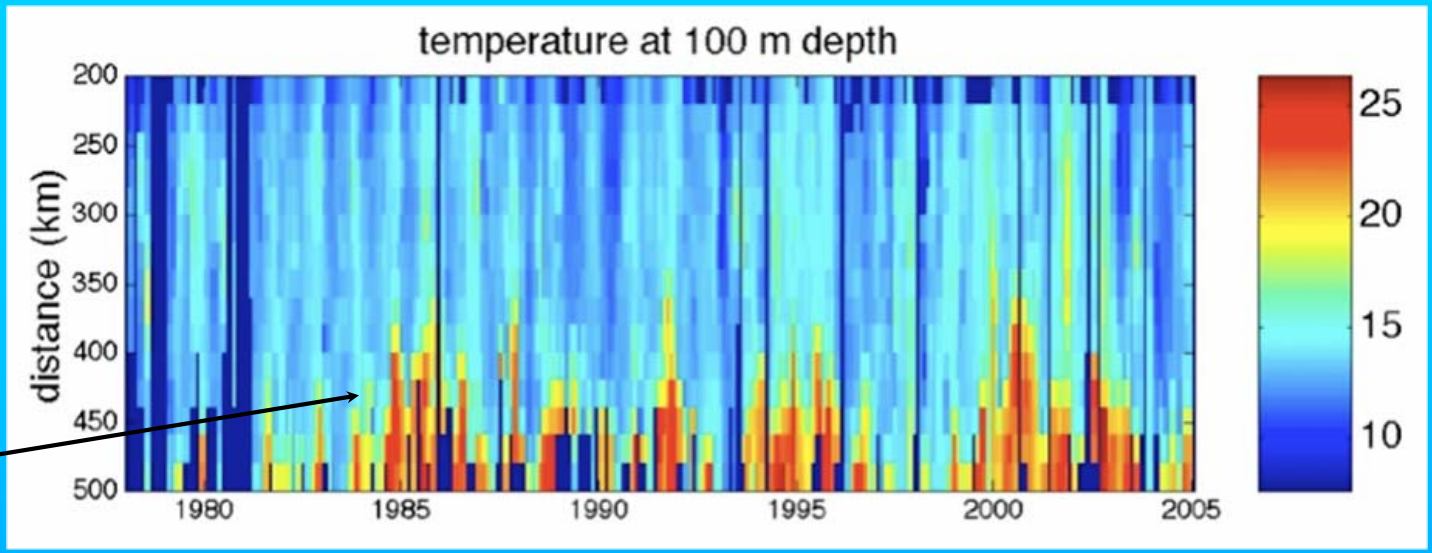


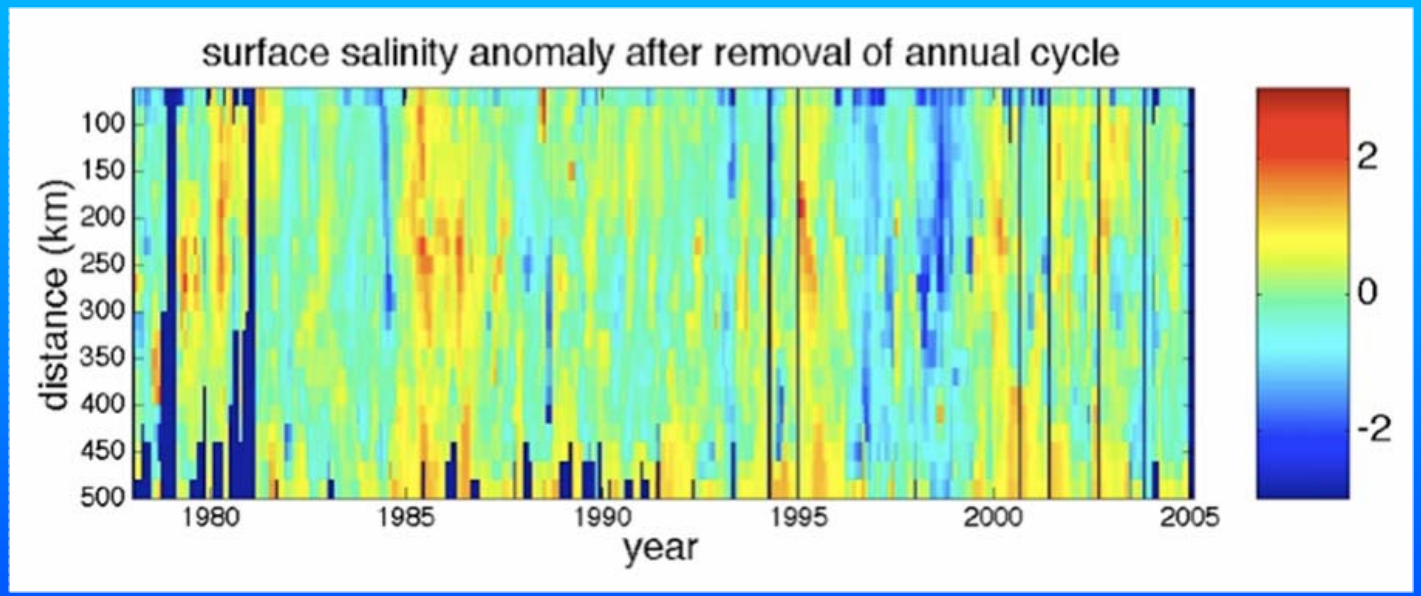
Note the tight coincidence of high velocities with GS path. Also the vectors wrapping around the cold-core ring in the Sargasso Sea.

This figure shows vectors from the Oleander super-imposed on mapped SSH. The agreement is impressive. Satellite tracks are not shown.

*SSH = sea surface height

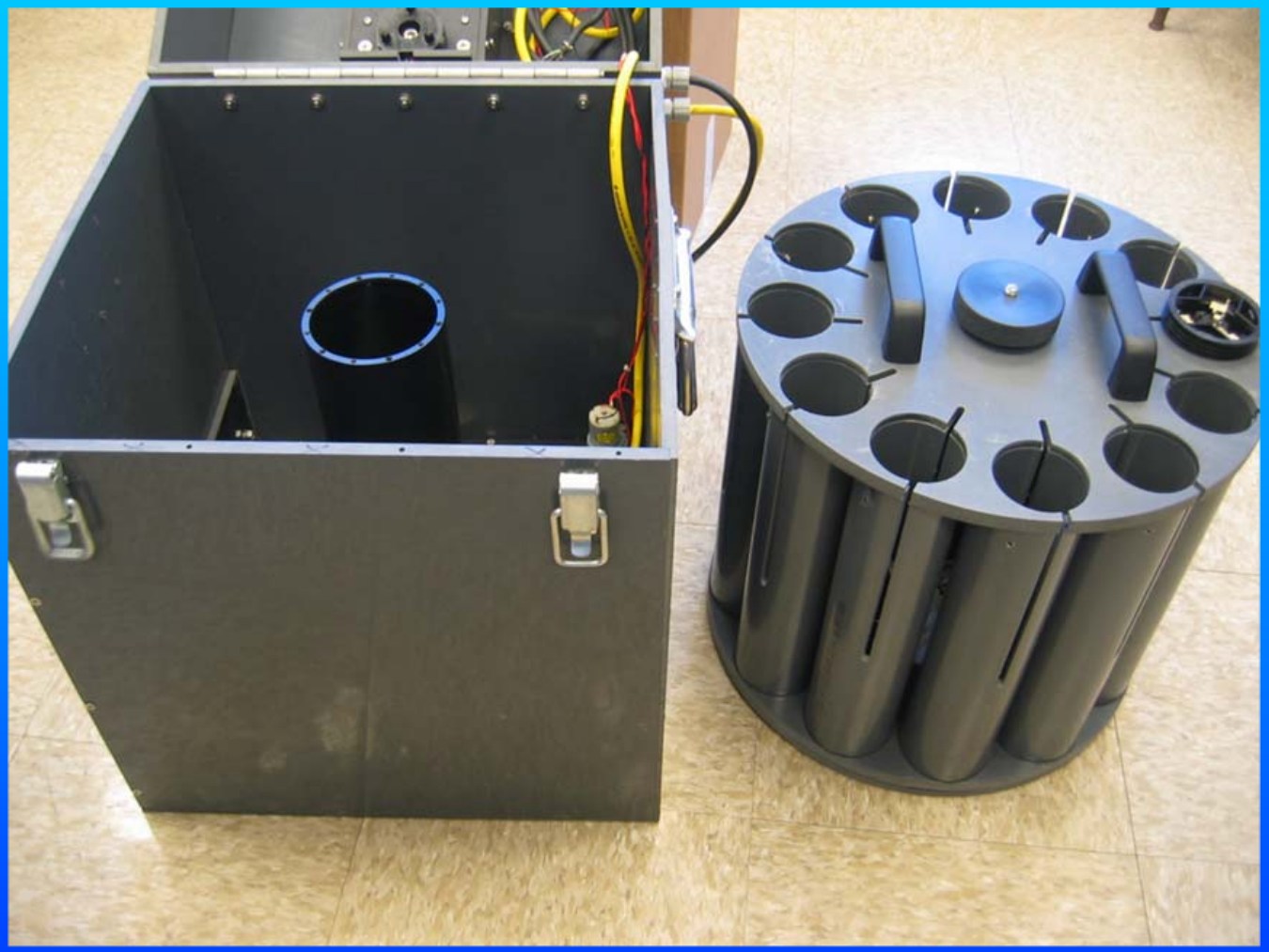
XBTs out to but not across the stream.





data courtesy NMFS

Every month an XBT line is taken along the Oleander track out to the Gulf Stream. Add'l XBTs are taken in the Sargasso Sea. XBTs are now taken across the full stream to get 'heat' fluxes.



D. Fratantoni, WHOI

Battery-driven, easily relocatable on deck, no cables, built-in operating system, swappable cassette, Iridium.

In addition, we are hopeful that a new development will soon become a reality. This launcher, with its preloaded cassette of XBTs will have an Iridium link so that XBTs can be released either upon a preset schedule or upon direct command. This will enable us to greatly improve the XBT operation.

By September the ADCP program will have been in operation for 17 years. The project is funded through 2013 (NSF). The data are freely available and have been used in a number of studies.

The advantage of measuring currents directly is that one resolves the meso- and submesoscale at full accuracy. Further, the repeat sampling removes uncertainty associated with meandering and instantaneous state variability enabling accurate estimates of transport and its change over long time.

The recent addition of an enhanced XBT program will enable us to measure temperature fluxes with much greater confidence.

This ongoing effort has been possible by the excellent cooperation of the BCL and our NMFS and NOAA colleagues who operate the XBT and TSG programs.