

A Coastal Ecosystem Research Initiative (CERI) for the Northwest Atlantic

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Al Plueddemann (Physical Oceanography), Heidi Sosik (Biology), John Trowbridge (Applied Ocean Physics and Engineering)

Region of Interest

The Initiative focuses on the northwest Atlantic continental shelf from Nova Scotia to Cape Hatteras and includes Georges Bank and the Gulf of Maine (Fig. 1). This predominantly advective system is fed by relatively cold, fresh water from the Labrador Shelf. The region is bounded on the seaward side by the shelf break front, a challenging environment for study due to variability of the front itself and the influence of mesoscale features. The southern boundary is delineated by the separation of Gulf Stream from the coast.

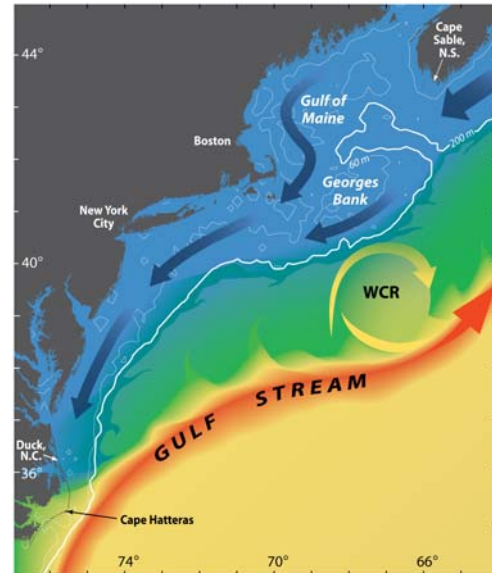


Fig. 1. The CERI Region

Goal and Objectives

The overall goal of the Initiative was to advance our ability to measure, monitor, and analyze fundamental processes shaping the northwest Atlantic continental shelf ecosystem. Specific objectives included:

- Bring together PIs from multiple WHOI Departments who share common interests in an inherently interdisciplinary concept.
- Develop and advocate an observation and modeling framework that will enable predictive understanding of variability in the region.
- Promote a coordinated plan to integrate existing resources and to acquire and focus the use of new resources.
- Position WHOI PIs to compete for funding opportunities related to the CERI theme.

Activities

The CERI project spanned two COI Initiative awards (2006, 2007) and a one year extension bringing the end date to June 2009. During this period, the PIs have:

- Presented the Initiative concept via talks in all 5 departments, plus Marine Policy and the Northeast Fisheries Science Center (NFSC).
- Prepared and solicited input to a white paper defining the science framework and implementation strategy for the Initiative; produced Rev. 8 of the draft paper.
- Surveyed regional observing assets and produced a regional asset map (Fig. 2) that has been widely used in various forms for proposals and presentations.

- Planned and held an Institution-wide workshop to identify funding and program development opportunities for WHOI researchers, and to articulate appropriate strategies in response to those opportunities (see summary on the COI website at <http://www.whoi.edu/page.do?pid=8036>).
- Formed a working group on Science Supporting an Ecosystem Approach to Management (SSEAM). Advocated the SSEAM concept to the WHOI directorate as part of an overall WHOI strategic plan for research.
- Co-organized an Ecosystem Initiative Scoping workshop, sponsored by the Cooperative Institute for Climate and Ocean Research (CICOR; see <http://www.whoi.edu/page.do?pid=13749&tid=282&cid=40568>).
- Worked with COI, COSMOS, CICOR, WHOI Development Office and individual PIs to coordinate WHOI's role in NW Atlantic ecosystem research and coastal observing.
- Advocated for a regional (South Atlantic Bight to Newfoundland) ecosystem research framework in meetings with representatives from the NOAA Northeast Fisheries Science Center (NEFSC), the office of the Consulate General of Canada, and the Regional Technical Development Corp. (RTDC) of Cape Cod. Specific activities included participation in:
 - Coastal Ecosystem Research Partnership Workshop, St Johns, NL, May 2007
 - Ocean Innovation World Summit, St Johns, NL, October 2008
- Participated in a variety of fisheries and ocean tech industry engagement and outreach activities, including:
 - Advanced Technologies for Ocean Sensing, August, 2006
 - MTS/IEEE Oceans '06, September 2006
 - Atlantic Canada – New England Business Forum, November 2007
 - Chicago Museum of Science and Industry, December 2007
 - Fisheries Information and Product Definition Workshop, November 2008
- Initiated a proof-of-concept study to use gliders for New England Shelf Transects (NEST) from the MVCO to Line W with COI funding (see proposal summary at <http://www.whoi.edu/page.do?pid=7903&cid=22530&c=2>).
- Coordinated initial analysis of the NEST glider data set (see representative results in Fig. 3, complete results at <http://science.whoi.edu/users/seasoar/nestglider>).
- Participated in the preparation of proposals for:
 - ORION Coastal/Global Implementing Organization (NSF-OOI)
 - Massachusetts Technology Council and John Adams Innovation Fund (OOI matching funds)
 - Regional IOOS development (NOAA-NERACOOS)
 - North Atlantic Regional Cooperative Institute (NOAA-CINAR)
- Served as WHOI representatives on the Regional Association for Research in the Gulf of Maine (RARGOM) board.

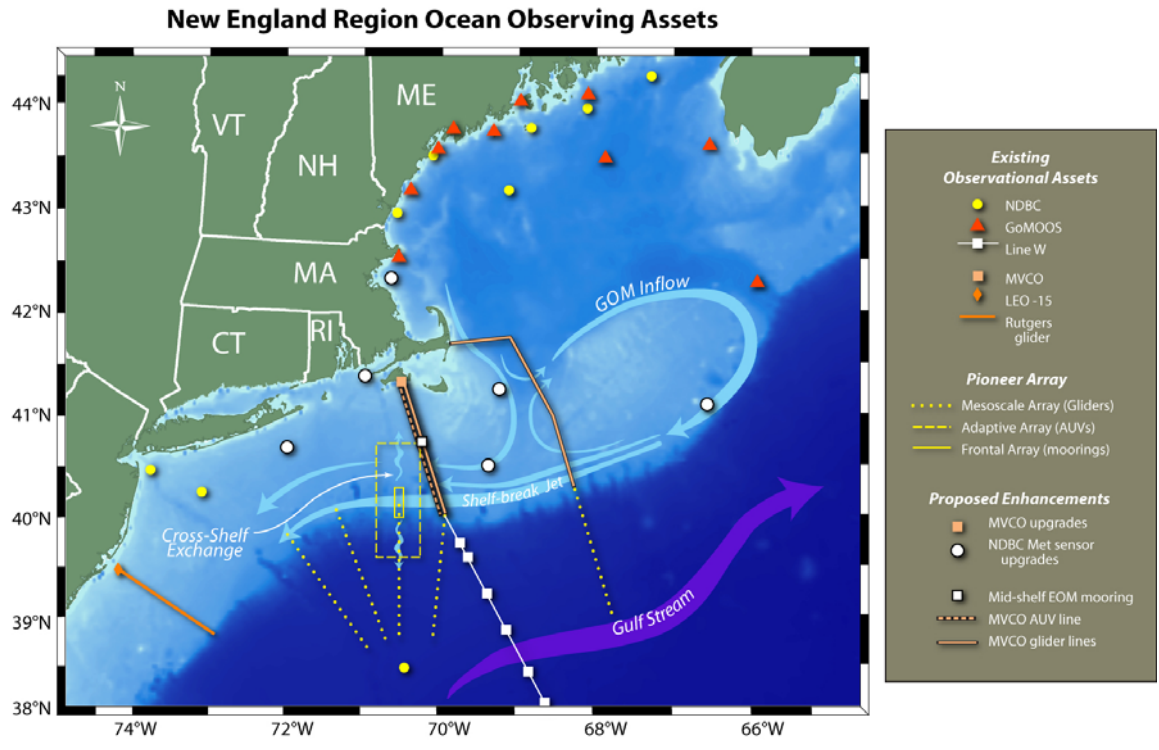


Fig. 2. Regional observing asset map as used in the WHOI Ocean Observatories Initiative (OOI) proposal.

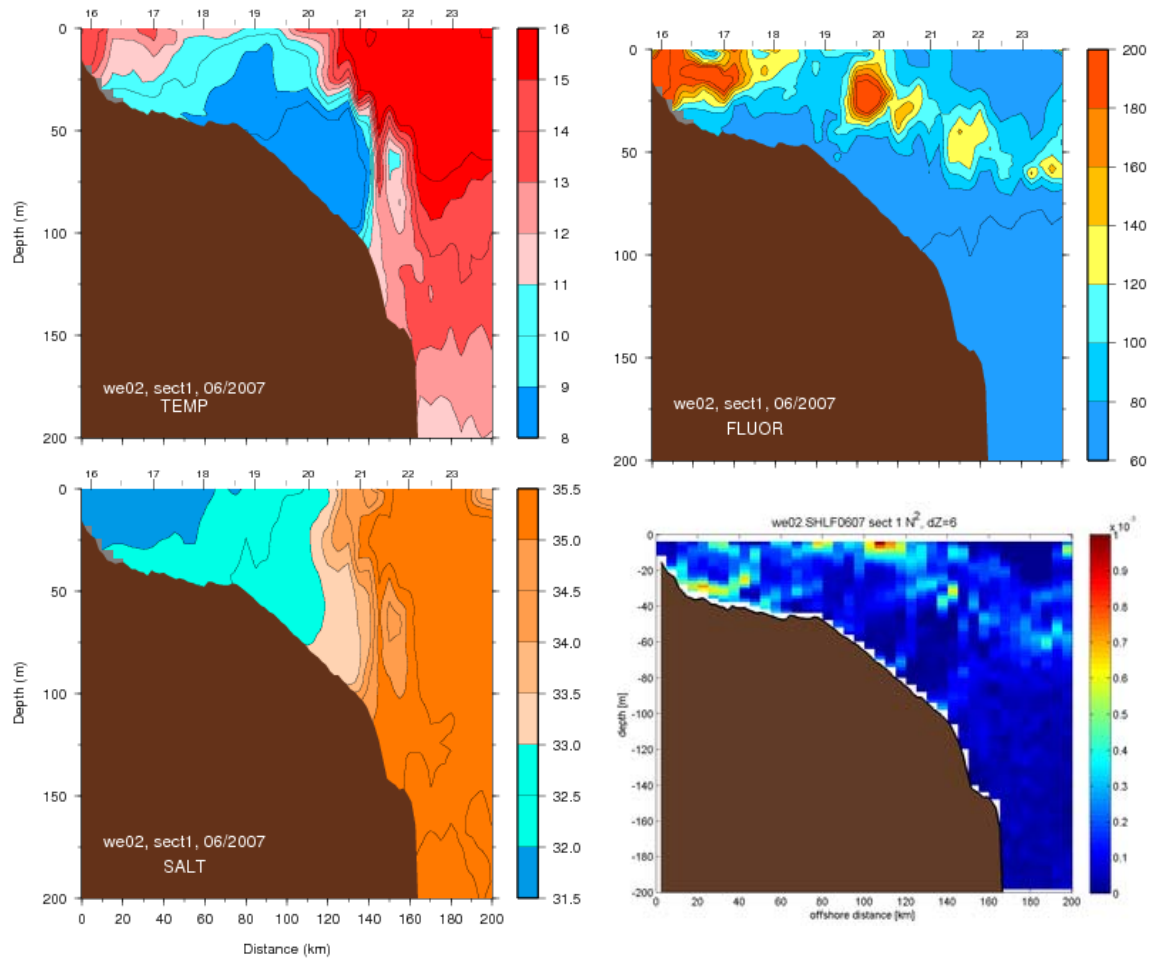


Fig. 3. Glider transect from MVCO to Line W in June 2007. Temperature and salinity (left) show variable stratification (temp) and a nearly vertical shelfbreak front (sal). Chlorophyll fluorescence (upper right) appears to be controlled by vertical stratification (reflected in N^2 , lower right) despite the strong salinity front.