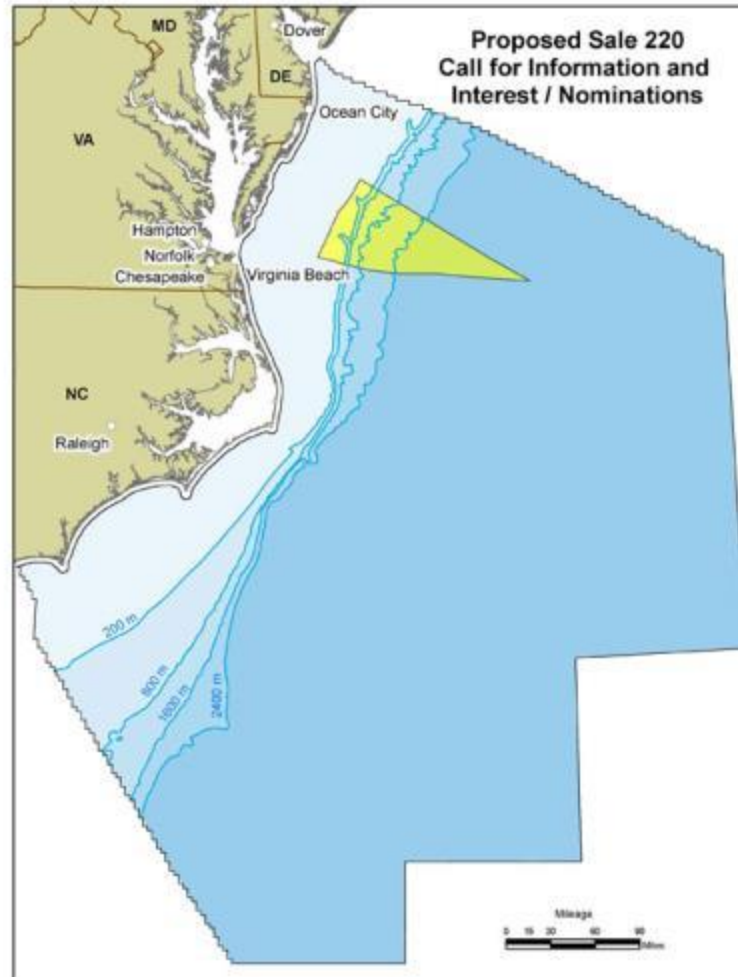


Mid-Atlantic Canyons Research

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Biological Oceanographer
BOEM Environmental Studies Program
April 7, 2016

- Origins of first Atlantic Canyons study in 2009 with the prospect of a lease sale offshore Virginia in 2011
- Lease sale cancelled in 2010
- Minerals Management Service, to become Bureau of Ocean Energy Management, had foresight to continue with this study.

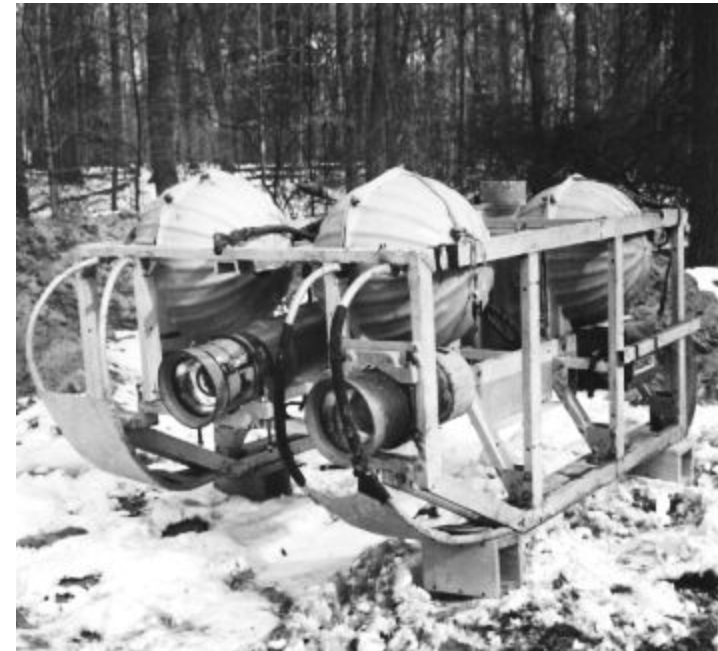
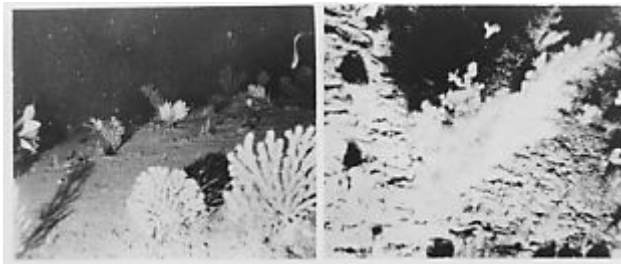


Major feature of the Atlantic continental shelf break in the northeast United States



- Extensive work for BLM/MMS in 1970's and early 1980's by Battelle New England Marine Research Laboratory, Woods Hole Oceanographic Institution and Lamont-Doherty Geological Observatory.

Oceanographer Canyon
Offshore New Jersey,
900-1,000 m



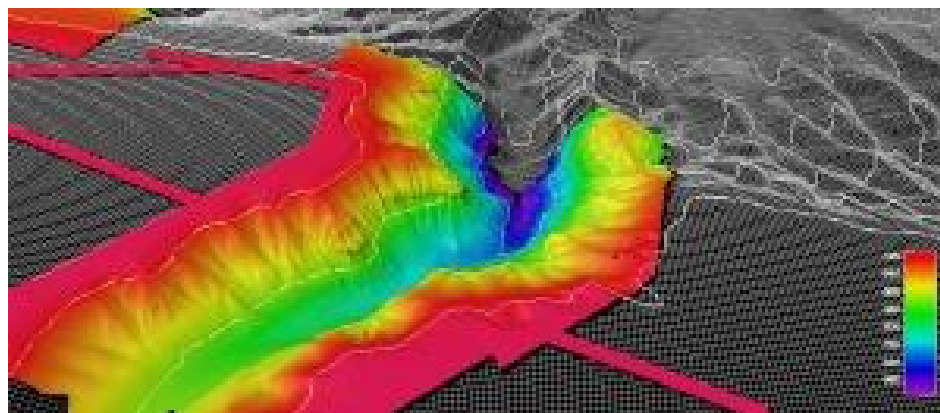
- Other early information from submersibles (mostly *Alvin*) also reported in BLM *Canyon Assessment Study in the Mid- and North Atlantic Areas of the U.S. Outer Continental Shelf* (Hecker et al., 1980).



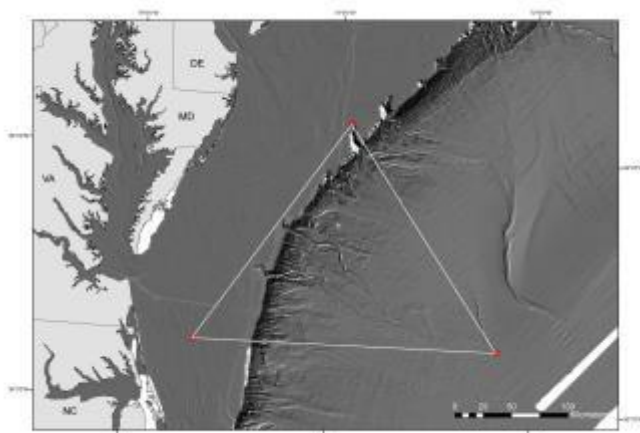
Initial concept:

- Norfolk Canyon
- Washington Canyon
- Baltimore Canyon

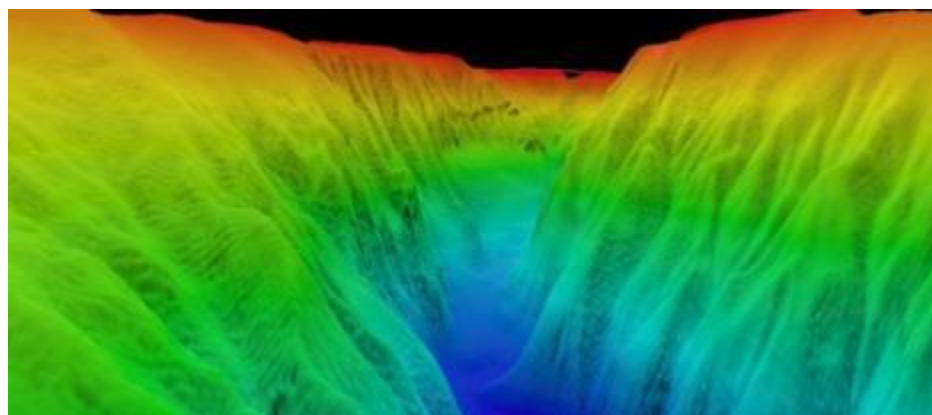
Multibeam bathymetry



Norfolk Canyon



Triangle represents RFP study area



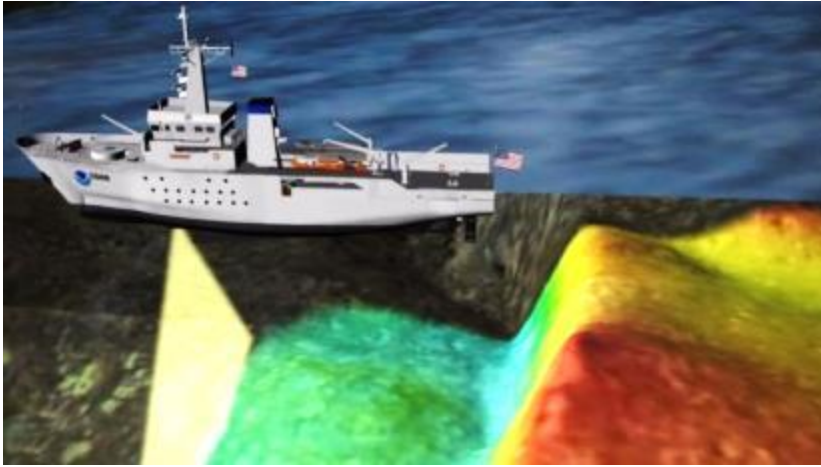
Baltimore Canyon

Based on rigorous scientific design, decision to focus on the two larger canyons, Norfolk and Baltimore

Study's Objectives:

- **Understanding of the distribution, and diversity of hard bottom communities in the north and mid-Atlantic slope area with focus on canyons.**
- **Define environmental conditions that result in the observed distribution of significant high-density hard bottom communities that are sensitive to impacts from oil and gas development activities.**
- **Locate, explore and identify archaeological targets for potential historical significance.**





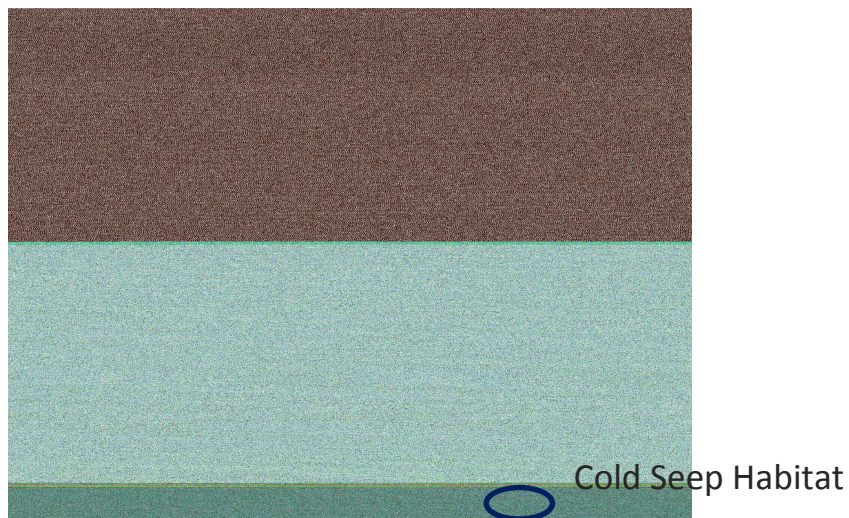
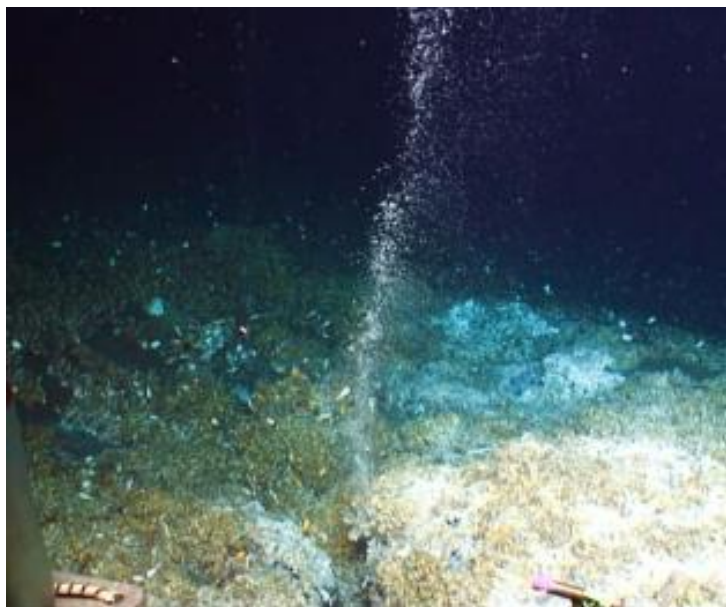
- NOAA research vessel *Okeanos Explorer* first detected the gas seeps near Norfolk Canyon in November 2012.

- With scheduled study cruise to Norfolk Canyon in April 2013, a portion of the effort was redirected to this exciting potential!



Multibeam data covered 94,000 km² of sea floor identified 570 gas plumes at water depths between 50 and 1,700 m between Cape Hatteras and Georges Bank. (A. Skarke et al., 2014). Extrapolating the upper-slope seep density on this margin to the global passive margin system, it is possible there are tens of thousands of seeps that could be discoverable.

Targeting the previously located gas seep area near Norfolk Canyon.....



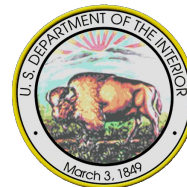
Extensive chemosynthetic communities discovered! Two features over 1 km in length.



- Final technical report is nearing completion (expect 1,500 pages).
- After review and editing, public release expected late 2016.
- Although the Atlantic has been withheld from 2017-2022 BOEM 5-year Program, this research will contribute new and valuable information to inform future decisions.



Preliminary information from the BOEM/NOAA OER/USGS study has already played a significant role in the decision document to protect deep-water corals by the Mid-Atlantic Fishery Management Council.



- BOEM is actively coordinating with partners to develop new study initiatives for deepwater exploration and research on the Mid- and South Atlantic OCS.
- Study results will inform management for future leasing decisions.

