Mapping Deepwater Areas Southeast of Bermuda in Support of the Galway Statement on Atlantic Ocean Cooperation (EX1807)

NOAA Ship *Okeanos Explorer*
July 12 – 31, 2018

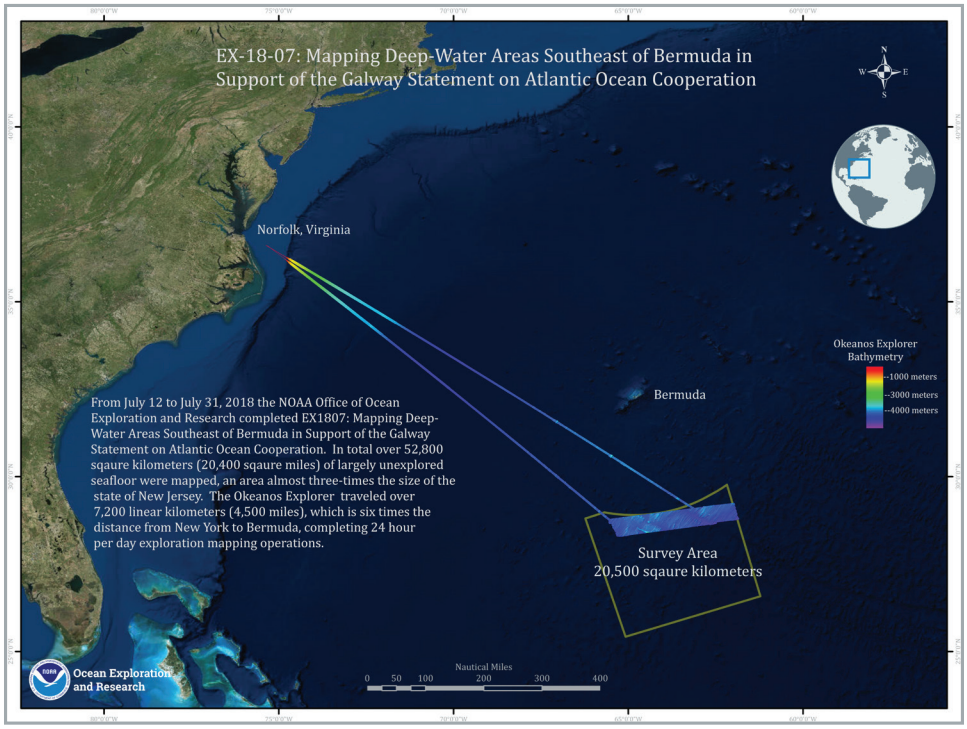
Ocean Exploration and Research

ASPIRE

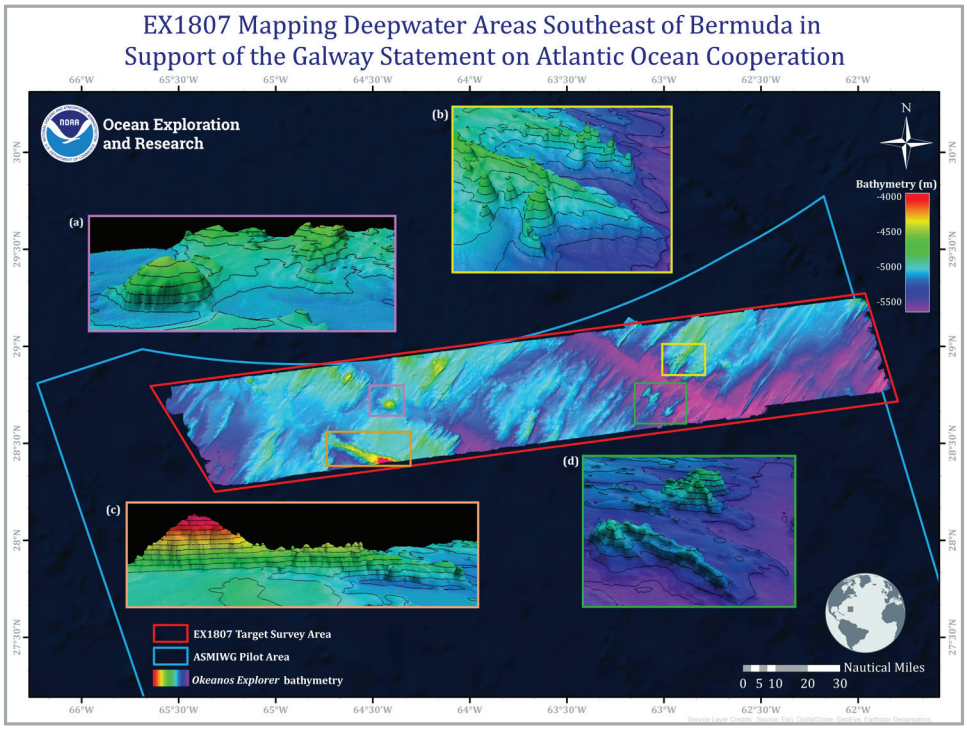
This expedition was the first dedicated government non-transect survey in support of the Atlantic Ocean Research Alliance/Atlantic Seabed Mapping International Working Group (AORA/ASMIWG) and the Galway Statement on Atlantic Ocean Cooperation. This was the second expedition in support of the Atlantic Seafloor Partnership for Integrated Research and Exploration (ASPIRE) campaign, a major multi-year, multi-national collaborative field program focused on raising collective knowledge and understanding of the North Atlantic Ocean.

Expedition Summary

Mapping Deepwater Areas Southeast of Bermuda in Support of the Galway Statement on Atlantic Ocean Cooperation was a 20-day telepresence-enabled expedition to collect critical information and acquire data on priority exploration areas identified by the ocean management and scientific communities. Highlights from the expedition are summarized below.



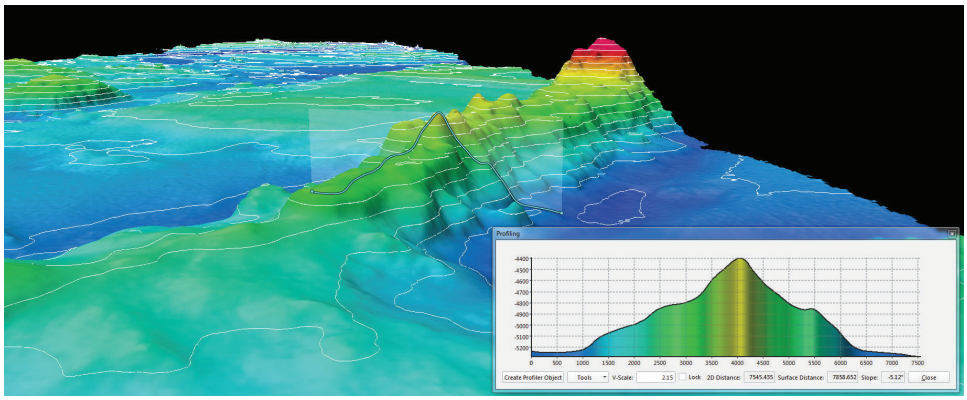
Overview map showing seafloor bathymetry during the **Mapping Deepwater Areas Southeast of Bermuda in Support of the Galway Statement on Atlantic Ocean Cooperation** expedition (EX1807). *Map courtesy of the NOAA Office of Ocean Exploration and Research.*



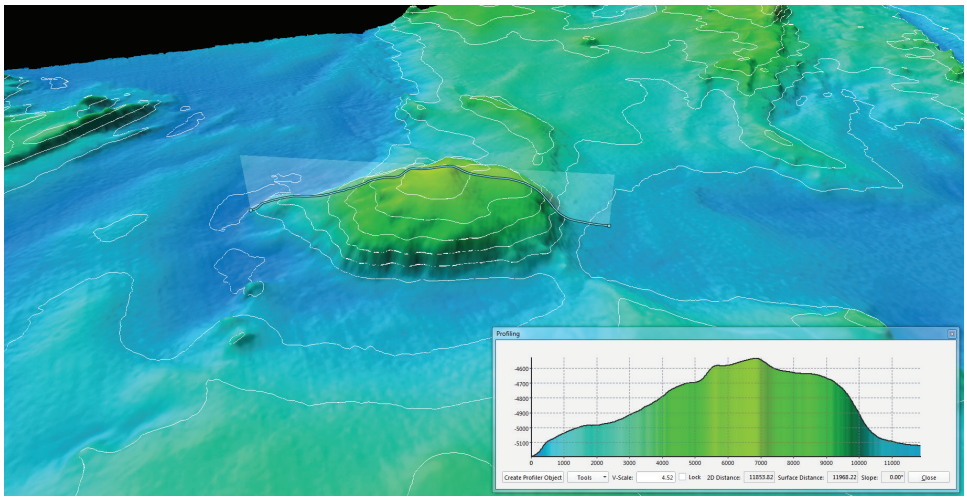
Kongsberg EM302 bathymetry data collected on NOAA Ship *Okeanos Explorer* during EX1807. During this expedition, the *Okeanos Explorer* mapped a focused survey area over 20,500 square kilometers, an area larger than Massachusetts. Exploration mapping revealed a complex seafloor structure, including distinct conical features, a true seamount, and southwest/northeast trending linear ridges. *Image courtesy of the NOAA Office of Ocean Exploration and Research.*

Extended bathymetric mapping coverage in the U.S. EEZ and international waters in support of Seabed 2030.

- Mapped over 52,000 square kilometers (20,400 square miles) or over 7,200 linear kilometers (4,500 miles), an area almost three times the size of New Jersey.
- Mapped a focused survey area of 20,500 square kilometers, an area larger than Massachusetts.
- Collected over 150 GB of data including multibeam bathymetry, backscatter, and water column data; sub-bottom data; and split-beam sonar data.



This ridge feature, extending over 30 kilometers, is topped with distinct cones arounds depths of about 4,400 meters. They are over 910 meters above the seafloor and taller than the One World Trade Center. Prior to EX1807, these features were completely unexplored. Similar structures were used as remotely operated vehicle (ROV) dive targets during the Pacific CAPSTONE campaign. The colors and units in the corresponding profile are in meters. White contour lines are 100 meters. *Image courtesy of the NOAA Office of Ocean Exploration and Research.*



Almost twice the height of the Empire State Building, this not-quite-a-seamount stands 800 meters above the seafloor. Technically defined as a knoll, this distinct mound was a relatively unique feature since it was not associated with the southwest, northeast trending linear ridges crossing the survey area. It is 11 kilometers from flank to flank and likely volcanic in origin. The colors and units in the corresponding profile are in meters. White contour lines are 100 meters. *Image courtesy of the NOAA Office of Ocean Exploration and Research.*

Characterize water column habitats throughout the Atlantic basin using acoustics, visual observations, and emerging technologies.

- Mapped a previously unknown seamount.
- Collected split-beam and multibeam data of water column habitats.
- Completed 85 expendable thermograph (XBT) profiles.
- Identified potential areas of younger lava flows relative to the older oceanic crust using a combination of backscatter and bathymetry.

Improve international collaboration and serve as a major contributor to the Galway Statement on Atlantic Ocean Cooperation and the Atlantic Ocean Research Alliance's deep-sea mapping and exploration efforts.

- Mapped priority areas defined by the international ASMIWG using suitability models to identify areas in the North Atlantic Ocean, factoring in areas of public interest, sensitive marine areas, and areas with marine resource potential.

Leveraged international partnerships to conduct coordinated exploration and mapping of priority high-seas areas of the North Atlantic.

- Hosted two international visiting scientists from the Memorial University of Newfoundland in Canada and the University of Kiel in Germany.

Engaged with audiences around the nation, opening a window of understanding into the deep sea.

- Hosted four Explorers in Training, including one from the NOAA Education Partnership Program.
- Hosted one NOAA Teacher at Sea from the Peddie School in Hightstown, New Jersey.
- Hosted five interactions with over 85 individuals from the NOAA Seattle Science MiniROV Camp, the Engineeristas Technology Camp, and other groups visiting the University of New Hampshire.

For more information: oceanexplorer.noaa.gov/okeanos/explorations/ex1807/welcome.html