The EX1204 North East Canyon Exploration, one of five missions contributing to the overall Atlantic Canyons Undersea Mapping Expeditions (ACUMEN), seeks to produce high-quality bathymetric images. These images reveal the intensity of the study, highlighting the complexity of the seafloor and its potential as a habitat for deep sea corals. The analysis of this mission's results will also provide excellent ground-truth information to the multibeam mapping community.

Smith and Sandwell (1997) compiled a global seafloor topography database derived from satellite altimetry and ship-based depth soundings. This database provided a solid foundation for understanding the geomorphology and diverse habitat of NE Canyons. Great interest was expressed by the oceanographic community about the potential of using satellite altimetry to conduct mapping explorations over this region. Horizontal and vertical resolutions of 10 km and 0.03 m (~1 inch), respectively, were achieved, providing a high level of detail for deep-sea exploration. Now, research vessels equipped with multibeam sonars can survey sites at a much finer resolution.

The EX1204 mission displayed the potential of satellite and ship-based multibeam systems for deep-sea exploration. A pulse of sound is emitted from a transmitter on the hull of the ship. The speed of sound in water travels approximately 1500 meters per second as opposed to 340 meters per second in the air. As the sound travels through the water column, it is subject to various processes including refraction, diffraction, and backscatter. These processes can result in less accurate computations of the seafloor depth. Above is an example of data collected during a storm on June 5th, 2012, with wave heights reaching three meters. However, the depth to the seafloor can be calculated through a series of algorithms using the backscatter and acoustic interference data, which gives insight into the physical characteristics of the seafloor.

The EX1204 mission also directed attention to the greater potential to serve as habitats for deep-sea corals. Being more reflective, hard bottoms produce a higher intensity. In the ocean, these areas possess a greater potential to serve as habitats for deep-sea corals (Packer et al. 2007). As wave heights increase, the ship begins to pitch and roll more drastically,的第一作者为James. From the data collected during the EX1204 mission, the Hudson Canyon was shaped by the southeast flow of the Hudson River, today it continues to be eroded by oceanic currents. The Hudson Canyon spans 12 kilometers at its widest point. Its walls reach heights over 1000 meters and are comparable to those of the Southwest's Grand Canyons, which shoot upwards just over 1600 meters from its base. Similar to how the Hudson Canyon was shaped by the southeast flow of the Hudson River, today it continues to be eroded by oceanic currents. The Hudson Canyon spans 12 kilometers at its widest point. Its walls reach heights over 1000 meters and are comparable to those of the Southwest's Grand Canyons, which shoot upwards just over 1600 meters from its base. This is an example of data collected during a storm on June 5th, 2012, with wave heights reaching three meters.