

# Search for Bermuda's Deep Water Caves: seafloor mapping and exploration of the Bermuda seamount slope



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In 2009 high resolution multi-beam sonar, ROVs and mixed gas scuba were used to locate, map and investigate previously unknown deep water caves along the outer shelf break edge surrounding the Bermuda pedestal and the banks. Specific goals are to:

- Use high resolution multi-beam sonar to map the seafloor from 60 -200m.
- Use analytical software to discover and map deep water cave and/or crevicular habitats.
- Determine the origin, age, orientation and hydrologic activity of these deep water caves.
- Use mixed gas diving techniques to collect their fauna for comparison with those species known to inhabit Bermuda's shallow water marine (anchialine) caves.
- Characterize the nature, geological stratification and composition, and sea level history of the platform margin, in particular those directly relating to Pleistocene low sea stand events

Follow-up mixed gas diving to explore the precisely geo-referenced high value sites will take place in 2010.

Project sponsors: NOAA Ocean Exploration; Bermuda Zoological Society; Bermuda Aquarium, Museum & Zoo

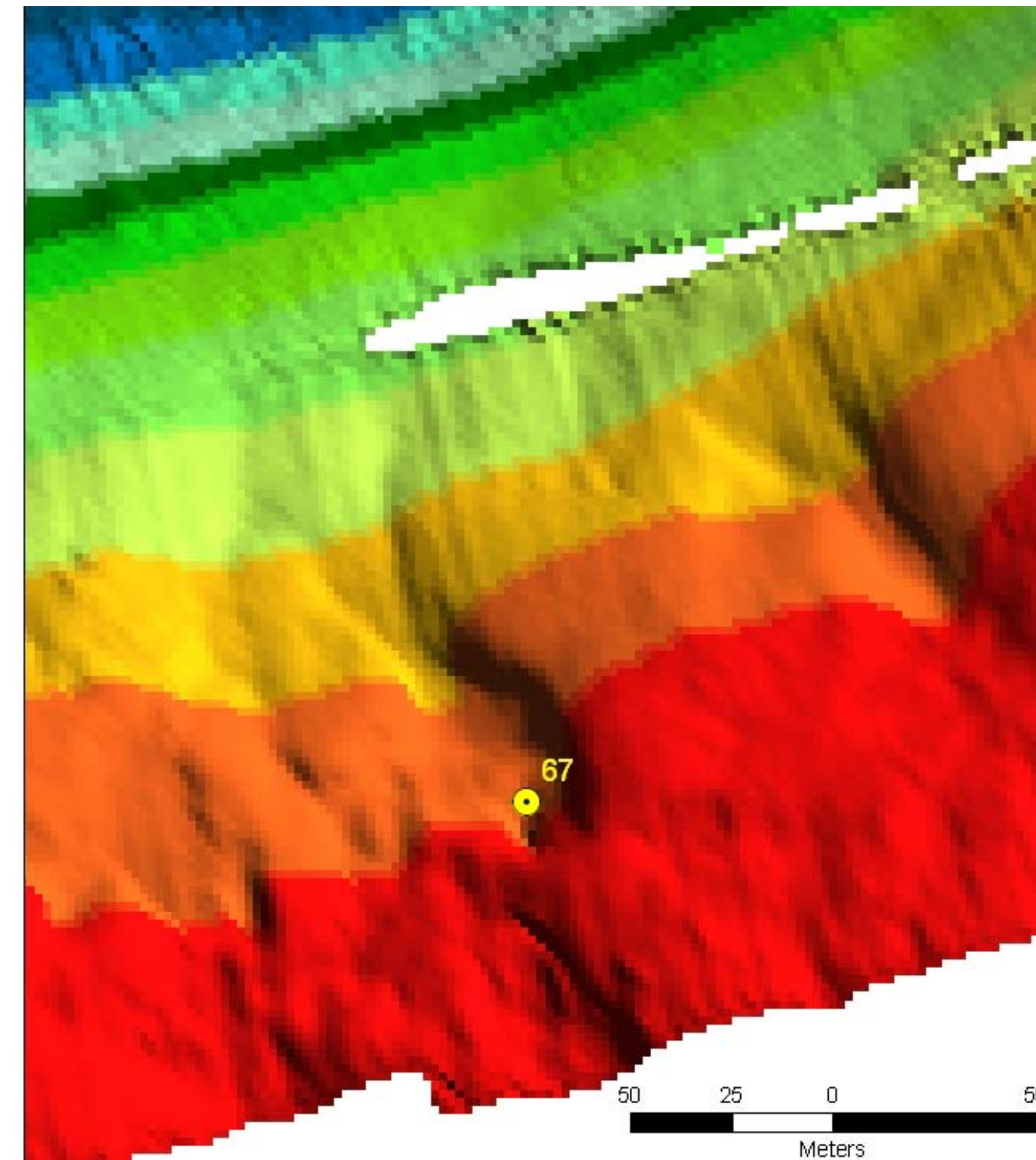


Figure 1. Close up of seafloor bathymetry in shaded relief, colored by depth showing the location of the natural tunnel (POI 67) discovered near the North Rock area of Bermuda's Western Ledge.

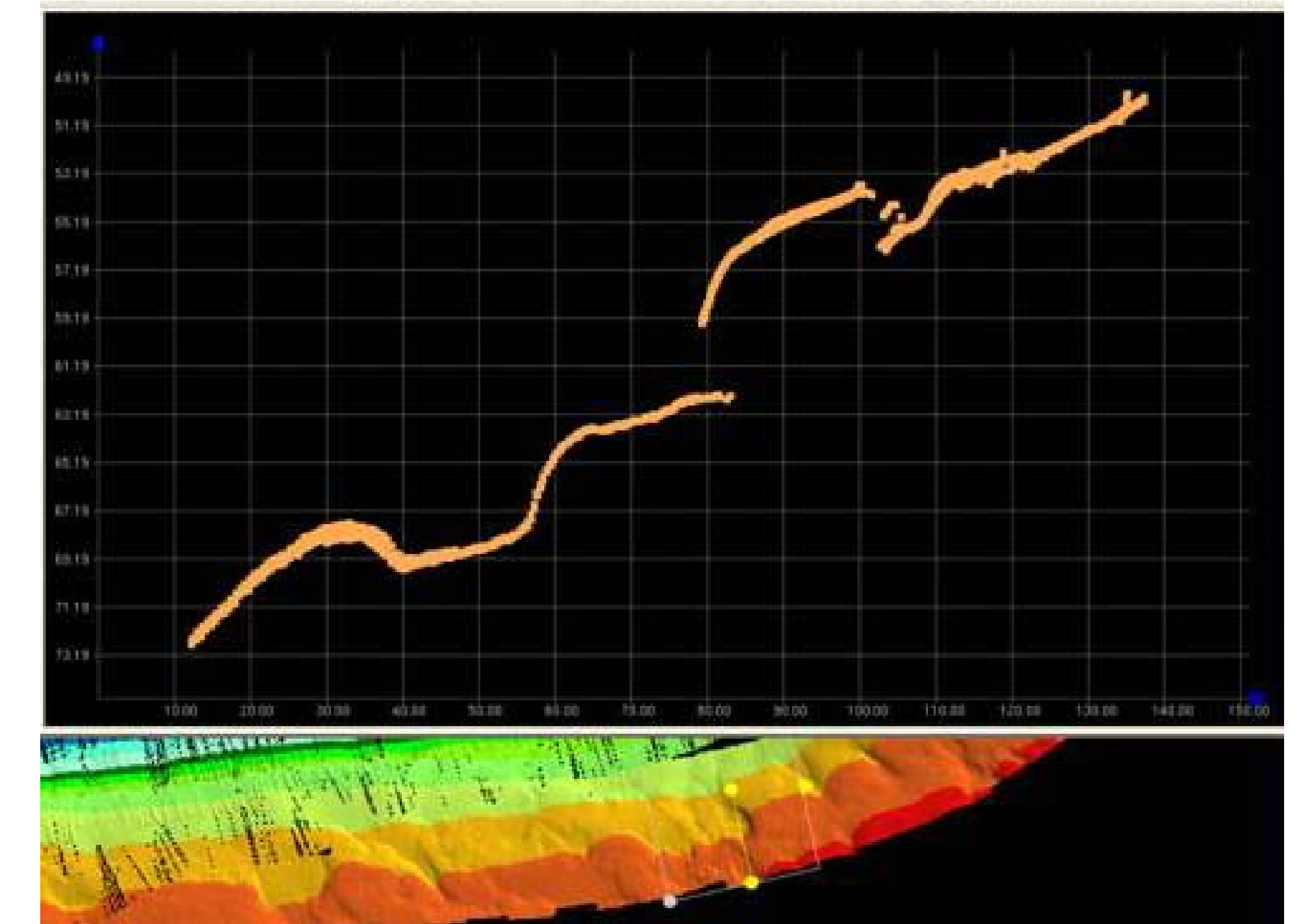


Figure 2. Profile slice through the bathymetry of POI 67 showing the upper and lower entrances to the tunnel. Position of the profile slice is displayed in the lower pane by the yellow bar.

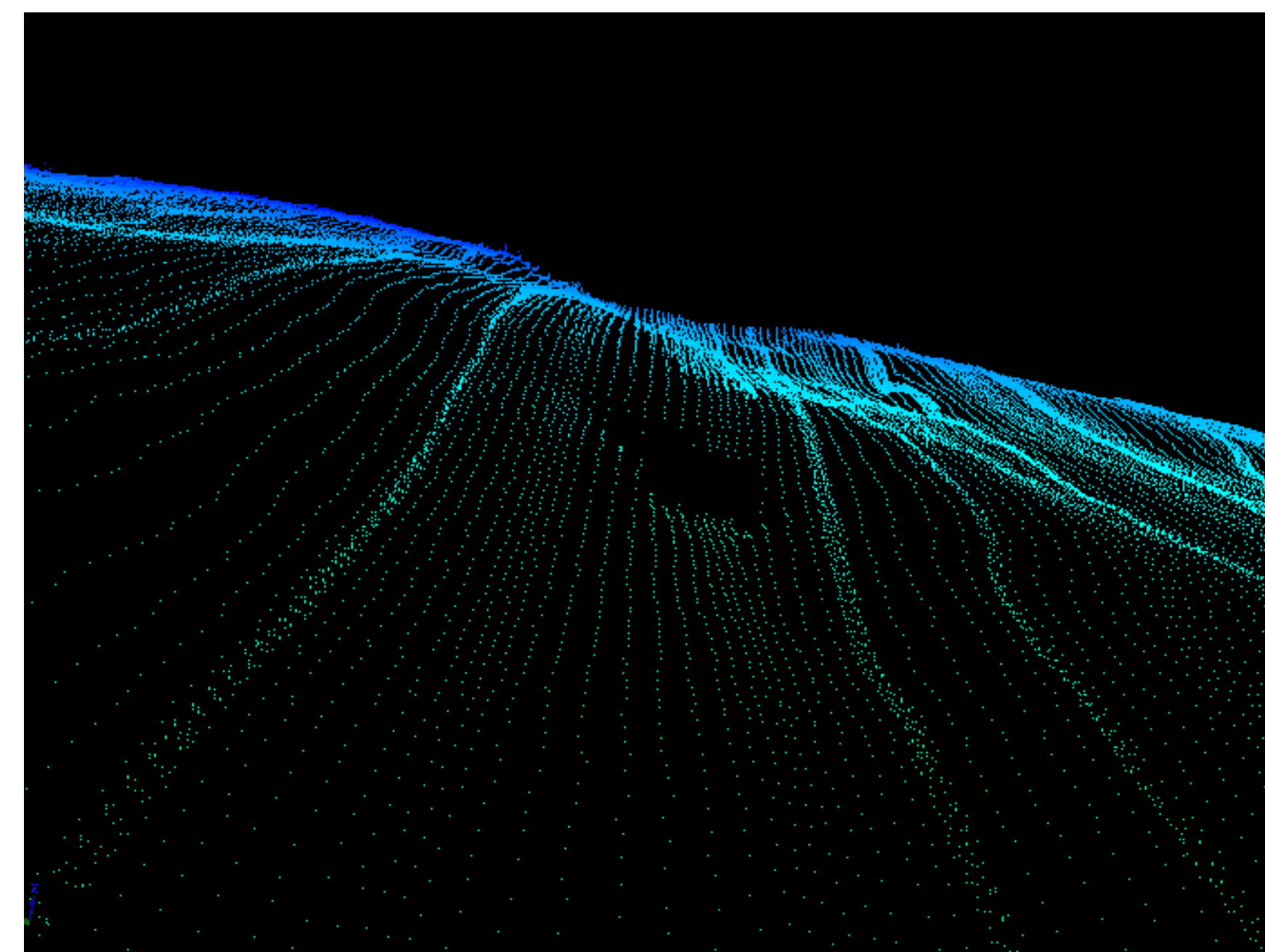


Figure 3. Up-slope view of the 3D bathymetry point cloud data showing the lower tunnel entrance of POI 67.



Figure 4. Still frame from the remotely operated vehicle (ROV) video footage taken of the lower tunnel entrance showing ripple marked sediment leading into the POI 67 feature. ROV claw is in the lower left foreground.