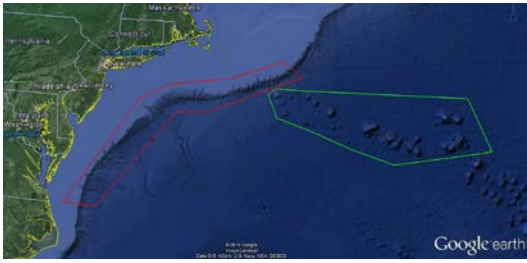


# OKEANOS EXPLORER ROV DIVE SUMMARY

<b>Site Name</b>	Unnamed Deep Seamount		
<b>ROV Lead/Expedition Coordinator</b>	Todd Gregory/ Brian Kennedy		
<b>Science Team Leads</b>	Scott France and Susan Schnur		
<b>General Area Descriptor</b>	Northwest Atlantic Ocean; Mid Atlantic U.S. Canyons		
<b>ROV Dive Name</b>	Cruise Season	Leg	Dive Number
	EX1404	3	DIVE10
<b>Equipment Deployed</b>	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
<b>ROV Measurements</b>	<input checked="" type="checkbox"/> CTD	<input checked="" type="checkbox"/> Depth	<input checked="" type="checkbox"/> Altitude
	<input checked="" type="checkbox"/> Scanning Sonar	<input checked="" type="checkbox"/> USBL Position	<input checked="" type="checkbox"/> Heading
	<input checked="" type="checkbox"/> Pitch	<input checked="" type="checkbox"/> Roll	<input checked="" type="checkbox"/> HD Camera 1
	<input checked="" type="checkbox"/> HD Camera 2	<input checked="" type="checkbox"/> Low Res Cam 1	<input checked="" type="checkbox"/> Low Res Cam 2
	<input checked="" type="checkbox"/> Low Res Cam 3	<input checked="" type="checkbox"/> Low Res Cam 4	<input checked="" type="checkbox"/> Low Res Cam 2
<b>Equipment Malfunctions</b>	The D2 depth gauge failed so all depths recorded came from the D2 CTD		
<b>ROV Dive Summary (From processed ROV data)</b>	Dive Summary: EX1404L3_DIVE10 AA		
	In Water at:	2014-09-30T14:45:52.008000 38°, 54.896' N ; 064°, 52.364' W	
	Out Water at:	2014-09-30T23:34:02.258000 38°, 54.172' N ; 064°, 50.566' W	
	Off Bottom at:	2014-09-30T20:54:02.225000 38°, 54.960' N ; 064°, 51.507' W	
	On Bottom at:	2014-09-30T17:27:50.015000 38°, 54.849' N ; 064°, 52.005' W	
	Dive duration:	8:48:10	
	Bottom Time:	3:26:12	
	Max. depth:	4689.0 m	
<b>Special Notes</b>	This was the deepest dive D2 has made to date.		
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#### Purpose of the Dive

Explore the biology and geomorphology of a deep seamount

#### Description of the Dive:

**Setting:** After our initial dive target on Kiwi Seamount was abandoned this morning due to strong currents associated with an eddy of the Gulf Stream, we were able to divert to a deep unnamed seamount 28 nm to the south where conditions were favorable for getting in the water. We conducted ROV Deep Discoverer's deepest dive to date on the deep flanks of an unnamed star-shaped seamount east of Asterias Seamount. The unnamed seamount is part of a group of small, deep seamounts that seems to form a trail running parallel to the main trend of the New England seamount chain. The dive began on a small saddle near the tip of one of the seamount's five rift arms. The results of the dive suggest these rift arms are primarily constructional volcanic features.

**Exploration:** The ROV reached the seafloor at a depth of about 4693 m, revealing a stark landscape of large (1-2 m) bulbous manganese-encrusted pillow lavas coated with a light dusting of fine sediment. In places debris boulders were observed, but most of the rocks on this dive seemed in-situ. The sides and bases of many pillows had a distinct rippled texture thought to be a current-modified form of botryoidal manganese crust surface morphology. In several locations individual pillow lobes were cracked in half and flatter surfaces were often broken by multiple long, propagating cracks. One possible explanation for the extensive cracking observed on this dive is deformation related to subsidence of the seamount after moving away from the active hotspot. The ROV spent the first half of the dive climbing a gentle slope punctuated by large (> 3 m) pillow mounds and elongate pillow ridges. Megafauna density was strikingly low, as was species richness, compared to shallower seamount dives, and no fish were observed throughout the dive track. However, many hexactinellid (glass) and cladorhizid (carnivorous) sponges and a couple of species of octocorals were regularly observed. The corals were a small whip-like bamboo coral (possibly *Bathygorgia*, which has been only rarely collected since first described in 1885 from Challenger Expedition samples) and stoloniferous Cornulariidae. The stoloniferous (ribbon-like growth pattern to the colonies) octocorals were very common encrusting the seafloor throughout the dive, and in places their linear ribbons were relatively abundant crossing the high points of pillow lobes (eg. see images around 1944 and 2026 and 2044 UTC). Arborescent foraminifera were also frequently seen. On a few occasions amphipods or polynoid polychaetes were seen on stick-like or arborescent cladorhizid sponges, but we could not determine if they had alighted temporarily, or

were caught as sponge prey. A species of corallimorph (or possibly an actinarian with knobby tentacle tips) was observed frequently along the dive track. White galatheoid crabs were the most common crustacean seen, but we also made frequent observations of verrucamorph barnacles, which were typically arranged in lines along rock edges (see images at 2027 UTC). There was much excitement over an unidentified crustacean that looked like and crawled like an insect (i.e. only 6 legs obvious) with massive antennae or pseudoscorpion on a rock at 4664 meters depth. It was subsequently identified in email by Dr. Angelika Brandt (Univ Hamburg, Germany) as a munnopsid isopod (Family Munnopsidae), possibly *Munnopsurus* as they are large, about 2 cm, and rather abundant in the North Atlantic; the largest species is *Munnopsurus giganteus*.

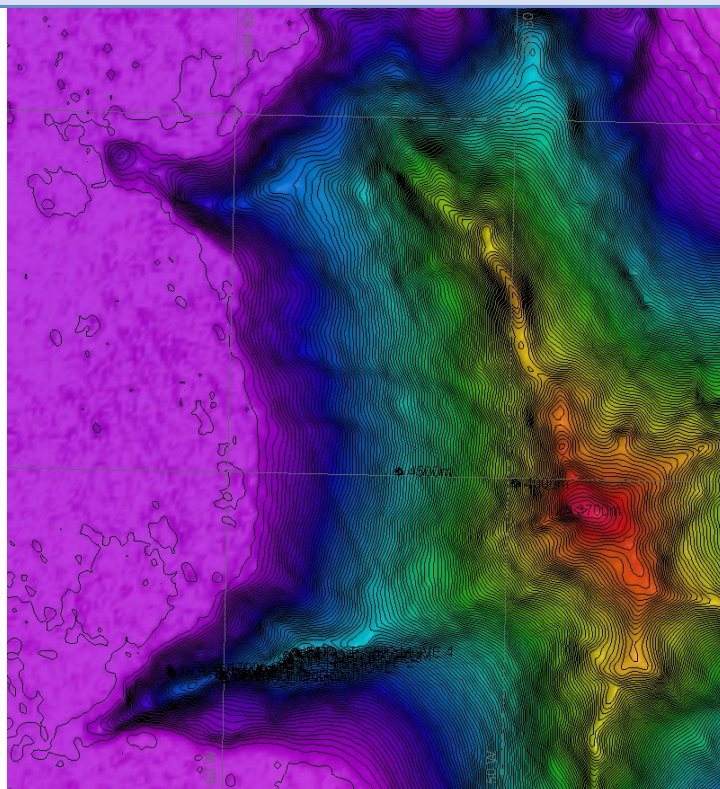
At about 4572 m depth this slope transitioned into a flatter area dominated by thin pillows and lobate flows. Gravel was generally not observed lower down on the rift arm, but here gravel had collected in flat areas, along with some pebble and boulder-sized debris. The gravel was poorly sorted and may have included ice-rafted debris as well as material from higher up on the slopes, although no granites were observed directly. The ROV left bottom at about 4552 m after examining a flat-topped slab of debris. Overall, the deep landscape of this unnamed seamount contrasts with the lavas seen on our previous seamount dives. These other dives revealed predominantly lobate or sheet flows with only small pillowed regions.

**Other biological observations:** Among the recorded sightings of asteroid seastars were a species unidentifiable to Chris Mah (NMHN), who suggested it was likely a new species, and several brisingids (?*Freyastera*). At least one comatulid crinoid was seen, as well as an unidentified species of sea anemone (Actiniaria; images shown to Meg Daly [OSU] and Fani Rodriguez [AMHN]). As we were leaving bottom for recovery, a pelagic munnopsid isopod (?*Bathyopsurinae* or ?*Munnopsinae*) was seen paddling its large flattened posterior pereopods to rise backwards into the water column.

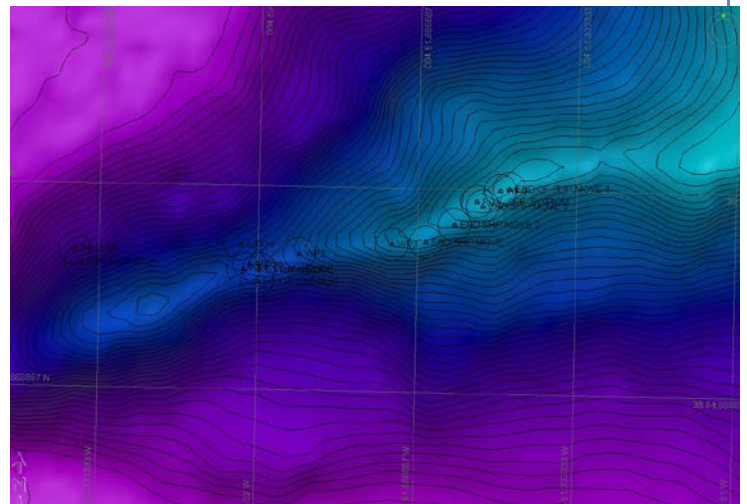
**Interesting highlights:** Abundant large, bulbous pillow lavas; abundant stoloniferous (ribbon-like colonies) octocorals encrusting the seafloor; variety of carnivorous sponges; furiously paddling pelagic munnopsid isopod as we began ascent.

**NOTE:** During this dive the depth sensor on D2 malfunctioned. The depths reported here are approximate values calculated from the depth and altitude of Seirios.

Overall Map of ROV Dive Area



Close-up Map of Main Dive Site



**Representative Photos of the Dive**



**Please direct inquiries to:**

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