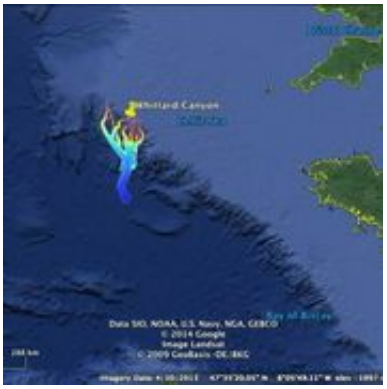
Marine life in deep-sea canyon more varied than expected

January 8 2015



Map of the location of the Whittard Canyon on the Irish Margin

Research into the sediment-dwelling marine life in deep-sea canyons, by the National Oceanography Centre (NOC), may help to predict how marine ecosystems will respond to human disturbance of the ocean, such as deep-sea mining and trawling.

A submarine canyon is a steep-sided valley cut into the sea floor that can be comparable in scale to the Grand Canyon. Submarine canyons have either a branching or single channel form, similar to river beds. They are swept by tidal currents, internal waves and sediment flows, which disrupt the canyon environment. By studying the density and composition of groups of small marine animals, such as; small crustaceans, bivalves and worms, within this highly disturbed environment, Laetitia Gunton from the NOC was able to get a better idea of how marine ecosystems may

respond to disturbances created by human intervention.

Laetitia explained that, "Canyons exist on continental margins, and are thought to be important links between the continental shelf and the deep sea. Due to the higher flow organic matter funnelled through the canyon, together with the range of habitats provided by the distinctive topographic profile, deep sea canyons are hotspots for deep-sea marine life. However, currently very little is known about how these organisms react to the naturally disturbed conditions found inside canyons."

This research, published in the Journal of Deep Sea Research 1, reveals that the marine life within these deep submarine canyons is much more varied than previously thought. As part of this study Laetitia looked specifically at the variation of creatures within three branches of the Whittard Canyon, located on the Irish margin. It was discovered that there is an equally great variation between different branches of the same canyon, as between the canyon and the sea floor outside of it. This is one of the first studies to look at differences in fauna within a canyon itself.

The animals being studied as part of this research were sieved out from mud cores collected from the Whittard Canyon during the NOC led HERMIONE project. This research was funded by a NERC PhD studentship as well as CASE funding from the Natural History Museum in London.

In August 2015, a team of researchers from the NOC will go back to Whittard Canyon, within the framework of the European Research Council funded CODEMAP project. The aim of the expedition will be to carry out further habitat mapping in the canyon, using a Remotely Operated Vehicle (ROV) and Autonomous Underwater Vehicle (AUV) developed by the NOC. They will apply newly developed methodologies to create a full, three dimensional picture of the environments in which

the fauna live.

Chief scientist Veerle Huvenne explains: "submarine canyons are complex environments, including several sections with near-vertical or even overhanging walls. Those cannot be studied using scientific equipment deployed by a cable over the side of the research ship. The ROV and AUV will allow us to map and quantify the terrain in true 3D, which will be a first for a deep-sea submarine canyon."

More information: Laetitia M. Gunton, Andrew J. Gooday, Adrain G. Glover, Brian J. Bett, "Macrofaunal abundance and community composition at lower bathyal depths in different branches of the Whittard Canyon and on the adjacent slope (NE Atlantic), Deep Sea Research Part I": *Oceanographic Research Papers*, Volume 97, March 2015, Pages 29-39, ISSN 0967-0637,

Provided by National Oceanography Centre, Southampton