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A tale of two "canyon" systems; Gollum & Whittard

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Within the framework of the EC FP6 HERMES project, Ghent University organised a joint geophysical and biological research cruise to the Gollum and Whittard Canyon system with R/V Belgica from 23^{rd} to 29^{th} of June 2006. The aim was to study the local ecosystems and their drivers. In combining and integrating various scientific disciplines, it is aimed to get a complete picture on how biodiversity, biological processes and physical factors are linked to each other and how they can control the various ecosystems along the European Margin.

During this campaign, special attention was given to the upper slope configuration of the Gollum channel heads, fitting in a framework of multibeam bathymetry .....(Beyer *et al.*, 2003), seismic profiling and TOBI side-scan sonar data .....(Wheeler *et al.*, 2003) collected during previous campaigns. The main Gollum channel system is characterised by several deeply incised canyons with numerous slide scars on their flanks. Their pathways seem to be influenced by a structural control, creating a bayonet-shaped course. Upstream of this structural feature, the channel floor deposits are characterized by thick acoustically transparent units suggesting ponded turbidites or mass-wasting deposits. A long piston core, acquired with R/V Marion Dufresne in 2001 (MD01-2464), however, only yields a small number of fine-grained turbidites in a muddy hemipelagic host sediment. This suggests that this system has known a relatively low activity during Quaternary times.

The high-resolution single-channel sparker geophysical survey on the Whittard canyon system was originally designed to better document its morphology and structure and to assist finding suitable places for biological sampling. During this survey, a set of enigmatic mound-like structures were found in water depths of 300 to 500m, very much alike the coral banks observed in the Porcupine basin, recently drilled by

IODP expedition 307 .....(IODP 307 Expedition Scientists, 2005; De Mol *et al.*, 2002). They are closely associated to a downslope gully of the Whittard canyon and some levee (or even drift) deposits. The presence of coral banks in this canyon location would be a perfect example of the HERMES ecosystem hotspots. However, only few profiles were acquired and no detailed bathymetric data was available at the time of the campaign. Further investigations within the HERMES community will be conducted in order to verify this potentially interesting observation.

References

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