New Seafloor Map of Offshore NE Spain

Fugro Survey Ltd. and AOA Geophysics Inc. have mapped the Cap de Creus canyon head, northeast of Barcelona in the Gulf of Lion, acquiring a data set that demonstrates Fugro and AOA's extensive capabilities with a hull-mounted multibeam system. The map data, acquired in early July this year, clearly shows a wide range of active geologic processes, from mass wasting and furrows, to faults and seafloor seepage, in unprecedented detail.

The data were acquired with a hull-mounted Simrad 30 kHz EM300 system (1x1 degree configuration) on Fugro's Geo Prospector. Northwest-southeast lines were run approximately parallel to the canyon axis, at speeds varying from 6.5 to 8 knots. The beam configuration was controlled to insure a high ping density at all water depths.

The resultant shaded relief bathymetry has been created with a grid spacing of 10m. No interpolation or smoothing has been applied to the data. In the shallower water portions of the field area (<150m), the grid spacing is 5m. The furrows in the east-central part of the field area are 20-50cm deep, and 20-50m apart. These features are smaller than the advertised accuracy of the system, and attest to our ability to image geologically relevant features with bin sizes significantly smaller than the footprint of individual beams.

Backscatter data show significant variations throughout the field area. Sub-sampled backscatter mosaics of the field area have a pixel size of 1m for all water depths. Backscatter variations appear to be related to changes in seafloor sediment type (hemipelagic drape vs. mass gravity flow / turbidity currents). Really restricted high backscatter zones are related to seafloor outcrops of over consolidated sediment as well as to possible gas seeps (carbonate mounds).

Sub-bottom profiler (pinger) data were acquired with a hull-mounted GeoAcoustics 4x4 transducer array and a Knudsen 320 topside unit. Sub-bottom data were acquired concurrently with multibeam data, at multibeam acquisition speeds. Sub-bottom data show penetrations of up to 40-50m, and clearly image canyon cut-and-fill sequences, folded strata, and geologically recent faulting. Sub-bottom data show the location and distribution of acoustic turbidity in the shallow section, interpreted to be related to shallow gas.

https://www.hydro-international.com/content/news/new-seafloor-map-of-offshore-ne-spain