



Quantitative data from the inner and outer gas fields of the Ria de Vigo (Spain).

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Ría de Vigo is a river valley flooded by the sea, with a bay (San Simón Bay) at its innermost part. The Quaternary sedimentary infill of this ria has been studied by the integration of 1) high resolution geophysical data (mono and multi-beam ecosounders and seismic), and 2) direct sediment analysis (present distribution of seabed sediment and detailed geochemical analysis of gravity cores).

The general pattern of grain-size distribution on the present seafloor of the ria consists of mixed siliciclastic and skeletal gravels in both the outer areas and the edges of the ria. The central and inner parts of the ria is dominated by clay and silt, which contain up to 10% organic matter.

Interpretation of high resolution acoustic records have allowed mapping of shallow gas accumulations and gas escape features. Mapping of gas accumulations has enabled several fields to be recognized in the ria. Comparison of the locations of the gas accumulations with the grainsize distribution of sediments reveals a spatial coincidence between gas fields and finer surface sediments (García-Gil, 2003). These muds correspond to the youngest Holocene seismic unit, which constitutes both the source and seal for the gas accumulations.

Two gravity cores taken 1) within the inner gas field of ria de Vigo (GC-B) close to the mussel rafts and 2) from a seismic gas free area between two smaller gas fields (GC-9) in the most external part of ria de Vigo. These two corers provide 3.40m and 3.80m respectively of fine-grained sediments (muds) from the youngest seismic unit.

Geochemical analysis show values (2.5 to 4% in GC-B and 1.5 to 2.5% in GC-9) of TOC. Sediment and porewater analyses indicate a distinct sulphate-methane transition zone (SMTZ) between 70 and 90 cm where sulphate is depleted and methane increases (to >0.4 mM) in GC-B. In the most external gravity core (GC-9), without visible acoustic turbidity, methane concentrations higher than 0.4 mM occur from 2.70m up to the bottom core depths.