Geophysical Research Abstracts, Vol. 9, 03992, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03992

First attempt to evaluate the size of the peat-like deposits formed by the seagrass Posidonia Oceanica using high resolution seismics

Ll. Guasch (1), MA. Mateo (2), C. Lo Iacono (3), E. Gràcia (3), R. Carbonell (1)

(1) Institute of Earth Sciences Jaume Almera, Consejo superior de Investigaciones Científicas (CSIC); (2) Centre for Advanced Studies of Blanes, CSIC; (3) Marine Technology Unit (UTM), CSIC

The Mediterranean endemic seagrass Posidonia oceanica accumulates large quantities of organic debris as roots, rhizomes and leaf sheaths that are progressively buried forming the so-called ‘matte’. The thickness of these deposits over the Mediterranean and the internal distribution of the seagrass-derived organic matter is mostly unknown and thus the magnitude (size) of the carbon sink that the PO represents remains unconstrained. This is a feasibility study aimed to determine the volume and the internal architecture of the PO accumulations within the Port-Lligat Bay (Northwestern Mediterranean) by means of a non-destructive method that can be easily applied over large areas. A high resolution geophysical imaging method, a parametric echosounder (Hydroacoustics), was used to acquire data to achieve a 3D image that would allow us to determine the 3D distribution of the P. oceanica meadows in the study area. The experiment carried out during April 2006 consisted on the acquisition of a grid of 73 200 m long (in average) transects within the bay. The processing used the low frequency component rather than the high frequency because of its higher penetration. The rhizome structure creates a high dispersive medium, masking the internal structure of the grass and decreasing the S/N ratio of sea sub-bottom seismic image. The shallow waters (water columns from 3 m) produced relative high amplitude multiples. The preliminary results (3D acoustic image) indicates that a reasonable upper bound for the volume of the P. oceanica matte is of, approximately, 175.000 mˆ3 in the Port-Lligat Bay.