Geophysical Research Abstracts, Vol. 9, 09352, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-09352

Oceanographic signals at the Benthic Boundary Layer in the Mediterranean Sea

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The Benthic Boundary Layer (BBL) is considered a quite homogeneous environment where a wide variety of processes (chemical, physical, geological and biological) occur often producing front structures or inducing turbulence phenomena. The typical stratification of these zones can be interrupted by episodic events which effects can diffuse to the ocean interior exploiting by local current and mixing processes.

According to hydrodynamic definition, the BBL thickness may vary from few millimetres up to 100 metres depending on the friction intensity with the sea bed and the stability of water column above it. Generally in deep-sea condition, the BBL thickness is defined by the ratio between the friction velocity and the Coriolis parameter according to the Ekman scale.

In the latest years several experiments have been carried out in the deep water of Mediterranean Sea, focusing on the survey and study of benthic processes following a multidisciplinary approach.

Benthic observatories, such as SN-1 and GEOSTAR, allow to record long time-series of geochemical, seismological, geomagnetic, geodetic and oceanographic data and allow to understand the dynamics and evolution of the processes though comparison and interpolation of different types of signals.

From a oceanographic point of view, the technology of these benthic observatories brings the possibility to observe and measure directly the hydrological properties at the seafloor collecting data for long-time series and with high sampling rate.

The observatories deployed in Mediterranean Sea, have provided good information about variations and oscillations of hydrological parameters in deep water where the

monitoring is almost lacking.

In some cases it has been possible to link these deep-sea datasets with upper data collected by ship-handled system during the same period or during different cruises. This allows to have a more complete idea of the linkage between surface, intermediate and bottom sea.

Hence the multidisciplinary approach represents a very important aspect for this kind of study, because it allows not only a cross check of functionality among all the instruments but also an important tool to recognise and better understand possible non-physical-oceanographic phenomena.