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Signatures of Marsili seamount activity from the ORION-GEOSTAR3 long-term seafloor multiparametric observatory experiment

Angelo De Santis (1,2) and the ORION Team

(1) Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy, (2) Università G. D'Annunzio, Chieti, Italy, (3) IFSI- INAF, Via del Fosso del Cavaliere, 100 (00133) Rome Italy, (4) Eni, Milano, Italy

ORION-GEOSTAR3 (EC- 6th FP) has been the first long-term continuous geophysical and oceanographic experiment on the Marsili Seamount, Europe's largest underwater volcano of Plio-Pleistocenic age. The main scientific objective of this experiment was to detect specific signatures of Marsili activity. A deep sea multiparametric observatory was deployed on the seafloor at the base of the seamount at 3320 m b.s.l., in the period December 2003-May 2005. Among the instruments on board the observatory were: broadband seismometer, hydrophone, gravity meter, magnetometer, water sampler for laboratory analyses, 3D single point current meter, ADCP, CTD and Ph sensor, with a common accurate time reference.
Multiparametric analysis shows that data are generally of good quality, showing continuous time series with only a very few gaps.
Seismic, chemical, oceanographic, magnetic, and gravity data were analysed both in the time and frequency domains. This presentation will show some examples of analyses and comparisons. For instance, both the analysis of individual time series and their comparison have already shown interesting results: estimation of the lithospheric depth under the Marsili, lateral attenuation distribution of recorded seismic body waves and indications for possible existence of a hydrothermal circuit. Significant correlations between recorded time series could be related to activity and structure of the Marsili seamount revealing interesting and unknown characteristics of this submarine volcano.