Geophysical Research Abstracts
Vol. 18, EGU2016-15967, 2016
EGU General Assembly 2016

The role of the contribution of the whole sea energy on pollution distribution and biocenosis quality: a case study in the Northern Tyrrhenian Sea, Italy

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Marine sediments and benthic biocenosis record, at different spatial and temporal scales, natural and anthropogenic processes that occur in the water column.
The coastal area of Civitavecchia, in the Tyrrhenian Sea, Italy, presents valuable marine and coastal ecosystems, which are subject to pollution due to the presence of potentially impactful uses of the coastline (the most important port for traffic passenger in the Mediterranean sea and one of the biggest energy production site in Europe) that overlap with the presence of natural geogenic anomalies related to the concentrations of some trace elements.
The C-CEMS monitoring system, currently available in the study area, is able to perform the analysis of pollutants dispersion in coastal waters using in situ and remote observations coupled with numerical models simulations . In particular, water column parameters trends and the distribution of both benthic biocenosis and pollutants from natural sources and human activities in the water column can be assessed. This work focuses on the distribution patterns of pollutants and its relationship with the distribution of the benthic community in relation to biocenosis. Moreover, this work presents a first attempt to relate the whole sea energy contribution, which has effects on both the deposition of fine material and pollutants associated with it, and the distribution of communities, in terms of "exosomatic energy" (sensu Margalef).