



Preliminary chemical data from basaltic rocks dredged at Great Meteor, Hyeres and Plato seamounts

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The seafloor near the Azores archipelago and the southern seamounts are still greatly unexplored. Cruise EMEPC/Açores/G3/2007 was planned to collect geological and geophysical data for the Portuguese Proposal for the Extension of the Continental Shelf under the United Nations Convention on the Law of the Sea (UNCLOS) along a track from the Azores to the Great Meteor seamount. Over 40 dredge operations were performed and a significant volume of cemented carbonate rocks, sedimentary and volcanic breccias, as well basaltic rocks were recovered. Major and trace element data is now available for basalts samples from Great Meteor, Hyeres, and Plato seamounts.

In the TAS diagram most samples plot in the basalt or basanite fields above the sub-alkaline and alkaline divide from Irvine & Baragar (1971). Basaltic rocks are under-saturated (with normative nepheline), relatively unfractionated (MgO normally higher than 5%) and present TiO₂ contents higher than 3 wt% typical of OIB lavas. Ratios between incompatible elements (e.g. Ba/Rb, Ba/Th, Ba/Nb) point to the existence of source heterogeneities that will be better constrained by isotopic data. La/Y_{bn} ratios, ranging from 8 to 14, require fractionation of REE during melting in the presence of residual garnet and its increase towards the Great Meteor seamount suggests a dependence of melting with the lithosphere thickness. Comparing REE ratios as (La/Sm)_n from the seamounts with the ones found in the Azores islands of Faial, Pico and São Jorge, we find no significant variation with latitude.

These preliminary observations will be complemented in the near future with isotope geochemistry. We will examine the model of Gente et al. (2003) that considers the origin of these southern seamounts at the Mid-Atlantic Ridge due to a plume-ridge interaction.

Bibliography

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