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The Azores - G3 cruise: Multidisciplinary studies from the Azores rift zone to the Great Meteor seamount

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During May/June 2007, the Cruise EMEPC/Açores/G3/2007 was sailed aboard the SV Kommandor Jack in the scope of Portuguese Program for the Extension of the Continental Shelf. The Cruise, mainly focused on geological sampling, comprised a 1st leg lasting five days, at the Terceira rift zone and S. Jorge Island flank and a 2nd leg which lasted twenty-four days at the Atlantis, Plato, Hyeres and Great Meteor Seamounts located south of the Azores region, in the Mid-Atlantic Ridge off-axis domain. A multidisciplinary national team of 19 scientists, from 7 Portuguese Universities and National Research Institutes participated in the cruise. Disciplines involved comprised geology, geophysics, geochemistry, hydrography, biology, environmental chemistry and oceanography. Furthermore science outreach initiatives complemented the cruise, as ship track and summary of operations have been published in a daily basis on Google Earth for follow up by schools and general public.

The cruise comprised 2605 NM of surveying by EM120 swath bathymetry and gravimetry, including two short systematic surveys, east of Terceira Island and at the Great Meteor southern flank. Some magnetic data was also collected. Other sea operations comprised sediment coring, micro and macro biology sampling and CTD-rosettes on the water column. The main objective of the cruise was to perform dredges on seamounts and within the Azores rift zone. 48 dredge operations (67% with recoveries) were performed and about 6 tons of material was collected.

Along axis in the Terceira rift, within clear Brunhes magnetic anomaly seafloor, very

fresh basalt samples along with highly altered basaltic breccias from possible monogenic volcanic cones were recovered. These data implies that accretion processes are highly discontinuous spatial and temporally within this ultra-slow rift system. Within the seamounts, the recovered lithotypes are carbonate rocks (s.l), sedimentary and volcanic breccias, as well as generally altered basaltic rocks. Considering the depth range of individual dredging operations and the nature of the recovered materials, the seamounts seem to present a fairly constant geological cross section, ranging from massive basalts near the relief base, followed by a wide zone dominated by volcanic and/or breccias. The tops of Irving, Hyeres and Great Meteor are defined by a shallow flat where some wave rounded carbonate cobbles were recovered, therefore corroborating marine abrasion, as suggested in other studies.

The data recovered in the different disciplines is presently being analysed. Some results from major and trace element geochemistry have however been achieved and are presented in Madureira *et al* and Ribeiro *et al. abstracts* (this meeting).