



## ***Seismic monitoring in the Azores using OBS's and land stations: preliminary results from the STAMINA mission, September 2004***

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The small magnitude seismicity observed in the Azores archipelago is monitored by a network of short-period land stations, operated by the SIVISA, which performs well in constraining epicenters location inside most of the Islands. This situation changes radically in the offshore that comprise a great part of the seismic activity. Furthermore, many of the destructive events in the past were originated by offshore tectonic sources that are poorly monitored by land stations only. The few monitoring experiments comprising Ocean Bottom Seismometers (OBS) have shown that seismicity is concentrated in space and time in discrete tectonic features. In an effort to monitor the offshore activity in the Azores, the STAMINA project organized a passive seismic experiment where 4 OBS's were deployed for 3 weeks continuous recording, complemented by continuous monitoring by land stations. The location of the array, near Banco D. João de Castro, was chosen in accordance with the recorded seismicity in the previous weeks. This is the first time that the Portuguese instruments were used in the Azores and a new recording design was tested. This design might be the foundation of a new generation of sea bottom instruments.

To assist the identification of these events in continuous records, a methodology based on the construction of spectrograms was adopted. These spectrograms synthesize in a single image the seismic records of each complete day. The anomalies are identified and the corresponding data extracted from the database with a simple command.

Preliminary analysis of the data shows a considerable seismic activity, with several small events detected every day. The resulting epicentral distribution plots almost exclusively along Terceira Ridge in two main seismicity bands. Band 1 is aligned along a tectonic depression at South Hironnelle's Basin, following the Terceira axis local orientation (ca. N120°). To NW, band 2 is aligned nearly perpendicular to band 1, along a morphological step corresponding to the transition between South Hironnelle basin and the shallower north Hironnelle Basin. Given their morpho-structural context and the seismicity bands orientation, we interpret band 1 as corresponding to events along a spreading segment. Conversely, band 2, hints a suggestion of strike slip faulting along an axial non-transform discontinuity. Taken together, this seismicity bands seem to express the segmentation pattern of Terceira Axis and its progressive transition from an intra-oceanic rift to a seafloor spreading oblique ridge system.