



Intraplate seismicity across the Cape Verde swell

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The Cape Verde Archipelago ((15-17°N, 23-26°W) is located within the African plate, about 500km west of Senegal, in the African coast. The islands are located astride the Cape Verde mid-plate topographic swell, one of the largest features of its type in the world's ocean basins. The origin of this Cape Verde swell is still in debate. Previous determinations of the elastic thickness (T_e) reveal a normal T_e and a modest heat flow anomaly which suggest that the swell cannot be fully explained by uplift due to thermal reheating of the lithosphere by an underlying "hot spot" and that other, deep-seated, mantle processes must be involved.

The CV-PLUME (An investigation on the geometry and deep signature of the Cape Verde mantle plume) project intends to shape the geometry and deep origin of the Cape Verde mantle plume, via a combined study of seismic, magnetic, gravimetric and geochemical observations. Through this study we intend to characterize the structure beneath the archipelago from the surface down to the deep mantle.

The core of this 3-year project was a temporary deployment of 39 Very Broad Band seismometers, across all the inhabited islands, to recorder local and teleseismic earthquakes. These instruments were operational from November 2007 to September 2008.

In this work we report on the preliminary results obtained from the CV-PLUME network on the characterization of the local and regional seismicity. To detect the small magnitude seismic events the continuous data stream was screened using spectrograms. This proved to be a very robust technique in the face of the high short-period noise recorded by many of the stations, particularly during day time. The 10 month observation time showed that the background seismic activity in the Archipelago and surrounding area is low, with only a very few events recorded by the complete network. However, two clusters of earthquakes were detected close to the Brava Island, one to the NW and a second one, more active, to the SW. This activity was concentrated mainly during January 2008. The Brava and nearby Fogo Islands are known for their recent volcanic activity (last eruption in Fogo was in April 1995) and earthquake swarms. Therefore, we infer that the recorded seismic activity may be also triggered by magma flow.

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