



Relation between CO₂ soil flux and Fogo Volcano seismic activity (S. Miguel Island, Azores)

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Fogo Volcano is one of the three active central volcanoes of S. Miguel Island. The most recent eruptive activity occurred in 1563 involving a subplinian intracaldera eruption followed four days later by a basaltic flank eruption. Seismic monitoring in the last two decades reveals that this volcano is located in one of the most seismically active areas of the Azores archipelago.

Gas geochemistry continuous monitoring of Fogo Volcano started in February 2002 with the installation of a CO₂ soil flux station with coupled environmental sensors in the Pico Vermelho geothermal area. In order to remove the environmental influence and discriminate seismovolcanic precursors, CO₂ flux data obtained in the first year of observations was statistically processed and a regression model was established.

Applying the model to the data acquired between March 2003 and December 2004, it was verified that in some periods CO₂ values didn't fit with the predicted by the model, being higher than the expected. A close relation was established between such anomaly and the increase of seismic activity observed in Fogo Volcano area since the beginning of 2003, characterised by several low magnitude seismic swarms.