



## **Kinematics of Faial-Pico Islands (Azores Archipelago) deduced from repeated GPS surveys.**

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The Azores archipelago occupies a lateral branch of the Mid-Atlantic ridge (MAR) near the triple junction of three large tectonic plates, the North American, the Eurasian and the African plates. Due to the peculiar geologic setting of the Azores, seismic and volcanic phenomena are frequent. In order to address the problem of the deformation partition on Azores, large-scale GPS surveys have been carried out in the frame of previous projects (STAMINA and SARAZORES). From these projects, and partially from TANGO project, a GPS network of 32 sites (20 in Faial and 12 in Pico) has been installed and surveyed at five epochs: 1999, 2000, 2001, 2003 and 2004. In the frame of KARMA project, another survey was carried out on July 2006 when each site was surveyed continuously with geodetic GPS receivers for, at least, 3 days. GPS data processing was done with GAMIT-GLOBK software package using the double-differencing approach. Data from IGS stations were used to re-estimate precise orbits and to provide a robust reference frame. The results were transformed to produce time series and velocities relative to ITRF-00, and, in order to minimize common-mode signals, baseline time series and velocities were calculated in this frame relative to station FAIM, which is located in the south-east of Faial. Surveys from 2001 to 2006 were incorporated into a unique system of equations, with 15 common stations on Faial and 11 on Pico, and the position and velocity for a reference time was estimated. The solution shows a coherent relative horizontal displacement of about 2 mm/yr between the east side and the west side of Faial. The principal strain rates were also determined for the west and east of Faial, showing an evident compression on the West Faial of -0.1 ppm/yr on the N30E direction, contrasting with an elongation on the East Faial of 0.09 ppm/yr on the N70E direction.