Geophysical Research Abstracts
Vol. 14, EGU2012-1425, 2012
EGU General Assembly 2012

African plate motions constraining and Euler pole determination using permanent GPS data

A. Deprez, F. Masson, C. Doubre, and P. Ulrich
France (a.deprez@unistra.fr)

IPGS-EOST, CNRS-Université de Strasbourg, 5 rue Descartes, 67084 Strasbourg Cedex France.

GPS data of permanent stations in Africa allowed us to calculate the position time series and the absolute velocity of many points on this continent during a twelve-year period (1999-2011). The data processing was made thanks to the GAMIT/GLOBK software. The results lead us to select reliable sites presenting a quantity of data large enough to limit the uncertainty. We took care too that this sites did not undergo local deformation and, in particular, that they were far from the plate boundaries. Then we adopted a technique based on William's method to remove the data jumps and the seasonal variations from the position time series. Station sets was brought together function of their position and of plate and micro-plate boundaries from precedents studies. The main conclusions of this velocity field study were as follows: (1) We achieve, with coherent data samples, to find pole coordinates for plates and micro-plates defined by Stamps et al. (2007). These coordinates differ slightly from values found in precedent studies (Altamimi et al., 2012 (in review); Stamps et al., 2007), which were taken as a priori values. (2) Many African stations were too recent to give reliable velocity and the pole coordinate accuracy could be improved in the next few years. (3) The presence of large zones of local deformation particularly on both sides of the East African Rift prevents from the use of many data for the pole determination.