Geophysical Research Abstracts, Vol. 7, 06735, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06735

Nubia-Eurasia kinematics from North Atlantic and Mediterranean constraints

E. Mantovani, M. Viti, D. Albarello, D. Babbucci, E. Mugnaioli
Department of Earth Sciences, University of Siena, Italy (mantovani@unisi.it)

Global kinematic models, like the NUVEL-1, have determined the recent/present Africa (Nubia)-Eurasia kinematics under the assumption that Eurasia is a single rigid plate from Atlantic ridges to Pacific trenches and considering kinematic constraints only located in the North Atlantic region. In this work we argue that both these choices should be reconsidered. The first because seismotectonic activity observed in Western Europe and the adjacent Atlantic zone might imply that one or more microplates exist between Nubia and Stable Eurasia. In particular, we show that assuming the Atlantic-Iberian region as an independent microplate allows a significant improvement of the fit of the NUVEL-1 data set. As regards the second choice, we argue that in the Mediterranean region it is possible recognizing significant constraints on the Nubia-Eurasia relative motion, which, being compatible with a NE to NNE ward convergence of these two plates, can hardly be reconciled with the NW to North ward relative motion predicted by global kinematic models. The NE to NNE-ward motion of Nubia suggested by Mediterranean evidence can also be reconciled with the NUVEL-1 data set if Eurasia is taken as a two-plates system, involving the above Atlantic-Iberian microplate. Then, we argue that starting from the plate kinematics defined by the above quantitative analysis and assuming two further microplates, the Iberian Peninsula and Morocco, a plausible and coherent explanation can also be found for the complex distribution of strain regimes recognized in the Western Mediterranean and the adjacent Atlantic region. At last, some considerations are reported about the constraints that the presently available geodetic data can impose to the Nubia-Eurasia kinematics.