



A new interpretation of the Mediterranean arcs: Mantle wedge intrusion instead of subduction

G. Scalera

Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy (scalera@ingv.it)

Because of the close similarity of some Italian and Mediterranean tectonic situations to the East Asia tectonics – arcs, trenches, Wadati-Benioff zones, volcanic and seismic activities, and a typical horizontal bending of the alleged lithospheric slab –, many clues are examined in search of new interpretations of the Mediterranean geological and observational evidence, with the aim of finding solutions that are exportable to the problems of the circumpacific arc-trench zones.

The facts coming from surface geology, magmatism, geochemistry, different method tomographies, etc., are at variance with the alleged Africa-Eurasia convergence. The clues for rifting prevail over those for compression, and many tectonic situations previously interpreted as due to plate collisions, are associated to or mixed to rifting evidence. The proposal is put forward that uprising of mantle material wedges between two separating lithospheric plates could be a new working hypothesis.

On an expanding Earth the region interposed between Eurasia and Africa has always had a smaller latitudinal extension with respect to the large Paleo Tethys and Neo Tethys appearing on constant-radius paleogeographical reconstructions. It is then possible, in the expanding Earth view, also to identify as phases of opening the Paleo Tethys and Neo Tethys currently alleged ‘closure’, which has added to the Proterozoic nuclei the Variscan and Alpine terranes respectively. These phases and their orogens have to be considered as extensional phases, and the added terranes of African provenance (e.g. the Adriatic fragment) should be regarded as fragments left behind as continental Africa moved away. In this sense, considering the ongoing process of opening as having Proterozoic origin, it is possible to speak of the Mediterranean as a slowly nascent ocean, but also – paradoxically – as a very old ocean.