

Volcanic source areas of the Upper Oligocene - Lower Miocene volcanogenic sediments along the Western Mediterranean chains: an overview

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Volcanogenic sediments are widespread in Betic Cordillera, Maghrebides and Apennines, interbedded within several Upper Oligocene-Lower Miocene marine formations.

Tuffaceous, volcanolithic and crystal- to vitric-rich volcanic sandstones are the most common types, although fine-grained ash layers have also been recognized. These deposits indicate a sedimentation penecontemporaneous to the development of calc-alkaline volcanic arcs and they are linked to rapid erosion and reworking of pyroclastics and lavas after their emplacement, and resedimentation into the adjacent basins.

Sardinia is often invoked as volcanic source area; but the epiclastic character recognized in the thick and coarse-grained volcanogenic deposits can not fit with this provenance. The location of the Sardinia-Corsica Block during Upper Oligocene-Lower Miocene (before its rotation) as well as the hypothesized palaeogeography of the sedimentary basins are not in agreement with the evidenced sedimentary processes. In contrast, the existence of active volcanoes connected with transform-related tectonics is suggested by several kinematic models applied to the Western Mediterranean area during Aquitanian-Burdigalian.

The available data of these volcanogenic deposits seem to support the existence of volcanic arc systems adjacent to the sedimentary basins, located in internal position with respect to the basins themselves. Remnants of volcanic edifices could have been buried and concealed at depth by underthrusting processes during the post Early Miocene tectonic evolution.