

## **Petrographic Features of Oligocene to Lower Miocene Volcaniclastic Turbidites in the Apenninic Chain (Italy)**

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Turbiditic successions, rich in volcanic clasts and ranging in age between the early Oligocene and the early Miocene, are widespread in the Apenninic Chain and in the Sicilian Maghrebids. Their deposition was related with an Eocene subduction and considered contemporary with the activity of a volcanic arc located on the Sardinia block and on the building chain docked to it.

In Northern Apennines volcaniclastic successions (Petrignacola and Aveto Sandstones) are considered early Oligocene in age on the basis of paleontological and geochronological data. However, the occurrence of Miogypsina-bearing beds demonstrates they reach the early Miocene.

Petrographic studies evidenced different structural features in the North-Apenninic and South-Apenninic-Sicilian formations. These latter are characterized by low sorting and textural immaturity. Volcanic grains show angular shape, microlithic and lathwork textures, single crystals of subhedral plagioclase and feldspar minerals, phenocrysts of plagioclase in cryptocrystalline and vitric groundmass. Vitric particles and ash-turbidites are present. The grains are not affected by chemical alteration. All these features testify the rapid erosion of a still active andesitic-rhyolitic arc.

North-Apenninic volcanoclastics include the same typology of grains, but they show higher alteration grade, whereas vitric particles and ash-turbidites are lacking. The arenites show high sorting and grains characterized by subangular to subrounded shape, suggesting transport from a distant source-area and provenance from a no-active volcanic arc.

In conclusion, the Apenninic volcaniclastic arenites are characterized by epiclastic detritus, deriving from recycling of pyroclastic deposits and/or lavas in subaerial environments. In South-Apennines a pyroclastic supply and petrographic features testify a deposition contemporary with the volcanic activity, whereas in North-Apennines detritus originated from lavas and tuffs of an older no-active arc. These data explain the discrepancies between the paleontological and geochronological data in the North-Apenninic deposits.