



How can we distinguish syn- versus post-magmatic supply in deep-sea sequences when pyroclastic density current deposits are apparently not preserved?

Andrea Di Capua (1,2) and Gianluca Groppelli (2)

(1) Milano - Bicocca University, Earth and Environmental Sciences, Italy (andrea.dicapua@unimib.it), (2) CNR - Istituto per la Dinamica dei Processi Ambientali, Milan, Italy

The significance of Taveyanne Sandstones (32-29 Ma – Haute Savoie Province, France and Switzerland) has always represented a controversial topic in the Alpine geology. Immaturity of sandstone components and correspondence between ages of andesite crystallization and sedimentation have been interpreted as owing to in situ phreatomagmatic explosion directly discharged into the basin. Alternations of sand and mud sedimentation have been interpreted as due to the dynamic combination of rapid eustatic variation and thrust wedge accretion. Geochemical features took other authors to consider the Taveyanne Sandstones as coming from an “andesitic nappe” tectonically eroded from the internal part of the Alps and discharged into the peripheral basins. Uncertainties about sedimentation models and detritus provenance derive from no-complete considerations of sedimentary dynamics controlled by volcanism. Through new fieldwork (stratigraphic logs and facies analyses) and mineral-chemical (sandstone point-counts and X-ray diffraction analyses) data, we re-discuss the reconstruction of the Oligocene source-to-sink system which fed the Taveyanne Sandstone basin, considering 1) potential preservation of PDCs below the sea level and relative deposits, and 2) impact of volcanism on the modern environments.

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