

THE RECORD OF FRONTAL TECTONIC EROSION IN A FOSSIL ACCRETIONARY WEDGE: EVIDENCES FROM THE BOCCO SHALE (INTERNAL LIGURIDE OPHIOLITIC SEQUENCE, NORTHERN APENNINE, ITALY)

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ABSTRACT

In the Northern Apennines, the Internal Liguride units are characterized by an ophiolite sequence that represents the stratigraphic base of a Late Jurassic-Early Paleocene sedimentary cover. The Bocco Shale represents the youngest deposit recognized in the sedimentary cover of the ophiolite sequence, sedimented just before the inception of subduction-related deformation history.

The Bocco Shale was unconformably deposited over the underlying formations, from the Gottero Sandstone to the Palombini Shale. The deposits belonging to the Bocco Shale can be subdivided into two different groups of deep sea sediments. The first group is represented by slide, debris flow and high density turbidity current-derived deposits, whereas the second group consists thin bedded turbidites. Facies analysis and provenance studies indicate, for the former group, small and scarcely evolved flows that rework an oceanic lithosphere and its sedimentary cover.

We interpret the Bocco Shale as an ancient example of a deposit related to the frontal tectonic erosion of the accretionary wedge slope. The frontal tectonic erosion resulted in a large removal of material from the accretionary wedge front reworked as debris flows and slide deposits sedimented on the lower plate above the trench deposits. These deposits may have been successively deformed and metamorphosed during the following accretion processes. The frontal tectonic erosion was probably connected with subduction of oceanic crust characterized by positive topographic relief.

The frontal tectonic erosion can be envisaged as a common process during the convergence-related evolution of the Ligure-Piemontese oceanic basin in the Late Cretaceous-Early Tertiary time span. This interpretation can be also suggested for the analogues deposits from oceanic units of Western Alps and Corsica.

