

The preservation of Corsican lawsonite-bearing eclogites: evidence for the role of oceanic detachments in the very rapid exhumation of HP/UHP rocks in collisional orogens.

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This study aims at unravelling the reasons for the preservation of lawsonite-bearing eclogites (LE) in Alpine Corsica. Corsican eclogites differ from those characteristic of the Western Alps because of the lower peak T (lawsonite-bearing eclogite facies) and perfect preservation of HP mineral assemblages. The tectonic contacts that separate the eclogitic unit from the surrounding tectono-metamorphic units are often characterized by glaucophane-bearing mineral assemblages. Processes that could explain the preservation of LE are still debated.

This project aims at addressing this problem through the study of the upper and lower tectonic contacts bounding the eclogitic unit, and through the characterization of the stratigraphic, structural, petrological and geochronological evolution of Corsican meta-ophiolites.

The eclogitic unit, including both meta-ophiolites and continent-derived metamorphics, overlies the lawsonite-blueschist facies “Castagniccia Unit” (mainly oceanic metasediments) and is overlain by the lawsonite-blueschist facies Campitello Unit and Pigno-Olivaccio Unit consisting of both meta-ophiolites and continent-derived rocks.

In the proximity of the upper and lower tectonic contacts of the eclogitic unit, the stratigraphic relationships between the basement, consisting of serpentinites, gabbros, and continental slices, and its cover, consisting of basalts, arkoses, conglomerates, radiolarites and calcschists, are well preserved. These sequences are comparable with those commonly found at the Ocean-Continent Transition Zone (OCT) at passive margins.

These field data allow to reconstruct a very heterogeneous basin, defined by ocean- and continent-derived sediments deposited above a detachment-capped basement composed by serpentinitised mantle, gabbros and continental-derived extensional allochthons.

During the development of the Alpine orogen, these sequences experienced HP metamorphism, overprinted by blueschist-facies and locally by late greenschist-facies retrogression.

Basement-cover contacts in the eclogitic unit are exclusively found near the contacts with the over- and underlying units. Such contacts underwent pervasive deformation and recrystallization during the entire Alpine tectonometamorphic evolution. This observation suggests that Alpine contacts nucleated along, or in close proximity with, detachment faults that accommodated the opening of the Tethys in the Mesozoic. Therefore, kinematic reworking of those detachments during orogenesis may play a major role for the burial and rapid exhumation of lawsonite-eclogites.