



Exhumation of HP-UHP units in the Alps: the role of subduction rollback.

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The mechanism of exhumation of HP-UHP units in the Alps is still strongly debated. Field observations in the inner part of the Alps show piling up of several HP or UHP uppercrustal units. This piling up of thin and long units is related to the detachment of uppercrustal units from the subducted continental margin or thinned continental lithosphere and to the subsequent stacking of the detached units at depths. In the Alps, as well as in other recent mountain belts, exhumation of HP-UHP units occurs while the subduction is still active and begin with the burial of the oceanic lithosphere subducted next to the thinned continental lithosphere. Exhumation can occur only if rocks located above subducted units are removed by erosion or tectonics. In the Alps, erosion is not large enough to remove the total rock volume. Exhumation is driven by buoyancy of crustal units, and accommodated at surface by extension due to subduction rollback, as also observed from the Aegean to Central and Western Mediterranean. Restoration of palinspastic maps and cross sections highlight this process of subduction rollback in the Alps. Rollback controlled extension is related to the subduction of a single lithospheric slab and accommodates successively the exhumation of three HP-UHP units, namely Austro-Alpine, Briançonnais, and European.