

UHP TERRANES IN THE WESTERN ALPS

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In the Western Alps, only two UHPM tectonic units have been discovered: the continental Brossasco-Isasca Unit (BIU) of the southern Dora-Maira Massif (DMM), and the oceanic Lago di Cignana Unit (LCU) of the Piemonte zone. The BIU is a small slice of European continental crust, originally consisting of Variscan amphibolite-facies metamorphics intruded by late-Variscan (275 Ma) porphyritic granitoids recrystallised 35 Ma ago at 750 ± 30 °C and 33 ± 3 kbar. The late-Variscan granitoids, converted to augengneiss during the Alpine orogeny, locally include layers of pyrope-bearing whiteschists. In spite of the Alpine pervasive polyphase deformation, relics of pre-Alpine amphibolite-facies paraschists and granitoids are locally preserved where the UHPM recrystallisation is mainly pseudomorphous or coronitic. The LCU is a very small slice of Tethyan oceanic crust, exposed in the upper Valtournenche, Val d'Aosta, close to the tectonic contact with the overlying Austroalpine Dent Blanche nappe, and metamorphosed 44 Ma ago at 615 ± 15 °C and 2.8 ± 1.0 GPa. The unit consists of coesite-eclogite derived from MORB-type basalts, and metasediments with a compositional range from Mn-quartzite to calcschist. In spite of the different origin and present tectonic position, both units show similar P-T trajectories, characterised by two thermal peaks connected by a decompressional path coupled with a moderate cooling. The significance of such P-T path, peculiar to the internal units of the western Alps, is discussed and compared with those from other UHPM collisional orogens.