

## **Pre-Alpine oceanic tectonostratigraphy of the high-pressure Lanzo Valleys Ophiolites Viù Valley, Western Alps)**

De Togni M.\*, Gattiglio M. & Balestro G.

Dipartimento di Scienze della Terra, Università di Torino.

*Corresponding author e-mail:* [marcello.detogni@unito.it](mailto:marcello.detogni@unito.it)

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The Western Alpine Ophiolites represent the remnants of the Late Jurassic Alpine Tethys (Ligurian-Piedmont Ocean), and correspond to different tectonic units (i.e., the Piedmont Zone) stacked in the axial sector of the Alpine belt (Balestro et al., 2019). The meta-ophiolite units exposed along the inner Western Alps (i.e., the Internal Piedmont Zone) were metamorphosed under eclogite-facies metamorphic peak conditions and underwent extensive polyphase deformation during the Alpine subduction-exhumation cycle.

The Lanzo Valleys Ophiolites (LVO) tectonically lie both above Dora-Maira Unit (to the South, in Viù Valley) and Gran Paradiso Unit (to the North, in Ala Valley and, to a lesser extent, in Grande Valley), and correspond to an extended but poorly known ophiolitic complex (Leardi & Rossetti, 1985). New lithostratigraphic data have been collected and a new geological map has been realized in Viù Valley in order to improve the knowledge of the oceanic tectonostratigraphy of the LVO (De Togni et al., 2021). Despite the metamorphic-deformation overprint, the main lithological contacts are poorly sheared and not transposed, thus making pre-Alpine tectonostratigraphic reconstruction possible.

The LVO succession consists of serpentinite, metagabbro, metabasalt and metasediments, whose primary lithostratigraphic relationships highlight different stages of the oceanic evolution. Mantle rocks were firstly intruded by gabbroic melts (both Mg-Al and Fe-Ti -rich types) and then serpentinitized and exhumed at the seafloor. This was followed by an effusive stage (i.e., metabasalt) and by deposition of carbonatic sediments interlayered by mafic breccia and sandstone, representing the syn-extensional succession. The latter was overlain by post-extensional sediments (i.e., quartzite, impure marble and calcschist), which sealed an articulated ocean floor morphology at Late Jurassic-Early Cretaceous times.

The reconstruction of LVO succession highlights the occurrence of a seafloor characterized by high mobility and tectonically unstable reliefs, evolved during extensional oceanic tectonics. At a regional scale these data can provide new further insights in the Alpine Tethyan evolution and, moreover, in the Alpine geodynamic framework of meta-ophiolites.

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