

THE WESTERN MARGIN OF ADRIA IN THE JURASSIC: NEW FINDINGS ON THE RELATIONSHIP BETWEEN SESIA-LANZO, IVREA, CANAVESE AND LANZO MASSIF

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The Jurassic palaeogeography of the thinned Adriatic margin is currently being studied in the Internal Western Alps. The pre-orogenic position of Sesia-Lanzo Zone, Canavese Zone, Ivrea Zone and Lanzo massif can be inferred from the relationships among continental basement, serpentinitic bodies and Mesozoic cover.

Several serpentinitic bodies are found both at the margins and within the Sesia-Lanzo Zone. Antigoritic serpentinites preserving relicts of the original peridotitic fabrics crop out (1) in contact with the high grade metapelites of the Rocca Canavese Unit, (2) along the Insubric Line, near Favaro, and (3) *within* the Eclogitic Micaschists Complex, at Alpe Maletto. The presence of rodingites within the latter body, which is located in a proximal position with respect to the Mesozoic Sesia-Lanzo Cover (Scalero Unit) suggests that serpentinitization may be related to exposure on the ocean floor. Lithospheric thinning along the eastern margin of the Sesia-Lanzo Zone is also recorded in the evolution of the Favaro serpentinite, where chlorite pseudomorphs after probable plagioclase are found at the rims of former Cr-spinel. The presence of high grade metapelites with a cataclastic structure overprinted by Alpine metamorphic assemblages at the contact with the Rocca serpentinites may be related to the formation of an extensional detachment during Tethyan rifting.

Exhumed serpentinitized mantle crops out to the east of the Sesia-Lanzo zone, at the southern end of the Canavese zone, between Rivara and Levone, where the Pesmonte serpentinite, characterized by lizardite with a typical mesh microstructure, is overlain by Jurassic radiolarites. Complete crustal thinning was accommodated along low-angle detachment faults, leading to the formation of extensional allochthons, which consist of pre-rift dolomites.

Exhumed serpentinitized mantle is also found in the northern part of the Lanzo massif, between Balangero and Chiaves, near the town of Lanzo. There, a detrital sequence of arkosic composition, with rare intercalations of Mn-rich meta-cherts and marbles, commonly ascribed to the 'Gneiss Minuti Complex', crops out at the contact between the pre-Alpine basement of the Sesia-Lanzo Zone and the Lanzo serpentinite. The presence of an omphacite layer at the contact between the metamorphosed detrital sequence and structural observations indicate that sediments and serpentinites were already juxtaposed prior to Alpine high-pressure metamorphism. Analogies with the Mesozoic sedimentary sequence overlying the Lanzo serpentinites further to the west suggest that the southern tip of the Sesia-Lanzo zone consists of Mesozoic sediments that were deposited directly over the exhumed serpentinites. The relationship between the arkose and the pre-Alpine basement of the Eclogitic Micaschists Complex is unclear, but the local interposition of thin slivers of high grade metapelites may suggest that this contact formed during Alpine tectonics.

The above observations suggest that the Eclogitic Micaschists Complex was separated from the Ivrea margin by areas of thinned lithosphere, with local mantle exhumation at the seafloor in the Canavese Zone. The Sesia-Lanzo zone itself probably represents the amalgamation of several extensional allochthons that were separated by mantle windows. Furthermore, some of the lithological sequences commonly ascribed to the Gneiss Minuti Complex are probably derived from Mesozoic sediments deposited on exhumed mantle in the distal margin.