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The Origin of The Piz Terri-Lunschania zone (Central Alps, Switzerland)

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The Piz Terri-Lunschania zone (PTLZ) represents a band of metasedimentary rocks embedded in a crucial knot at the NE border of the Lepontine dome, at the intersection of the Gotthard, Lucomagno, Simano, Adula and Grava nappes. Its origin and its position in the tectonostratigraphy of the Central Alps are still not completely understood. A better understanding of this sedimentary zone and its tectonic position could shed lights on the Helvetic-Penninic connection and facilitate the disentanglement of the Lepontine dome tectonics.
In this study we combine structural and stratigraphic observations with detrital zircon (DZ) and detrital rutile (DR) U-Pb geochronology as well as mineral trace element data from Permian, Triassic and Jurassic sandstones. We compare these data with those from adjacent tectonic units and coeval strata in other portions of the Alpine chain. Maximal depositional ages, abrupt changes in provenances and stratigraphic correlations based on new DZ and DR U-Pb and trace element data allow for a better understanding of the sedimentary evolution of the Terri basin and its palaeogeographic position along the northern margin of the Alpine Tethys. In particular the DZ U-Pb signatures, with its abundant 260-280 Ma zircons and the scarcity of 290-350 Ma zircons, corroborates an Ultra-Adula origin of the PTLZ as proposed by Galster et al (2010; 2012) based on stratigraphic arguments and reinforces the notion of a Briançonnais influence on the stratigraphic record of this complex zone, a fact that has important tectonic and Palaeogeographic implications.

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