



UNIVERSITÀ DI PAVIA

Corso di Dottorato in Scienze della Terra e dell'Ambiente

1. Project title

The geodynamic evolution of the Gondwana-Laurasia boundary in Triassic times: Constraints from the tectono-magmatic cycles of the Southern Alps.

2. Proposer

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4. Key words

(Max. 5 – at least 2)

Southern Alps, Triassic, Geodynamics, Magmatism, Continental rifting

5. Abstract

(Max.1.500 characters with spaces)

The Triassic geodynamic evolution at the Gondwana-Laurasia boundary in the area now corresponding to the Southern Alps is still strongly debated. The proposed project is aimed at placing new, valuable insights into the Triassic tectonic regime(s) of the Southern Alps by investigating the geochemistry and the timing of emplacement, as well as the styles of intrusion/effusion, of intrusive bodies and volcanic units cropping out in different key areas, namely: 1) the Ivrea-Verbano Zone (IVZ, westernmost sector of the Southern Alps), 2) the Brescian PreAlps (Central Southern Alps); 3) the Dolomites (Eastern Alps). The project activities will involve field work, with definition of the structural features governing intrusion/eruption, rock types and sampling. This will be followed by petrographic investigation using microscope and SEM-EDS, and by characterization of minerals geochemistry in terms of major, trace, light and volatiles elements (EMPA, LA-ICP-MS, SIMS). Zircon will be separated to get in-situ U-Pb geochronological data and assess the isotopic Hf composition by LA-ICP-QQQMS and LA-ICP-MCMS, respectively. Clinopyroxene, amphibole and plagioclase will be separated to determine their isotopic Nd, Sr and Pb composition by TIMS. The isotopic Sr composition will be also determined in-situ on petrographic section by LA-ICP-MCMS and LA-ICP-QQQMS. The investigation results will enable us to characterize in detail the occurrence of different tectono-magmatic cycles, the petrologic and geochemical composition of their mantle sources, the differentiation processes underwent by melts, the role of crustal assimilation in melt chemistry, providing more comprehensive constraints on the evolution of the geodynamic environment.