UNIVERSITÀ DEGLI STUDI DI PAVIA
DIPARTIMENTO DI SCIENZE DELLA TERRA E DELL'AMBIENTE

Project title

Determination of the P-T-t paths of gneisses and metapelites embedding eclogite-facies mafic rocks in the Cima Lunga-Adula unit: possible implications for (U)HP nappe evolution in the Central Alp

Proposer

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5. Abstract

(Max.1.500 characters with spaces)

The sporadic occurrence in the collisional belt of UHP and HP metamorphic rocks (up to 30-40 kbar) embedded within significant lower pressure matrix invokes mantle depth tectonics that open a debate on the subduction/exhumation dynamics. Several models have been conceived to explain these occurrences, each one with different assumptions about the reliability of the metamorphic pressure as good indicator for maximum burial, the internal coherency of the tectonic units, the timing of the exhumation processes, the metamorphic pattern preserved by the rocks. At now, the available data are insufficient to discriminate the most reliable model, nor a promising approach to detect it has been never proposed.

In the recent years, the proponents of this project performed the geological mapping of one of the most famous UHP tectonic unit of the Alps (the Cima Lunga-Adula nappe). We thus achieved an expertise on the lithostratigraphy and structure of this nappe and conceived an original plan to study the relationships among structure, metamorphism and geochronology between (U)HP rocks and their matrix. The project integrates structural, petrological and geochronological data to understand the possible different P-T-t paths of the rocks in relation to the rheological and deformation boundaries. We expect, as minimum result, a detailed characterization of the studied nappe and, as major outcome, a fully consistent geological model of the subduction/exhumation dynamics.