



A new subdivision of the central Sesia Zone (Aosta Valley, Italy)

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The Sesia Zone in the Western Alps is a continental terrane probably derived from the NW-Adriatic margin and polydeformed at HP conditions during Alpine convergence.

Subdivisions of the Sesia Zone classically have been based on the dominant lithotypes: Eclogitic Micaschist Complex, Seconda Zona Diorito-Kinzigitica, and Gneiss Minuti Complex. However, recent work (Regis et al., 2014) on what was considered a single internal unit has revealed that it comprises two or more tectonic slices that experienced substantially different PTDT-evolutions.

Therefore, detailed regional petrographic and structural mapping (1:3k to 1:10k) was undertaken and combined with extensive sampling for petrochronological analysis. Results allow us to propose a first tectonic scheme for the Sesia Zone between the Aosta Valley and Val d'Ayas.

A set of field criteria was developed and applied, aiming to recognize and delimit the first order tectonic units in this complex structural and metamorphic context. The approach rests on three criteria used in the field: (1) Discontinuously visible metasedimentary trails (mostly carbonates) considered to be monocyclic (Permo-Mesozoic protoliths); (2) mappable high-strain zones; and (3) visible differences in the metamorphic imprint. None of these key features used are sufficient by themselves, but in combination they allow us to propose a new map that delimits main units.

We propose an Internal Complex with three eclogitic sheets, each 0.5–3 km thick. Dominant lithotypes include micaschists associated with mafic rocks and minor orthogneiss. The main foliation is of HP, dipping moderately NW. Each of these sheets is bounded by (most likely monometamorphic) sediments, <10–50 m thick. HP-relics (of eclogite facies) are widespread, but a greenschist facies overprint locally is strong close to the tectonic contact to neighbouring sheets.

An Intermediate Complex lies NW of the Internal Complex and comprises two thinner, wedge-shaped units termed slices. These are composed of siliceous dolomite marbles, meta-granites and -diorites with few mafic boudins. The main foliation dips SE and is of greenschist facies, but omphacite, glaucophane, and garnet occur as relics. Towards the SW, the width of the Intermediate Complex is reduced from 0.5 km to a few meters.

In the External Complex several discontinuous lenses occur; these comprise 2DK-lithotypes and are aligned with greenschist facies shear zones mapped within Gneiss Minuti. By combining these features, three main sheets were delimited in the External Complex, with the main foliation being of greenschist facies and dipping moderately SE. Petrological work and in situ U-Th-Pb dating of accessory phases is underway in several of these subunits of the Sesia Zone to constrain their PTDT-history and thus their Alpine assembly.

REFERENCE

Regis, D., Rubatto, D., Darling, J., Cenko-Tok, B., Zucali, M., Engi, M., 2014. Multiple metamorphic stages within an eclogite-facies terrane (Sesia Zone, Western Alps) revealed by Th-U-Pb petrochronology. *J.Petrol.* 55, 1429-1456.