



Structural investigations on the western margin of the Schneeberg Complex in the Austroalpine Unit, Southern Tyrol

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The Austroalpine microplate traces the Alpine collision event between the Africa-related southern Alpine realm and the European continent. The southern margin of this microplate, the basement to the north of Meran (including Texel Complex and Schneeberg Complex) is characterised by regional eo-Alpine high-pressure metamorphism (Hoinkes and Thöni, 1987). Rocks there were exhumed within a c. 15 km broad SW-NE-striking, NW-dipping high strain zone (Sölva et al., 2001). The high-pressure Texel crystalline is tectonically underlain to the south by the Campo Complex and overlain to the north(west) by the Ötztal-Stubai Basement Complex, with an up to 5 km thick shear zone, the Schneeberg Complex, forming the contact at its base.

The northern part of this shear zone shows normal sense kinematics and separates pre-Alpine basement rocks in the hanging wall from high-pressure rocks in the foot-wall Texel Complex. These latter were emplaced on top of pre-Alpine basement rocks (Campo Complex) by an eo-Alpine ductile thrust.

The ductile deformation in the northwestern portion of the Schneeberg Complex is characterized by contemporaneous shearing and folding, with fold axes parallel to the NW-plunging stretching lineation. This geometry is typical for transpression in oblique strain regimes in which the shortening direction is perpendicular to the stretching direction. The wide variety of lithologies, including micaschists, amphibolites, quartzites, calc-schists, and marbles show strain-partitioning and different deformation-styles during continuous cooling and displacement of the active shear zone in relation to the hanging wall Ötztal-Stubai crystalline.

Microstructures suggest that a large amount (>70%) of pure shear occurred during progressive deformation. Folding in the area shows type 3 re-fold structures, with steep NW-plunging axes parallel to the orientation of large-scale folds (i.e. "Schlingen") in the southwestern Ötztal-Stubai Basement Complex, which have previously been assigned to be of Variscan age by most authors. However, based on combined results from geochronology, petrology, the observed structures (mm to km scale) at the western margin of the Schneeberg Complex are inferred to be eo-Alpine in age.

Hoinkes, G. and M. Thöni 1987. New findings of eclogites within the eo-Alpine amphibolite grade area of the Ötztal basement. Terra cognita **7**(96).

Sölva, H., M. Thöni, et al. (2001). Emplacement of eo-Alpine high-pressure rocks in the Austroalpine Ötztal complex (Texel group, Italy/Austria). Geodinamica Acta **14**, 345-360.

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