with the Variscan subduction–collision processes as indicated by depleted-mantle Nd model ages. Isotope and trace-element composition is characteristic for European Asthenospheric Reservoir (EAR) – the common mantle end-member for widespread Tertiary-Quaternary volcanic rocks from Europe. It suggests a long-term occurrence of EAR mantle component beneath the Central Europe. *In situ* laser-ablation ICP-MS U–Pb dating of titanite (124–119 Ma) indicates short duration (ca. 5 Myr) of the alkaline magmatism. It is correlated with maximum lithospheric thinning which triggered adiabatic decompression and partial melting of the asthenospheric mantle. Rapid transition from extensional climax to compressive regime directly preceding the Carpathian-Alpine Orogeny could have ceased magmatism in the Silesian basin.

Two separate orogen-parallel extension events in the Tauern Window revealed by crystallization-deformation relations

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The Tauern Window in the Eastern Alps represents a tectonic window within Austroalpine crystalline nappes. The window is formed by the Venediger (Zentralgneiss) nappe system forming large scale antiformal dome structure with preserved Mesozoic cover sequences. This system is overlain by the Subpenninic nappes (namely Modereck and Wolfendorn nappe and Eclogite zone) distinguished from the rest of the nappes by discrete deformation record. The Subpenninic nappes are overlain by the Penninic nappes represented by the Glockner nappe, Reckner Ophiolitic Complex and Matrei zone.

In the studied area, the Venediger duplex is composed of nappes of late Variscan/Permian Tux Gneiss and Zillertal Gneiss with its post-Variscan (Permo-Carboniferous and Mesozoic) cover sequences (Veselá et al. 2010). The Subpenninic nappes in the hanging wall are represented by the Modereck and Wolfendorn nappes which are overlain by the Glockner nappe being part of the Penninic units (Schmid et al. 2013). The nappes alltogether were previously named as Lower Schieferhülle, Upper Schieferhülle and their P-T conditions of up to blueschist facies were described by Selverstone (1985, 1988).

We present results of detailed structural and petrological study focused mainly on the cover sequences represented by the post-Variscan cover and Subpenninic nappes and their tectono-metamorphic evolution with respect to the Central gneiss complexes. The cover sequences consist mainly of schists, amphibolites, marbles and quartzites and they show dominant W to NW-dipping fabric (S1) in the western and central parts of studied area and S to SW-dipping fabric in the southern part. The observed stretching lineation (L1) plunges generally to the W. This dominant fabric was later folded by open to tight folds F2 with steep E-W trending axial planes (S2) and gently SW- to W-plunging axes (L2). Subsequently, the western part of the Tauern Window was heterogenously affected by development of discrete gently westward dipping cleavage S3 with dip-slip lineations L3. The geometry of the cleavage as well as the development of synkinematic folds with their axes perpendicular to L3 suggest normal sense shearing associated with this deformation. These later structures are only present in schists and orthogneiss, while they are absent in quartzites. The overlying Glockner nappe (former Upper Schieferhülle) is composed of deformed greenschists, calcschists, micaschists and marbles, which are together folded by large-scale open folds with W-SW trending fold axes and lineations (L2) and steep NW dipping cleavage in fold planes (S2). Western part of studied area is affected by late folding F2 with fold axes trending N-S and fold planes dipping to W or NW (S3).

The metamorphic overprint observed in the Venediger duplex cover sequences, Subpenninic nappes and Penninic nappes is characterized by occurrence of garnet in generaly syn- to post-kinematic position with respect to S1. These garnets show decrease in spessartine and sometimes also grossular component, while almandine and pyrope increase towards the rim. The core to rim increase in XMg documents the overall prograde growth of these garnets. PT conditions were estimated using thermodynamic modelling in Perple_X (J. Connolly, ETH Zurich). The compositional zoning of garnets in the calculated pseudosections confirmed their prograde PT evolution with an increase in both temperature but mainly pressure and show prograde evolution of garnets.

From our data, we conclude that the tectono-metamorphic evolution of Tauern Window comprises two independent E-W orogen-parallel extension events. The first one related to the nappe stacking responsible for formation of the dominant S1 fabric which was later overprinted by formation of S3 during the N-S shortening and westward lateral escape associated with exhumation of the nappe stack of Venediger duplex.

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The Iberian Massif: Variscan evolution and terrane correlations

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The Iberian Massif is the outcrop of the Variscan basement in the western half of the Iberian Peninsula. It is divided in six zones, of which two are external and one is significantly allochthonous. All zones and units are derived from the northern margin of Gondwana or oceanic peri-Gondwanan realms. The autochthonous and part of the allochthonous tectono-metamorphic units derive from an extended passive margin of early Paleozoic age. There are two sutures, both related to the closure of the Rheic Ocean. The tectono-metamorphic evolution is particularly complex in the NW Iberian Allochthon, and includes large thrust sheets, recumbent and upright folding, and high-, medium- and low pressure-metamorphism of Cambro-Ordovician and early Variscan age. The Autochthon registered poly-phased deformation of Variscan age, including large transcurrent shear zones, orocline development and abundant syn- to post-kinematic granitoids.

The aim of the presentation is to give a snapshot of the structure and structural evolution of the Variscan belt in Iberia, and to review the correlations with other Variscan massifs in Europe preserved from Alpine deformation, namely the Armorican, Central and Bohemian massifs. Among the several possible interpretations regarding how many terranes where involved, a conservative hypothesis of two relatively large ensembles is preferred. These are respectively described as the Autochthon and the Allochthon, according to their relative structural position. They form the essential part of the Variscan belt in Central Europe, and their superposition formed one of the sutures identified in Iberia, the one that will be described in detail. The other is Rhenohercynian suture, which represents the collision of these terranes with the supercontinent Laurussia.

The deciphering of mixed tectonic pattern based on characterization of structural data from boreholes obtained using acoustic televiewer

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The acoustic televiewer (Zemanek et al. 1969) records structure of borehole by transmitting ultrasound pulses from a rotating sensor and by recording the time and the amplitude, which it returns from the reflected signals walls. Amount of energy, which reflected wave carries back to the probe sensor, is dependent on quality of the borehole wall.

Each joint, bedding or foliation surface or any similar anisotropic planes is indicating by decreasing of reflected-wave amplitude. Due to its principle, the probe contains a group of three magnetometers and accelerometers. Output of the probe is continuous information about value and azimuth of borehole inclination, which allows us to define the dip direction and dip of planar structures. The structural data obtained were submitted in matrix showing depth of inhomogeneity, dip direction and dip.

Orientational analysis was used for detailed interpretation of inhomogeneities from the borehole. Directional data were visualized by equal-area Lambert projection on Lower hemisphere and statistically analyzed by Spheristat software.

Foliations, joints and/or zones of joints (eventually shear zones) were interpreted by cluster analysis across the