

# Polyphase structural and metamorphic evolution of Variscan superstructure, Teplá-Barrandian unit, Bohemian Massif

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The Teplá-Barrandian Unit (TBU) represents the largest relict of orogenic superstructure within Variscan Bohemian Massif characterized by common occurrence of well-preserved pre-Variscan and early-Variscan fabrics. It is mostly composed of medium to low-grade Neoproterozoic metasediments unconformably overlain by Paleozoic unmetamorphosed sequences and therefore it offers an excellent opportunity to study not only superposition of individual structures, but also their P-T evolution using thermodynamic modelling.

We present here the preliminary data collected along the Střela river profile, which exposes a continuous crustal section across the western margin of the TBU. We identified three distinct deformation stages and related fabrics, each characterized by systematic spatial variations of P-T conditions and structural styles.

The eastern part of the studied area is dominated by sub-horizontal metamorphic foliation ( $S_1$ ) originated via complete transposition of original bedding and showing normal metamorphic zonation from very-low

grade in upper part to at least garnet zone in structurally lower part. From the east to the west, the  $S_1$  foliation is progressively reworked by north-south trending steep  $S_2$  slaty cleavage formed by large-scale upright folding and transposition. The metamorphic conditions increase together with the degree of reworking from chlorite zone in the east to kyanite zone in the west. The structural style as well as prograde character of metamorphic evolution shows that major thickening of TBU occurred during  $D_2$  deformation.

In contrast, the western part of the studied area is characterized by the dominance of  $S_2$  fabrics, which are progressively transposed by tight to isoclinal folds  $F_3$  accompanied with SE dipping axial plane cleavage  $S_3$  towards contact with Mariánské Lázně complex (MLC). The  $S_3$  cleavage is associated with significant vertical shortening and retrogression of  $S_2$  metamorphic assemblages in sillimanite stability field. We interpret the  $S_3$  fabrics as a result of activity of a large-scale detachment zone responsible for unroofing of the MLC.