

Tectonic history of the Teplá–Barrandian unit in a nutshell: from Cadomian accretion through Cambro–Ordovician extension to Variscan collisions, plutonism, and collapse

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The upper-crustal Teplá–Barrandian unit (TBU) is a unique ‘archive’ that records more than 300 M.y. of tectonic history of the central Bohemian Massif. The ~650–530 Ma Neoproterozoic/earliest Cambrian basement of the TBU represents a superbly preserved section across the Cadomian active margin of Gondwana from an accretionary wedge with sedimentary and tectonic mélanges involving dismembered pieces of ocean floor to volcanic arc sequences and intra-arc and relic back-arc basins. This active margin begun to break up during Cambrian. As recorded by intermediate and felsic dikes in the northernmost vicinity of the Late Cambrian Křivoklát–Rokycany volcanic complex, the main phase is characterized by reorientation of the principal extension direction from ~E–W to ~NW–SE during the latest Cambrian/earliest Ordovician, perhaps as a response to slab-pull of the emergent Rheic Ocean. The subsequent basin development and passive margin stage lasted till Middle Devonian, when the TBU became involved in the Variscan orogeny. The initial orogenic shortening and transpressional deformation was associated with SE-directed subduction and closure of the Saxothuringian Ocean at around ~380 Ma and was localized along the NW margin of the TBU above the subduction zone. At approximately the same time, the opposite TBU margin records an enigmatic tectonomagmatic event (the Staré Sedlo and Mirovice orthogneiss complexes), perhaps reflecting convergence the Teplá–Barrandian and Moldanubian units. The overall shortening/transpression lasted in the orogenic upper crust from ~380 Ma to ~346 Ma. A protracted Variscan plutonic activity in the TBU commenced with intrusion of small-volume stocks of calc-alkaline granodiorites–tonalites (e.g., the Štěnovice and Čistá plutons) at ~375 Ma, and after ~20 M.y. gap continued

with the emplacement of large-volume continental magmatic arc (represented by the Central Bohemian Plutonic Complex) along the SE margin of the TBU. The arc development begun with the calc-alkaline Sázava

suite emplaced at ~354 Ma and culminated with a magmatic flare-up at ~346 Ma. This magmatic event also terminated the shortening/transpressional deformation in the TBU and marked the onset of normal movements and extensional collapse with respect to the southeasterly high-grade Moldanubian unit. The end of normal shearing is bracketed by the latest ultrapotassic intrusions of the plutonic durbachite suite and compositionally similar dike rocks which preserve magmatic features and have largely not been affected by extensional shearing. Altogether, these intrusions define a spatial–temporal–compositional shift of the granitoid plutonism from older (~375–354 Ma), calc-alkaline in the NW to younger ~346 Ma high-K calc-alkaline and youngest (~343–337 Ma) ultrapotassic in the SE, compatible with successive and migrating magma generation above the Saxothuringian/ Teplá–Barrandian subduction zone.