riods repeated within the wedge. Seemingly, the advancing orogenic wedge prograded by alternation of extensional and compressional events, just like a caterpillar. However, the WC orogenic wedge lost the character of a mechanical continuum by the Middle Miocene and was disintegrated by whole-lithosphere stretching triggered by a change from the advancing to retreating oceanic subduction in its front. Therefore, the Late Tertiary rifting and foundation of the Pannonian Basin system is interpreted as a hinterland, i.e., back-arc extensional event.

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Seismic Velocity Structure of Mantle Lithosphere Beneath the Bohemian Massif

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Deep structure of the lithosphere of the Bohemian Massif (BM) is derived from tomographic images of teleseismic body-wave velocities and a joint inversion of anisotropic data (Plomerová et al., 1996) – P-residual spheres (Fig.1) and fast shear-wave polarizations and split times δt (Fig. 2). Data for this study were recorded by a portable array of digital three-component stations operating in the BM for 8 months within the co-operation between the geophysical institutions in Prague and Strasbourg (MOSAIC Project, 1998–2000; Plomerová et al., 2000). We observe that velocity anomalies within the mantle lithosphere are strongly affected by dipping anisotropic structures. Moreover, distinct lateral variations of the shear-wave split time δt and the fast shear-wave azimuths were also observed. The shear-wave splitting, analogous to the birefringence in optics, occurs in case that the shear wave propagates within anisotropic medium, and is considered the most reliable diagnostics of anisotropy. The splitting means that a shear wave splits into fast and slow waves, the latter one being recorded with a time delay δt. Mapping lateral changes in the anisotropic parameters extracted from body waves allows us to determine domains of mantle lithosphere of similar velocity structures separated by sutures. At boundaries of domains with different anisotropic structures, we observe either an abrupt change in the P-residual patterns and/or a significant decrease in split time of sub-vertically propagating shear-waves sampling both units. Steep and narrow sutures sharply delimit domain boundaries, while inclined contacts, such as the Saxothuringian (ST) and Moldanubian (MD) contact in the westernmost BM, result in a broader transitional region above the suture (Babuška and Plomerová,

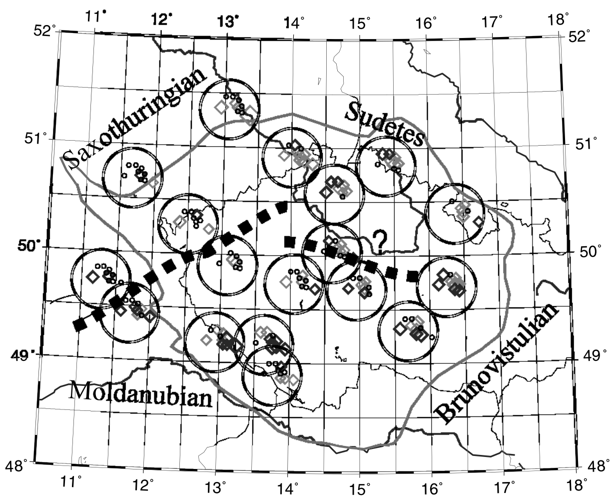

Fig. 1. P residual spheres showing directional terms of the relative P residuals constructed from 35 teleseismic events recorded during the MOSAIC experiment. Black diamonds show negative residuals (high-velocity directions), light grey diamonds represent positive residuals (low-velocity directions) and dots denote residuals close to zero. The outer circle of the spheres corresponds to an angle of propagation 60° below the M-discontinuity. Size of the signs is related to magnitude of the residuals.

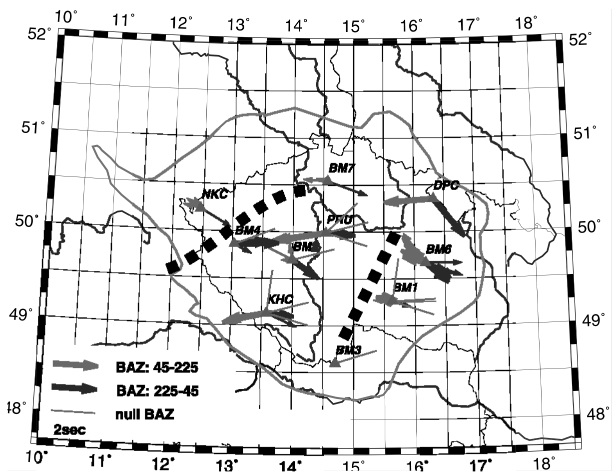

Fig. 2. Fast shear-wave polarization azimuths and split times δt of the SKS and SKKS phases. Arrows point in dip azimuths of the fast S polarisation vectors evaluated in 3D. Length of the arrows is proportional to the δt.

2001). According to anisotropic parameters of body waves, we can distinguish several domains in the mantle lithosphere of the BM. While a large δt and a general E–W orientation of the fast split wave prevail in the western and central parts of the BM, the δt in the eastern part is smaller and the fast polarization rotates to the WNW–ESE direction (Fig. 2). The null split solutions or a decrease in the split times are related to the ST/MD contact in the western part of the BM and in the eastern Moldanubian around longitude 15.5°E (see the BM1 station in Fig. 2). The latter lateral change is associated with the effects caused by wave propagation within the complex mantle lithosphere formed by the Brunovistulian domain (e.g., Gnojek and Hubatka, 2002) underthrust beneath the eastern MD. The P residual spheres indicate that there is no substantial difference between the velocity structure of the mantle lithosphere beneath the MD and the Teplá-Barrandian Unit (TBU). But the spheres indicate that the velocity structure of the northern part of the BM differs from that of the MD. We interpret the observed variations of the anisotropic parameters by olivine models with generally orientated (dipping) symmetry axes. While the (a,c) foliations dip mostly to the NW in the ST and Sudetes, they dip to the S in the MD. As shown by lateral changes in the anisotropic parameters, the mantle lithosphere of the BM, similarly to other Variscan massifs such as the Armorican Massif (Judenherc et al., 2002) or the French Massif Central (Babuška et al., 2002), consists of at least three domains with different orientation of large-scale olivine fabric separated by sutures cutting the whole lithosphere.

Acknowledgements

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Brittle Deformation of the Ernstbrunn Limestone (Jurassic) of the Pavlov Hills

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The Ernstbrunn Limestone is suitable for the study of the mechanics of brittle deformation. It represents the top member of the carbonate facies of the Ždánice Unit (Eliáš 1961, Matějka et al. 1961) of the Late Jurassic (Oxfordian) to

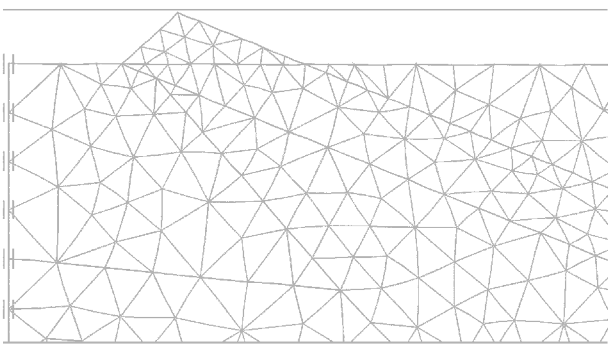

Fig. 1. Construction of primary triangles.

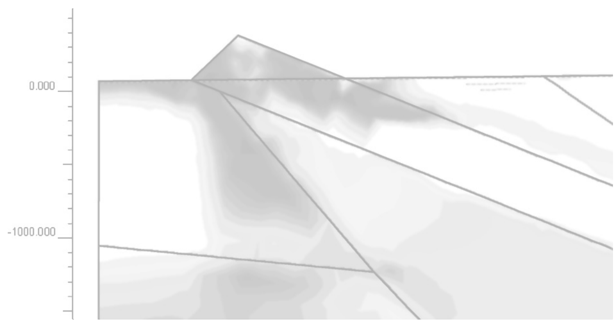

Fig. 2. Decomposition of stress.