characterized by the occurrence of magnetite and the other one by the occurrence of ilmenite. Studies of granite spatial distribution show rough coincidence of I type with Magnetite Series Granites on one hand and S type with Ilmenite Series on the other. Consequently, it is highly likely that the magnetic granites correspond basically to the I and/or A types, while the weakly magnetic granites correspond to the S types and the susceptibility can therefore be used as an indicator of granite tectonic setting. However, as the occurrence of magnetite or ilmenite is primarily controlled by the oxygen fugacity in the magma source, the correlation between the above granite types and granite series need not be very close.

In addition, the magnetic mineral assemblage may reflect not only the conditions of granite generation, but also processes of its later development when disintegration or new-formation of magnetic minerals may take place. Consequently, the susceptibility must be used as tectonic setting indicator with great caution, after a thorough study of the origin of magnetic minerals. Nevertheless, as the susceptibility measurement is several orders of magnitude faster and cheaper than the investigation of oxygen and strontium isotopes used for the discrimination of the granite type in geochemistry, the susceptibility survey can be recommended despite all its disadvantages.

An overview of magnetic susceptibility of granites of the Bohemian Massif is presented and the results are discussed from point of view of the known geochemical data of the tectonic setting.

CELEBRATION 2000: P-Wave Velocity Models of the Bohemian Massif

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Deep structure of the Bohemian Massif (BM), the largest stable outcrop of Variscan rocks in Central Europe, was studied along two refraction profiles: CEL09 that traverses the whole massif in the NW–SE direction, and CEL10 that extends along its eastern edge almost perpendicular to CEL09. Good-quality recordings with clear first arrivals of crustal and upper-mantle phases show apparent velocity 5.9 km/s for the upper crust with slightly higher gradient in the NW part of the BM and app. velocity 8.0 to 8.1 km/s for the upper mantle. Decrease of amplitudes of crustal phases visible in some sections may be connected with a specific upper crustal structure (zero to negative velocity gradient zone). Pronounced Moho reflections in the central part of the BM suggest well-defined Moho in that part and not so clear Moho with a smaller velocity contrast in other parts of the BM.

For interpretation, the tomographic inversion routine of Hole (1992) was used as an efficient tool to determine seismic P-wave velocity distribution in the crust using first arrivals. Tomographic models were verified by forward ray tracing modelling based on well-established algorithm developed by Červený and Pšenčík (1983), where further phases were also included besides the first arrivals. 2-D velocity models of first arrivals and reflected phases show high P-wave velocity-gradient zone reaching the depth of 5-7 km followed by low-gradient and laterally homogeneous P-wave velocity distribution in the middle crust. Differences in velocity distribution in the lower crust delimit the central part of the BM (sharp Moho discontinuity) from other tectonic units within the BM (lower crust high-gradient transition zone). Position of Moho discontinuity ranging from 32 km to 40 km and reflectors within the crust complement the P-wave velocity distribution. The presented models also show the contact of the BM with its neighbouring units: the Carpathians, Paleozoic Platform, Vienna Basin and the Alps.

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Confirmed Transtensional Slip in the Area of the Svratka Anticline

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This study is focused on the contact zone of three tectonic units: the Svratka Unit in the centre, the Polička Unit in the north and east, and the Hlinsko Zone in the west. This area had not been mapped in detail until a new mapping was carried out by a student of the Masaryk University in Brno in 2001. Interpretation of the structural data acquired during this mapping is presented in this paper.

The foliations form a brachyanticlinal structure, the eastern limb of which is formed by an old foliation dipping approximately 45° NE. In the western limb, the foliation is re-orientated into a new position – it dips approximately 25° NW. The axis of the large fold plunges towards 343° at an angle of 20°, the axial plane dips 27° NW and is subparallel to the foliation in the western limb. S-planes in the Hlinsko Zone are clearly different from the structure of the Svratka and Polička units. Foliation planes dip NE at variable angles.

Lineations measured in this area generally trend NW. They are subhorizontal in the east, with the plunge angles increasing towards the border with the Hlinsko zone to a maximum of 40°. In the Hlinsko Zone, plunge angles suddenly decrease to about 25°.

The Svratka Anticline can be interpreted as a combination of old foliations with younger foliation planes formed during transtensional slip in the NW part due to the slip of the upper Hlinsko Zone to the NW. This interpretation is in agreement with the conclusions of Pitra (1994) and Melichar (1998).

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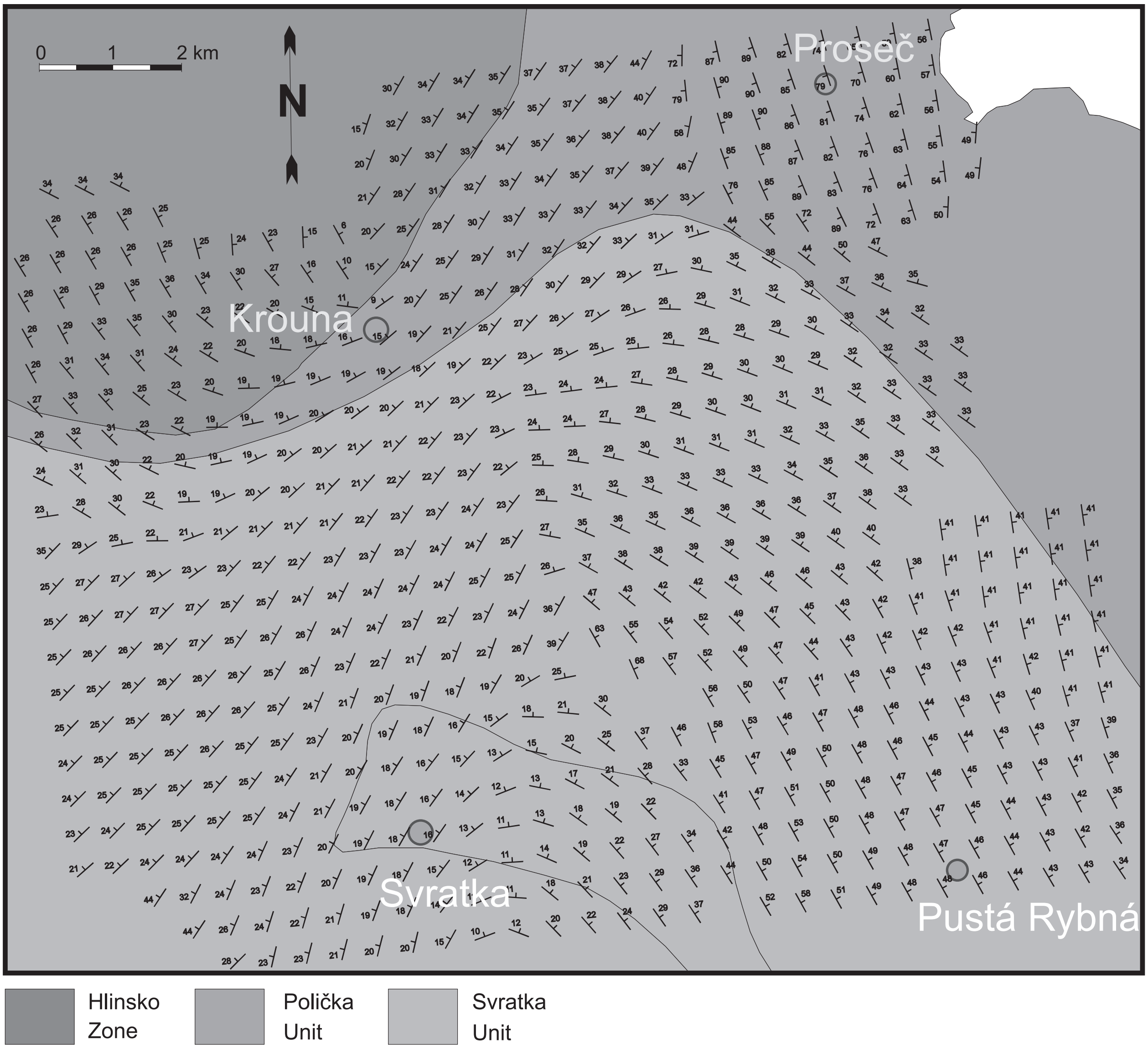

Fig. 1. A map of spatially averaged orientations of foliation planes with the northern brachyanticlinal structure of the Svratka and Polička units.