GEODYNAMIC HISTORY OF THE ARMORICAN MICROPLATE DURING THE PALAEOZOIC

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Although the Palaeozoic drift histories of Baltica, Avalonia and Laurentia are now fairly well constrained from both palaeobiogeographical and palaeomagnetic evidence, the drift histories for Armorica and Gondwana still remain enigmatic. In order to understand the geodynamic development of Hercynian Europe during the Palaeozoic it is most important to unravel the pre–collisional plate kinematics of all the lithospheric elements involved. With this aim in mind an extensive palaeomagnetic survey of Palaeozoic rocks from the Bohemian Massif, the eastern extremity of Armorica, and the Catalanian Coastal ranges of SE Spain has been crried out. Using the results obtained from these studies it is now possible to define the drift history of Armorica and thus construct accurate palaeogeographic reconstructions for the Atlantic Bordering Continents for key time intervals. They demonstrate that Armorica rifted from the northern margin of Gondwana in mid Ordovician times, with closure of the ocean separating Armorica and Baltica by the upper Silurian. A further implication of these results is that the Bohemian Massif underwent significant amounts of rotation between late Silurian and Carboniferous times. This therefore implies major internal deformation within Hercynian Europe before consolidation into its present day configuration. In order to quantify this deformation a further study of Devonian age rocks from both the Bohemian Massif and the adjacent Moravo–Silesian Zone has recently been carried out, the results of which and their geodynamic implications will also be discussed.

DEEP SEISMIC REFLECTION PROFILING AND CRUSTAL STRUCTURE IN WEST BOHEMIA

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New deep seismic reflection profile 9HR between Kraslice (Krušné hory Mts.) and Horažďovice (SW Bohemia) has brought considerable progress in understanding crustal structure of the Bohemian Massif. The line 9HR passes from the Saxothuringicum in NW through the Karlovy Vary Massif, the Mariánské Lázně metabasite body, the Teplá – Barrandian zone and the Moldanubicum.

The reflection characteristics are strikingly different between the uppermost 8–10 km and the rest of the crust in Krušné hory Mts. and the Mariánské Lázně area. The upper layer seems to be overthrust over the strongly reflective SE dipping complex beneath. The Karlovy Vary Pluton is seismically transparent to the depth of 8–9 km and the most probable interpretation is that this value represents also depth of granite body.

The Teplá–Barrandian area reflections are mostly subhorizontal north of Plzeň and then steeply southeasterly dipping until the nearly vertical boundary with Moldanubicum near Klatovy. The reflection characteristics of both these neighbouring regions is completely different. Moldanubian crust is seismically very complex with different packages of reflections dipping to both ends of the profile. Whole crustal, seismically well visible, near–vertical fault between the Teplá – Barrandian area and the Moldanubicum might be interpreted as major strike–slip fault. The sense of movement inferred from geological data is sinistral. Detailed gravity and aeromagnetic data likely confirm this interpretation.

Conclusions. The Saxothuringicum (Krušné hory Mts.) and the Mariánské Lázně complex are part of the large allochthonous body rooted beneath the Teplá–Barrandian zone. This body overthrusted the unknown highly reflective and most probably strongly sheared European (Cadomian) basement. Teplá–Barrandian zone and Moldanubicum were part of the upper plate during the collisional process and the date of transcurrent motion between them is not well estimated.