



Detection of deep boundary between Saxothuringian and Moldanubian tectonic units (western Bohemian Massif, central Europe) by high resolution mapping of lithospheric thickness

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The Bohemian Massif belongs to the Variscan belt of central Europe. Its western part is situated at the junction of the Saxothuringian, Tepla-Barrandian and Moldanubian Variscan structural units. We investigated S-to-P converted phases of 264 teleseismic events recorded at 80 broad-band stations during the BOHEMA experiment (2001-2004) with the method of S receiver function analysis. A negative converted phase occurs in the Saxothuringian and northern Tepla-Barrandian unit at about 9-10 s before the S onset. It corresponds to a velocity decrease at 80-90 km depth and is interpreted as the lithosphere-asthenosphere boundary (LAB). In the Moldanubian unit, the negative phase occurs at 13-15 s before the S-onset, corresponding to lithospheric thickness of 120-130 km. The transition between the two lithospheric domains is less than 60 km wide. As the Moho depth also increases from about 28-31 km in the Saxothuringian/Tepla-Barrandian to 34-39 km in the Moldanubian unit, the observed crustal/lithospheric domains are interpreted to represent two distinct microplates with a relatively sharp boundary cutting through the whole lithosphere and separating different crustal and lithospheric thicknesses on either side.