Geophysical Research Abstracts
Vol. 14, EGU2012-6027, 2012
EGU General Assembly 2012

Variscan sutures and exhumation of high- to ultrahigh-pressure metamorphic rocks in the Bohemian Massif

S. W. Faryad (1), V. Kachlík (2), R. Jedlicka (1), and H. Klápová (1)

(1) Charles University Prague, Institute of Petrology and Structural Geology, Prague, Czech Republic (faryad@natur.cuni.cz),
(2) Charles University Prague, Institute of Geology and Paleontology, Prague, Czech Republic

The Bohemian Massif is the largest segment of European Variscan belt, where high-grade crystalline basement units are interleaved by numerous blocks and boudins of HP-UHPM rocks of oceanic and mantle origin. The medium- to high-temperature eclogites, garnet peridotites and pyroxenites occur within granulites, granulite gneisses and migmatites. UHP conditions are estimated for garnet peridotites and associated garnet clinopyroxenites and eclogites. The clinopyroxenite forms layers and the eclogite occurs as lenses or boudins in garnet peridotites. Prograde PT path and pressure near to coesite stability field is confirmed also for some granulites that host HT eclogite and garnet peridotite. Medium- to low-temperature eclogites are present in the gneisses and amphibolites. All these rocks occur in two tectonostratigraphic domains (the Saxothuringian and Moldanubian zones), which surround and underplate the Teplá Barrandian block from northwest and southeast, respectively. The Teplá Barrandian block is situated in the central part of the Bohemian Massif and it is formed by low- to medium grade metasediments, which are free from eclogites and garnet peridotites. The HP-UHPM rocks from the Saxothuringian and Moldanubian zones show similar lithology, PT conditions and ages of their protoliths and metamorphism. Ophiolites, some showing eclogite facies conditions, are also present in these two zones. The Saxothuringian Zone in addition contains blueschist facies rocks that form a discontinuous belt along the western and northern border of the Teplá Barrandian block. Due to strongly greenschist facies overprint, the blueschist facies rocks are only locally preserved. The presence and regional extent of HP-UHPM rocks in the Saxothuringian and Moldanubian zones and their relation to possible suture zones is the subject of long discussion. Recent results of petrological research show that HP-UHPM rocks primarily covered a large area and their present extent is the result of medium- to low-pressure reequilibrium during their exhumation and subsequent collisional processes. In addition to ophiolites, blueschists and low-temperature eclogites, knowledge of geotectonic position of the source material for UHPM rocks are needed to localise the suture zones. Eclogites and peridotites show signatures of both depleted oceanic and lithospheric mantle that were dragged down along the subduction zone. A combination of available data on lithology and ages, with the results of petrological study stated above, as well as of solid phase inclusions in minerals is used to reconstruct possible model for Variscan subduction that was responsible for formation and exhumation of HP-UHPM rocks in the Bohemian Massif.