Abstract
The Doupovské hory Volcanic Complex (DHVC) occupies the western part of the northeast-southwest trending Eger Graben in northwestern part of the Bohemian Massif. The Graben follows the older Variscan suture between the Saxothuringian and Teplá-Barrandian Domains. The rocks of the DHVC are alkaline with setting and composition similar to other Cenozoic intraplate volcanic complexes of the Central and Western Europe (CIMACi).
The Doupovské hory Volcanic Complex started the activity in the Lowermost Oligocene and lasted until Lower Miocene. The volcanic activity resulting in accumulation of the Doupovské hory Volcanic Complex was several times interrupted by periods of volcanic edifice decay and sector collapses. The magmatic activity lasted for *ca.* 14 M.y. and built a volcanic complex of total thickness 600-1000 m.
The earliest volcanic activity was explosive in style and the eruptions could be classified as Strombolian to Sub-plinian and phreatomagmatic. The eruptions deposited about 80 m of volcaniclastics. This initial activity was dated by paleontology to the Lowermost Oligocene. The volcanic activity subsequently became calmer and lava flows dominated over explosive events. The growth of the early DHVC edifice culminated with intrusions of the Flurbühl intrusive complex by about 30-29 Ma. The intrusive complex comprises essexite, foid-microsyenite, melteigite, ijolite, urtite and other related rocks. Growing early DHVC edifice experienced large sector collapse in its northern part. This collapse produced an alluvial fan of lahars and debris avalanche deposits in the vicinities of towns Kadaň and Klášterec nad Ohří. The deposits related to the sector collapse pre-date the lavas of 29 Ma. Subsequent effusive activity is well documented on the profiles of the Úhošť Hill with lavas of 29 to 22 Ma. Sector spreading of the eastern part of the DHVC is considered to be a response to the tectonic activity related to an early phase of opening of the Most Basin. The significant basement heterogeneity very probably played also an important role in the DHVC edifice instability. Up to 200 m thick sequence of lahar deposits is associated with this sector spreading which occurred about 25 Ma. The volcanic activity was terminated by formation of a group of monogenetic volcanoes on the northern periphery of the DHVC. In contrast to the České středohoří Volcanic Complex, such late monogenetic volcanoes do not represent primitive melts solely, but melts of various stages of magma evolution. Picrobasalt, basanite and trachybasalt were documented among lavas of this late period of volcanic activity. The late monogenic volcanoes yield ages 22.5 and 20.6 Ma.
The DHVC consists predominantly of mafic alkaline lavas. The prevailing basaltic rocks vary in composition from the (olivine-) foidites, basanites, tephrites and picrobasalts to (olivine-) alkali basalts. Scarcer moderately differentiated rocks are represented by trachybasalts and basaltic trachyandesites. Felsic rocks comprise phonolites, tephriphonolites and trachytes, the latter being significantly altered. Most of the mafic volcanic and intrusive rocks are impoverished in compatible elements (Cr, Ni) suggesting that these rocks already experienced some magma evolution. The rocks with the highest mg# values and compatible element contents are picrobasalts. However, the high content of large olivine and clinopyroxene phenocrysts (exceeding 1 cm) documents semi-cumulitic origin of these rocks. This interpretation is also supported by the positive correlation between SiO_2 and MgO in MgO-rich rocks. Various observed trends in alkalinity are considered evidence for various parental magma batches. According to the Sr-Nd isotopic composition, magmas of the DHVC originated in the mixed mantle sources derived from the European Asthenospheric Reservoir through the addition of components similar to the Enriched Mantle (EM 1 and EM 2).