



Gravity and magnetic survey of different granite types in the Variscan Western Krusne hory/Erzgebirge pluton (Czech Republic)

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The Western Krusne hory/Erzgebirge pluton (325 – 305 Ma) is a part of a large granite batholith within the Saxothuringian Zone of the Central European Variscides. The batholith is the source of a prominent regional gravity low. The exact cause of this anomaly is poorly understood. We studied whether several granite types should be distinguished in quantitative interpretation of regional gravity data. Two granite complexes as the principal units (Older Intrusive Complex – OIC and Younger Intrusive Complex -YIC) as well as several types of transitional granites are recognized in the Krusne hory/Erzgebirge batholith. Bibliographic search showed that density parameters (grain density, bulk density, porosity) and magnetic susceptibilities are very similar for both granite complexes in the Western Krusne hory/Erzgebirge pluton despite of a large interval between their emplacement and contrasting geochemical composition. We tested petrophysical homogeneity of granites in the field by gravity and magnetic measurements along a 3.5 km profile located West of Karlovy Vary. The geophysical profile crosses three types of granites: OIC, YIC and a narrow body of transitional microgranites. The laboratory measurements generally confirmed petrophysical homogeneity of various granites with an exception of slightly higher bulk densities of microgranites compared with OIC granites. The body of microgranites inside the OIC is clearly visible as a local gravity high. A difference in gravity field over the OIC and YIC granites was not observed. In magnetic field we could recognize all three types of granites: the quiet magnetic field values over YIC are 20 nT higher than those measured over OIC (sharp boundary in profile measurements). The body of microgranites was characterized by a strongly fluctuating magnetic field. Laboratory measurements did not provide clear explanation because of the similarity in magnetic

susceptibility values for all measured types. We assume that the difference between magnetic field over OIC and YIC is caused by various remanent magnetizations of both granite complexes while the fluctuating magnetic field over microgranites is due to rare accessory magnetite.