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Petrological Characterization of the Triassic Paleosurface in the Northern Bohemian Massif

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'Albitization' is a widespread alteration process affecting sedimentary, igneous and metamorphic rocks. Albitized facies usually show a pinkish to red colour, depending on the degree of alteration. The main mineralogical process of this phenomenon is the pseudomorphic replacement of the primary Ca-Na plagioclases by secondary albite (Na). During this replacement biotite is often transformed to chlorite and inclusions of hematite, apatite, titanite, and calcite develop.

So far, albitization has been systematically regarded as caused by magmatic derived hydrothermal brines, alkaline metasomatism reactions (Cathelineau, 1986; Petersson and Eliasson, 1997), or as a low grade metamorphic facies (Boles and Coombs, 1977).

Recent studies in the Morvan Massif granites (Ricordel et al., 2007; Parcerisa et al., 2009) showed that the albitization there is related to the Triassic paleosurface. The decrease of this alteration with depth and its paleomagnetic age support the link of the albitization to the Triassic paleosurface. Furthermore, the petrographic data suggest the import of sodium by weathering solutions. The enrichement in Na+ of the fluids that triggered this alteration is probably linked to the Triassic salt deposits.

Albitised pinkish facies have been recognized in the northern part of the Bohemian Massif (Polish Sudetes). Typical igneous and metamorphic rocks of the Klodzko area (southern Poland) are granites, granodiorites, schists, amphibolite, and gneisses, mostly of Paleozoic age. Three sites in the Klodzko area were sampled in detail from N to S: (1) Laski quarry, (2) Laski village, and (3) Chwalislaw. Here, the occurrence of the albitization is well developed and specific in its mineralogical paragenesis.

Throughout the sample sites different albitization stages can be observed. The most albitized and therefore reddish facies can be found at the Laski village granite that consists of primary quartz and K-feldspar, biotite, and development of secondary albite, chlorite and hematite forming tiny granules. The albitization of the Laski quarry granite (and granodiorite) developed along fractures. The fractures show alteration gradients with reddish albitized facies at the walls and less albitized and rather pinkish facies away from the fracture zones. The mineral assemblage is similar to the previous section, nevertheless hematite is pigmentary here and calcite occurs. The most southern site of Chwalislaw shows only weak albitization forming pinkish spotted facies with minor hematite and maghemite concentrations.

Recent paleomagnetic datations of these Polish albitized sections show a Triassic remagnetization carried by hematite and maghemite (Franke et al., 2009, 2010), related to the Triassic paleosurface. Moreover, based on the albitization degree, the massively hematised/albitized Laski village section seems to be closer to the ancient surface, whereas the fracture controlled albitization of the Laski quarry relates to deeper parts of the paleoprofile and the pinkish spotted facies of the Chwalislaw section are tied to the base of the paleosurface alteration. The albitized outcrops spread along a topographic surface that rises up southward. In detail, the arrangement of the various facies (massive, fracture controlled and spotted) allows to recognize zones where post-Triassic erosion has been more or less important and/or discontinuities due to fault movements. Mapping the albitized facies will allow to reconstruct the Triassic paleosurface and to date some strain events relatively to this surface. Recognizing

the Triassic paleosurface is important with respect to the post-paleozoic geodynamic evolution of this crystalline basement. As the paleosurface is widely preserved in the Sudetes, the post-Triassic basement erosion has been weaker than the depth of the albitization profile ($\sim$200 m depth).

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