

The geotourist assessment of the volcanic sites in Vtáčnik Mts. (Slovakia, Western Carpathians)

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The evaluation of resources is one of the most important tasks of geotourism research. This paper presents the method of geotourist assessment, which was applied on the example of sites presenting the Neogene volcanic activity within Vtáčnik mountain range. Two stages of assessment are proposed: inventory and valorization. The inventory includes identification of resources, initial selection and characterization. During the valorization, a researcher uses the point bonitation method and takes into account the following indicators: scientific value, location and additional values. The result of valorization process is presented in table which allows comparison and categorization of the selected sites. The assessment of considered region revealed, that selected sites like rock walls, rock forms, abandoned quarries and hills with ruins are characterized by high or medium geotourist value. Consequently, Vtáčnik is an example of area of a great potential for geotourism development.

Microfacies analyses of the Middle Jurassic hardgrounds from the Bucegi Mountains (SE Carpathians)

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The microfacies and diagenetic features of the hardgrounds occurring in the Middle Jurassic carbonate rocks from Bucegi Mts (SE Carpathians) are studied in the present paper.

These hardgrounds have been already recognized by previous authors but no detail study exists so far. They described the hardgrounds as indurated surfaces with limonitic crusts, and assigned them to several condensation levels formed at sea bottoms.

We conducted the microfacies analysis on thin sections, polished slabs or acetophane peels, incorporating the frequency and types of allochems, as well as sedimentary structures where they were dominant. Scanning electron microscopy (SEM) and cathodoluminescence (CL) were applied to identify the microstructures and diagenetic features. In addition to the optical methods we also investigated the geochemical composition of selected particles or lamina directly from polished slabs using a microXRF device (Horiba XGT 7000).

Several different microfacies have been distinguished in the studied sections: bioclastic grainstone/packstone, ooidal grainstone, bioturbated wackestone/packstone, stromatolitic mudstone serpulid bafflestone and more or less brecciated and mineralized laminated crusts. Endolithic organisms were responsible for the bioerosion and particle's micritisation, while the bacterial activity for the frequently clotted and stromatolitic structures as well as for mineralization. Laminated crusts are formed by microbial iron mats dominated by filamentous bacteria as revealed from SEM investigation. Limonite crusts on hardground surfaces indicate relatively long omission phases and low-energy hydrodynamic conditions. The investigated hardgrounds are heavily mineralized with Fe and Mn oxides as well as phosphates. Many minor elements are also concentrated in these hardgrounds.

The coexistence of borings and burrows in a sedimentary deposit has been considered a criterion of hardgrounds. Both of them are present in our sections. Serpulid bafflestones are frequently associated with the stromatolitic layering.

Diagenetic features include fibrous marine calcite cement, minor compaction, selective dissolution of aragonite leading to moldic porosity and several generations of late diagenetic cements as revealed by CL observations.