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Concept of geomorphological analysis of previously glaciated areas (based on analysis of the surroundings of Prášilské jezero lake and Jezero Laka lake, Šumava Mts., Czech Republic)

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Geomorphological analysis is an important part of geomorphological investigation. However, the process of this analysis itself is in fact still unclear, even though geomorphologists use it very often.

Therefore, a firm concept of geomorphological analysis has been postulated according to a proposal published by Urbánek (2000a, b) and applied to geomorphological research of previously glaciated areas in the Šumava Mts. (the Czech Republic).

Geomorphological information system (GmIS) has been suggested as the environment and the tool of the analysis (Minár et al. 2005, Mentlík et al. 2006). A layer of elementary forms of relief comprises the main part of this system – all other information is connected with a particular elementary form.

Generally, the process of geomorphological analysis has seven steps. Delimitation of the area under consideration is made in the first step – called identification. The second step – differentiation (which is separated into three substeps) deals with demarcation of elementary forms of relief in the particular area. Spatial analysis, when the positions of elementary forms are compared and identified genetically, is done in the third step. The next two steps are independent from the previous parts. They deal with research of current geomorphological processes and analysis of mophochronology (the main steps of the development of the particular area are postulated). The data obtained by all the steps of the analysis are summarized and the hypothesis of the genesis of the area of interest is postulated in the next step. The verification of this hypothesis is done in the last part of the analysis by means of independent (non geomorphological) methods.

The presented approach was applied in two areas (see above). The analysis of quartz grain surfaces and other sedimentological methods (analysis of orientation of clasts and analysis of clast shape and roundness) were used in this step there. Finally, hypotheses of development of relief were postulated for each area.

Two main further divided phases of glaciations were investigated in both areas. The older glaciation was more extensive (suggested TPW-ELA ~1080 m a.s.l., TP-ELA 1200-1300 m a.s.l.). The glaciers were ~1500 m long, ~600 m wide and ~ 50 m thick. Although the glaciation was less extensive during the

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second phase, various glacial environments existed – particularly in the surroundings of Prášilské jezero lake. Firstly a glacier rock glacier (comp. Benn, Evans 1996) developed and secondly the cirque glacier existed there. The method of analysis of quartz grains was especially useful for identification of the remnants of the glacier rock glacier.

Literature

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