

GEORELIEF TRANSFIGURATION IN AREAS AFFECTED BY OPEN-CAST MININGJan, PACINA¹, Kamil, NOVÁK²

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Abstract

Open-cast mining activity is causing the largest georelief transfigurations all over the World. In our conditions are affected large localities in the North-west Bohemia (the Czech Republic). In this area we focus on a very significant case of the royal town Most, where a town has been turned into a lake. The main aim of this paper is the reconstruction of the original georelief in different time periods together with analysis showing the process of landscape devastation.

The workflow and analysis is based on precise elevation data obtained from aerial photographs and old maps. The original georelief is reconstructed using the digitized contour lines contained in digital state-map 1:5000 (SMO5) from the period before the active open-cast mining (year 1953). Other SMO5 from different time periods are used for modeling the landscape evolution. Here we use SMO5 from years 1973 and 1982.

The historical aerial photographs are a very relevant source of elevation data as well. For georelief reconstruction of this area we use the aerial photographs from the year 1953. The data are processed in the standard way of photogrammetry and the digital surface model (DSM) is extracted using the pixel correlation method. The DSM extracted from aerial photographs from the year 2008 is used as the recent elevation data.

The most important results of the analysis are digital terrain models showing the evolution of the landscape which may be used for many purposes in landscape development analysis, historical applications, visualization or landscape recultivations.

Keywords: georelief, transfiguration, reconstruction, 3rd military survey, aerial photographs, analysis.

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