

Geodynamic investigations of the contact zone between the Bohemian Massif and the West Carpathians

A Case Study of an Interactive Mobility of the Epivariscan Basement and the Revúca Tectonic Fault System (the West Carpathians)

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Abstract

In view of the fact that the West Carpathians have been thrust to a considerable distance by nappes over the submerged Epivariscan complexes, the existence of the thrust nature of the contact zone between the West Carpathians and the Bohemian Massif and its extension below the Carpathian units have been investigated. The following features have been studied: the character of horizontal and vertical movements of structural blocks, crustal movements, remote sensing data, data on earthquake activity, gravity and magnetic anomalies. The long- and short-term dynamics of the Revúca fault system, the origin of which is assumed to be genetically connected with the main tectonic Epivariscan directions in the basement of the Carpathians, has been analyzed in details. The obtained results indicate that the Epivariscan structures are bound to continue in the Carpathian basement towards the SE up to a distance of 120–130 km from the outcropping thrust plane between the Bohemian Massif and the West Carpathians. This idea was supported by an application of the expert system GEO-1.2 for an evaluation of the maximum possible earthquakes of the non-Alpine part of the Central European territory.

Determination of the content of chemical elements present in brown coal ash matter by means of borehole gammaspectrometry

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Abstract

This contribution describes the utilization of the spectral logging equipment developed in Geofyzika Brno, based on analyses of the prompt gamma ray spectrum induced in rocks by a neutron source, for the purpose of determining concentrations of some chemical elements present in the ash matter. Physical analyses of this problem showed that there is a good possibility of detecting Fe, Si, Ti and Mn. Calibration graphs confirmed the possibility of determining of the concentration of Fe above 0,6 %, of Si above 2–3 %, of Ti above 0,1–0,2 % and Mn above 0,6 %.

**Gravity maps of the Czech Republic
The Past, the Present and the Future**

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Abstract

In the present paper the history, present stage and future prospects of gravity mapping of the Czech Republic are discussed.

Failure zones in rock massif and their physical manifestations

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Abstract

This paper discusses the physical manifestations of rock faults and the influence of rock massif weakening on their surroundings. Practical demonstrations show that the manifestations of rock massif faults are much more complicated than the current geophysical notion of the "conductor - insulator" model, or a velocity or density equivalent. The problem of how to determine the geometry of the fault zone and the character of its filling is discussed. Special attention is paid to the delimitation of zones of concentrated stress around the fault zones and to the time course of changes, both natural and anthropogenic.

Transcontinental longitudinal lineament between Fennoscandia and Mediterranean Sea areas and related structures

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Abstract

After defining the term transcontinental lineament (t.l.) as semilinear fracture system of continental scale, geoscientific and satellite techniques are described enabling the study of the near-surface appearance of deep crustal-mantle structures. The authors, following Ostaficzuk's idea, take into consideration those geological and geophysical phenomena, which might be the surface prints of the N-S transcontinental lineament No. 2 (according to Bush's numbering), which lies around meridian 20° E, as a 50–200 km broad zone. The phenomena are discussed in three segments (northern, middle and southern). Their main features are summarized with respect to the geotectonic consequences and/or their metallogenic importance.
