Abstracts

• Geophysical methods of analysis sliding leases of Carpathien region

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Problems of analysis of sliding leases are most considerable for regions assaying neotectonic of move. Recently locale the activating sliding and collapsing activity is supervised in Carpathien region. The special hazard is introduced by progressing landslides and dips in densely occupied regions of Carpathians. The problems of geophysical analysis of sliding processes in limits of urban and industrial constructions are complicated by a considerable extent of hums, which one handicap recording physical fields.

For analysis of collapsing -sliding processes the Institute of Applied Problems of Ecology, Geophysics and Geochemistry designs hardware - methodical geophysical complex permitting to conduct operations in urban and industrial bands. The proposed complex includes methods of geoelectric and seismoacoustic sondage.

The complex bases on usage of portative multifunction geophysical station. The station realizes acquisition of impulsive electrical exploration, natural electromagnetic field of the Earth, and seismoacoustic datas.

At analysis of sliding leases the bands of maximal humidifying of soils are mapped. The radiants of underground water-courses reshaping a sliding band are instituted.

At analysis of collapses apart from bands of heightened humidifying the underground vacuities of a natural or synthetic genesis are mapped. The bands of intersection of underground vacuities with natural or man-caused water-courses, as a rule, results dips formation.

Depth of study of bands of potential hazard about 100 m.

The hardware complex is small-sized, is unjammable and not power-intensive. Is handled by one operative. The instrumentation is mated with GPS and field computer. It allows to effect constructing maps and vertical geoelectric and seismoacoustic sections simultaneously with measuring of geophysical datas.

Connection of the eastern Periadriatic and Mid-Hungarian zones and its implication to Paleogene paleogeography, Miocene extrusion tectonics (for poster)

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The Periadriatic zone dipslays a very important tectonic feature crosscutting the southern part of the Alpine orogenic wedge. The zone facilitated the ascent of Paleogene magmatic rocks and accomodated strike-slip motion between the Eastern and Southern Alps. In that way, the zone formed the southern boundary of the eastward mooving Alcapa unit. The connection of this important zone toward the internal Pannonian area represents a key point in the late Paleogene-Miocene tectonic reconstruction of the region and, in particular, in extrusion models. In our presentation we summarize stratigraphic, structural and paleomagnetic data in order to emphasize connection and former continuation of Periadriatic and Mid-Hungarian zones and the consequences for tectonic models.

Premru (1981) and Báldi (1986) were among the first to delineate the stratigraphical similaritites between the Slovenian and Hungarian-South Slovakian basins. The unique nature of the sucsession within the Pannonian-Carpathian area suggest that it was deposited in a single

basin. New data give further evidences for correlation of the sequences of the two parts of the basin (Jelen et al., 1998). Subsidence started in the latest Eocene and continued up to early Miocene, when the basin was filled. Source of magmatic clasts found in Eocene and Oligocene rocks of the Hungarian basin could be located in the Slovenian part, undelying their former closer position.

Physical continuation of the Slovenian Periadriatic line and the Mid-Hungarian zone is suggested by gravity and borehole data and analysis of seismic sections (Csontos and Nagymarosy, 1998). Haas et al. (in press) demonstrated that all Permo-Meosozoic units of northern Slovenia can be traced in narrow belts along the northern branches of the Mid-Hungarian zone. Also in this belt, isolated occurrence of Paleogene rocks are known (Kőrössy, 1990). Using the surface analogy, we suggest that both the Paleogene and the Mesozoic rocks occur in a series of strike-slip duplexes (Fodor et al., 1998). The age of formation is pre-Karpatian, because such sediments cover strike-slip structures.

Paleomegnetic data also demonstrate that the two parts of the basin separated during or before the first rotation of the Hungarian part, between 18 and 17 Ma. The ca. 45ş counterclockwise rotation was not affected the Slovenian basin part. On the other hand, the first dextral faulting at the northern tectonic boundary of the Slovenian basin part occured at the same time, between 22(?) and 17,5 Ma.

The continuity of the Hungarian and Slovenian basin parts up to the Eggenburgian or Ottnangian has major implication in extrusion tectonics. This shows that the northern Alcapa unit was not in connection with the Tisza-Dacia unit and their juxtaposition happened only later, within the late Early Miocene. The extruding East Alpine block did not imply the southern Tisza-Dacia only the Alcapa unit (Fodor et al., 1998).

Further separation of the two basin parts was realised by Karpatian-Middle Miocene synrift extension of the Pannonian basin. This extension was much larger north of the Periadriatic zone where metamorphic core complexes occurred (Tari, 1996). During this period, the Mid-Hungarian zone was already bended, thus it was not the structural continuation of the Periadriatic line. In addition, fault kinematics was different along the formerly unique fault zones, dextral and sinistral along the Periadriatic and Mid-Hungarian zones, respectively. Minor eastward displacement of the amalgamated Alcapa and Tisza-Dacia units was possible during this interval.

Due to continuous push of the Adriatic indenter, dextral separation of the Periadriatic zone renewed in late Miocene to Quaternary. The displacement was probably accommodated by folding and thrust faulting in Slovenia and Croatia.

References

Báldi, T. 1986. Mid-Tertiary Stratigraphy and Paleogeographic Evolution of Hungary. - Akadémia Press, Budapest.

Csontos, L. & Nagymarosy, A. 1998. The Mid-Hungarian line: a zone of repeated tectonic inversion. - Tectonophysics, 297, 51-72.

Fodor, L., Jelen, B., Márton, E., Skaberne, D., Čar, J. & Vrabec, M. (1998). Miocene-Pliocene tectonic evolution of the Slovenian Periadriatic Line and surrounding area – implication for Alpine-Carpathian extrusion models. Tectonics, 17, 690-709.

Haas J., Mioc, P., Pamic, J., Tomljenovic, B., Árkai, P., Bérczi-Makk, A., Koroknai, B., Kovács, S. & Rálisch-Felgenhauer, E. in press Continuation of the Periadriatic lineament, alpine and NW Dinaridic units into the Pannonian basin. - Geologische Rundschau.

Jelen, B. - Báldi-Beke, M. - Rifelj, H. 1998. Recent improvements in Slovenian Upper Paleogene and Lower Miocene time-rock stratigraphy. - XVIth CBGA Congress, Vienna, Abstracts, 248.

Kőrössy L. 1990. Geological results of hydrocarbon prospecting in the SE half of Transdanubia. - Általános Földtani Szemle (Budapest), 25, 3-53.

Premru, U. 1981. Tectonic evolution of Slovenia during the time interval from the upper Cretaceous to the Tertiary period. - Symposium on Problems of Danian in Yugoslavia, Ljubljana, Proceedings, 147-154.

Tari, G. 1996. Extreme crustal extension in the Rába river extensional corridor (Austria/Hungary). - Mitt. Ges. Geol. Bergbaustud. Österr. 41, 1-18.

Combination of Paleomagnetic and Paleostress data in the Alpine-Carpathian-Pannonian region

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During the last decade, a great number of paleomagnetic and paleostress data were obtained for the Pannonian basin and surrounding mountain chains (Márton, 1993; Fodor et al., 1999). As it is well known, both methods are very important in the tectonic reconstructions. It is less widely recognised however, that the combination of the two types of data sets can lead to a more correct interpretation. In our paper, we give a basin-wide comparison of paleomagnetic and paleostress data and try to integrate these data to a gedynamic model.

The Pannonian-Carpathian area can be divided into two larger microplates during the Paleogene-early Miocene time period. This subdivision is based on paleogeographical and paleomagnetic data (Márton, 1993) and kinematic analysis (Balla, 1984). Since Márton (1997) demonstrated a complicated rotational motion of the two microplates, further subdivision of these two units into several subunits is needed when comparing the independent paleostress and paleomagnetic data sets. This subunit-scale combination was performed following the method of Márton and Fodor (1995).