Galşa syenogranites show a calc-alkali, the Păuliş syenogranites a subalkali character. In terms of both granitoid groups muscovites have a significant Fe content (2.46 wt%–7.48 wt%). Galşa muscovites can be of primary or secondary character, however, Păuliş samples (based on the Na-Mg-Ti diagram) have a uniform secondary character.

Acknowledgements

The financial background of this work was ensured by the Hungarian National Science Fund (OTKA) (Grant № F/029061) and János Bolyai Research Grant.

References

FOSTER M. D., 1960. Interpretation of the composition of trioctahedral micas. Geol. Surv. Prof. Paper. 354-B: 49.
GIUŞCĂ D., 1979. Masivul cristalin al Highişului. *St. Cerc. Geol.*, 24: 15-43.
GIUŞCĂ D., IONESCU J. and UDRESCU C., 1964. Contribuţii la studiul geochimic al masivului Highiş. *St. Cerc. Geol.*, 9: 2.
HECHT L., 1994. The chemical composition of biotite as an indicator of magmatic fractionation and metasomatism in Sn-specialised granites of the Fichtelgebirge (NW Bohemian massif, Germany). In: R. SELTMANN, H. KÄMPF and P. MÖLLER (Editors), Metallogeny of collisional orogens. Czech Geol. Survey, Prague, 295-300.
MILLER C.F., STODDARD E.F., BRADFISH L.J. and DOLASSE W.A., 1981. Composition of plutonic muscovite: genetic implications. *Canadian Mineralogist.*, 19: 25-34.
NACHIT H., RAZAFIMAHEFA N., STUSSI J.M. and CARRON J.P., 1985. Composition chimique des biotite et typologie magmatique des granitoides. *CR Acad Sci Paris.*, 301: 813-822.
PANĂ D., 1998. Petrogenesis and tectonics of the basement rocks of the Apuseni Mountains: significance for the Alpine tectonics of the Carpatho-Pannonian region. PhD Thesis, University of Alberta, Alberta, Canada. 356p.
PÁL-MOLNÁR E., KOVÁCS G. and BATKI A., 2001A. Petrological characteristics of Variscan granitoids of Battonya Unit boreholes (SE Hungary). *Acta Mineralogica-Petrographica*, 42: 21-31.
PÁL-MOLNÁR E., KOVÁCS G. and BATKI A., 2001B. Petrological characteristics of Algyő-Ferencszállás-Makó granitoids (SE Hungary). *Acta Mineralogica-Petrographica*, 42: 51-58.
PÁL-MOLNÁR E. and KOVÁCS G., 2002. Geochemistry and origin of the Battonya Unit granitoids, SE Hungary. *Acta Mineralogica-Petrographica*, 43: 65-69.
ROSSI P. and CHEVREMONT P., 1987. Classification des associations magmatiques granitoides. *Geochronique*. 21: 14-18.
SĂNDULESCU M., 1984. Geotectonica României. Ed. Tehn., Bucureşti. 336 p.
SOROIU M., POPESCU G., KASPER U. and DIMITRESCU R., 1969. Contributions préliminaires à la géologie des massifs cristallins des Monts Apuseni. An. St. Univ. 'Al. I. Cuza. 5/15: 25-33.

Upper Jurassic Gravitationally Redeposited Sediments in the Transdanubian Range

Márton PALOTAI[1] and Péter DÖVÉNYI[2]

[1] Eötvös University Budapest, Dept of Geology, H-1117 Pázmány P s 1/c, Hungary
[2] Eötvös University Budapest, Dept of Geophysics, H-1117 Pázmány P s 1/c, Hungary

Upper Jurassic sections in the Transdanubian Range generally expose pelagic, relatively calm sediments. These deposits and the locally occurring smaller crinoidal talus cones were interpreted as indicative of an extensional regime throughout the Jurassic (Galácz 1988). Some controversial sections exist, however, which show large amounts of bigger blocks of Upper Triassic–Lower Jurassic age in pelagic Upper Jurassic surroundings. Previous interpretations of these sections resulted in great contradictions. One possible interpretation suggested that the big older blocks were horsts, around which the Late Jurassic sediments transgressed [Császár (ed.) 2002]. An alternative interpretation suggested that the big blocks were redeposited olistoliths (Galácz and Vörös 1989). These interpretations were possible because of not very good exposure conditions.

The aim of field research was to decide between the two interpretations, and to describe the features of these disturbed sediments. Geological mapping, sedimentologic investigation and multielectrode geo-electric measurement were undertaken on the Jurassic exposures of the Eperkés Hill in the Bakony Range, and on the Kétágú Hill in the Pilis Range

Geological mapping has shown that in both areas metric – dekametric blocks of Upper Triassic (and on the Eperkés Hill also Lower Jurassic) blocks of shallow marine origin are found in the surroundings of Upper Jurassic pelagic deposits. While on the Eperkés Hill these blocks are usually in the metre scale and appear in great numbers, the few identified boulders on the Kétágú Hill can reach the size of 50 m in one direction.

These blocks rest directly above Oxfordian – Kimmeridgian radiolarite in the case of Kétágú hill, while they are embedded in Tithonian limestone in Eperkés hill. In this latter area bedding is different within the blocks and with respect to host sediments aswell.

Sedimentary structures were examined in thin sections. While in the Bakony exposure clasts of various size and origin were found, the appearance of these minor clasts was subordinate in the Pilis thin sections. No clear graded bedding was found, but clasts were organised in thinner-thicker uneven beds.

In order to understand the 3D position of the bigger blocks, multi-electrode geoelectric sections were recorded in both study areas. The results of these studies show that Upper Triassic has a high, and Jurassic (especially radiolarite and overlying pelagic limestones) a low resistivity. Therefore these lithologies differentiate well on the sections. The records show a good fit with the mapped bigger boulders, which in both cases are detached from the much lower resistivity underlying layers. In both areas the high resistivity blocks seem to float in the low resistivity matrix.

A good fit of the mapping and electric section, completed with sedimentologic observations all suggest that the blocks should be interpreted as olistholiths. Alpine analogies suggest, that these olistoliths were formed not in an extensional, but a compressional regime (Frisch and Gawlick 2003).

References

CSÁSZÁR G. (ed.), 2002. Az Eperjes-hegy élettelen és élővilága (Unliving and living world of the Eperjes Hill – in Hungarian). Excursion Guidebook, ELTE.

FRISCH W. and GAWLICK H. J., 2003. The nappe structure of the central Northern Calcareous Alps and its disintegration during Miocene tectonic extrusion – a contribution to understand the orogenic evolution of the Eastern Alps. *Int. J. Earth Sci.*, 92: 712-727.

GALÁCZ A., 1988. Tectonically controlled sedimentation in the Jurassic of the Bakony Mountains (Transdanubian Central Range, Hungary). *Acta Geol. Hung.*, 31: 313-328.

GALÁCZ A. and VÖRÖS A., 1989. Jurassic Sedimentary Formations in Transdanubia. In: G. CSÁSZÁR (Editor), Excursion Guidebook. IAS Tenth Regional Meeting, Budapest 24–26th April 1989, MÁFI, 125-188.

The New Structural Model of the Pavlov Hills (Western Carpathians, Czech Republic)

Ivan POUL[1] and Rostislav MELICHAR[2]

[1] Institute of Geotechnics, Faculty of Civil Engineering, Brno University of Technology, Veveří 331/95, 602 00 Brno, Czech Republic

[2] Institute of Geological Sciences, Faculty of Science, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic

KEYWORDS: Tectonics, Paleostress analysis, Pavlov Hills, Limestone, Fault, Thrust, Model

The Pavlov Hills are situated in the western margin of the outer units of the Carpathian Flysch belt. The Ernstbrunn Limestone is suitable for the study of the paleostress analysis and the mechanics of brittle deformation (Poul and Melichar 2003). It represents the top member of the Jurassic carbonate facies of the Ždánice Unit of the upper Tithonian to Tithonian/Berriasian age (Houša and Řehánek 1987). The structure of Pavlov Hills Klippen Belt is connected with thrusting of Carpathian acretionary wedge. Thrusts are subparalell to bedding and striking in NE–SW direction and slightly dipping to the SE. Thrust sheets are crosscut by set of steep faults striking mostly NW–SE. The thrusts and transversal faults divide the limestone beds into several separated blocks forming the Pavlov Hills.

Fault/slip data were collected at eight localities (Turold quarry, Turold cave, Damoklova cave, Svatý kopeček [St. Hill] – southern block, Svatý kopeček – central block, Svatý kopeček – northern block, Janičův vrch quarry and Stolová Hill). Every fault plane and striae were precisely described. Special attention was focused to fault planes with two or more striations and to its time relations.

Polyphase fault/slip data set was subjected to new stress inversion procedure using PASCAL program "Přímá inverse (Direct Inversion)" (Hroza 2003). Numerically separated clusters were compared by macroscopically obtained fault-plane features to natural groups of faults reactivated under the same stress conditions. Up to seven stress states could be delimited (T0–T6, see figure). Very wide striae (up to several decimeters) is typical for the oldest faults. The younger striae is usually finely spaced. The faults reactivated by state T4 and/or later are characterized by elongated or smashed black manganese tree-like coatings.

Results of the fault-plane geometry and kinematic analysis were used for construction of new geological map (see figure) showing new tectonic model of the area.

The study was supported by grant project MSM0021622412.

References

HOUŠA V. and ŘEHÁNEK J., 1987. Poznámky k biostratigrafickému využití mikrofosilií ve svrchní juře a křídě na Moravě, Čas. Mineral Geol., 32, 2, Praha. pp.123-134.

HROZA M., 2003. Paleonapjatostní analýza vybraných lokalit brněnského masivu, MS, diplomová práce PřF MU Brno.

POUL I. and MELICHAR R., 2003. Brittle Deformation of the Ernstbrunn Limestone (Jurassic) of the Pavlov Hills, Geolines, 16, Praha. pp. 84-85.