

ASSOCIATION OF HUNGARIAN GEOPHYSICISTS

H-1145 Budapest, Columbus utca 17-23.

Phone/Fax: +3612019815

HUNGARIAN GEOLOGICAL SOCIETY

H-1015 Budapest, Csalogány utca 12.

Phone/Fax: +3612019129

INVITATION

to the **50th** Meeting of Young Geoscientists

29-30 March 2019

Ráckeve, Duna Relax & Event Hotel

Useful information:

Accommodation and meals are available only for pre-registered participants.

The talks are open and public.

Official languages of the conference are English and Hungarian.

Registration desk open: from 9:00 am, 29th March onwards

Organisers

Inherited Triassic salt structures in the Silica Nappe, Aggtelek Mts.

Éva Oravecz¹, László Fodor^{2,3}, Gábor Héja²

¹Eötvös Loránd University Budapest, ²MTA-ELTE Geological, Geophysical and Space Science Research Group, ³MTA-ELTE Volcanological Research Group
Theoretical

The Permian to Lowermost Triassic Perkupa Evaporite forms the base of the enigmatic Silica Nappe which is the uppermost tectonic unit of the Aggtelek Mts. This evaporitic sequence played the role of the main detachment level of the Silica Nappe during the Cretaceous shortening. Several previous studies suggested that there may be salt diapirs rooting in this evaporitic detachment level [1][2][3] but for the lack of structural data the geometry and deformation history of the supposed salt diapirs have not been studied in details.

In this study detailed structural mapping in the area of Perkupa, Szin, Szinpetri and Jósvalő followed by fold axis estimations, fault-slip analysis and cross-section construction were carried out in order to understand the geometry, kinematics and timing of deformation of the salt structures present in the Aggtelek Mts, as well as their role during the subsequent deformation phases.

According to the results not only simple salt diapirs but complex salt structures, salt walls and salt anticlines originally related to Triassic normal faults, transfer zones and pull-apart basins are present in the Silica Nappe. Significant thickness variations observed in the Early Triassic sequences prove that syn-sedimentary salt tectonics must have initiated as soon as in the Early Triassic. As salt movements are always coupled with folding the first tilting event was Triassic. The scale and extent of this tilting is unknown but locally, directly next to the flowing salt bodies even sub-vertical dips may have been reached. This means that not all folds observed in the Silica Nappe is related to the Cretaceous shortening but some were formed much earlier, contemporaneously with the Triassic extensional and salt deformation. Moreover, the inherited pre-orogen extensional faults and salt structures had strong influence on the nature and geometry of the Cretaceous deformation. This is also supported by the

fact that the deformation history of all three of the most important structural elements of the Aggtelek Mts. (Jósvafő-Bódvaszilas Line, Jósvafő-Szin Strike-slip Fault and Jósua Anticline) can be traced back to the Triassic deformation. Consequently, unraveling the still debated nappe transport direction of the problematic Silica Nappe is possible only by first separating the salt-related structures from the purely shortening related structures.

The research was supported by the research found NKFIH OTKA 113013 and the ÚNKP-18-2 New National Excellence Program of the Ministry of Human Capacities.

[1] Grill, J. (1989): Structural Evolution of the Aggtelek-Rudabánya Mountains, NE Hungary — *Annual Report of the Hungarian Institute of Geology from 1986*, pp. 69-103.

[2] Less, Gy., Kovács, S., Szentpétery, I., Grill, J., Róth, L., Gyuricza, Gy., Sásdi, L., Piros, O., Réti, Zs., Elsholz, L., Árkai, P., Nagy, E., Borka, Zs., Harnos, J., Zelenka, T. (2006): Explanatory book for the geological map of the Aggtelek-Rudabánya Mts. (1:25 000) — Hungarian Institute of Geology, Budapest.

[3] Zelenka, T., Németh, N., Kaló, J. (2005): The structure of the gypsum-anhydrite dome at Alsótelekes — *Földtani Közlöny* **135/4**, 493-511.

Complex evaluation of fluid flow systems and hydraulic trapping of hydrocarbons in the broader area of Hajdúszoboszló and Ebes, Hungary

Zsóka Szabó, Brigitta Zentai-Czauner, Judit Mádl-Szőnyi
József and Erzsébet Tóth Endowed Hydrogeology Chair, Department of
Physical and Applied Geology, Eötvös Loránd University, Budapest
Applied

Groundwater flow mobilises, transports and accumulates hydrocarbons, thus the evaluation of recent fluid flow systems contributes to the mapping of hydraulically favourable places for hydrocarbon trapping and preservation. The aim of our research was (i) to understand the recent fluid flow systems and regional pressure field in the broader area of Hajdúszoboszló and Ebes, Hungary, (ii) to find potential areas for hydraulic trapping in the study area and (iii) to explore the hydraulic connection between Hajdúszoboszló and Ebes gas fields and their surroundings.

First the hydrostratigraphic build-up was determined based on borehole sequences, seismic horizons and sections. Then mapping of the fluid-potential field was carried out from measured hydraulic (pressure and hydraulic head) data by pressure vs. elevation profiles, tomographic fluid-potential maps, and hydraulic cross sections. This