

The Miocene salt formations of the Central Paratethys Basin are not evaporites

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Salt bearing formations of Lower and Middle Miocene age are widely distributed deposits within the molasses of late - to post - tectonic structural basins of the Carpathian region of the eastern Central Paratethys : The Carpathian Foredeep, the Transylvanian-, Transcarpathian and South-Slovakian Basins. In compliance with the generally accepted paradigm of sedimentology, oceanology, physical geology e.t.c. salinar formations are of evaporitic origin, i.e. formed under hot (warm), semiarid climatic conditions, where evaporation (E) exceeds precipitation (P) and inflow (I) : $E > P + I$.

However, palaeobotanic, both macro- and microfloral, as well as results of paleozoological, especially of terrestrial great mammals studies point to a warm or even hot but humid, periodically even wet climate during the whole Lower to Middle Miocene time of the Central Paratethys. These data are inconsistent with the evaporative halogenetic model which require a substantial deficit in the water budget due to evaporation.

Also, the geological setting, the lithology and mineralogical-geochemical composition of the Miocene salt formations of the Carpathian region are in many respect quite unusual : (i) they occupy the basal parts of individual macrocycles of molasse deposits; (ii) they occur transgressively in respect to the marginal zones of particular molasse basins; (iii) they pass laterally into late syndiastrophic flyschoidal or flysch deposits of the final miogeoclinal troughs; (iv) they pass laterally into or are immediately covered by brown coal deposits; (v) they commonly exhibit features of redeposited sediments, i.e. of olistostromic, olistolithic and turbiditic deposits; (vi) they show exact temporal coincidence with pulses and phases of strong tectomechanic activity within the adjoining Neo-Alpine Carpathian fold - and thrust belt; (vii) they are lithologically mostly composed of zubers with clay to halite ratio between 9 to 6 (halite saturation index : 0,1 to 0,4); (viii) halitites possess abnormal high Ba and Sr concentrations and a strongly variable Br-index; (ix) potash-salts occur accidental, not infrequently in basal parts within the vertical sections of individual salt formations, e.t.c.

Based on these and other inconsistencies it is stated that the salt formations discussed are not of evaporitic origin. Paleoclimatic reconstructions based on the presence of salts in the geological section alone are in the case cited a classical *circulus in demonstrando*.

To explain the origin of Miocene salt formations of the eastern Central Paratethys region, a new halogenetic model was formulated. The model proposed stress the first order, active role of the orogenic factor for the origin of the salt formations discussed. They were the result of precipitation and deposition of salt minerals from highly concentrated residual connate brines (formation fluids) expelled from the compacting and consolidating underthrust sediments and folded and thrust flysch masses of the accretionary prism due to the increase of the overburden pressure and lateral compression (Liszkowski, 1989).

There is only one point which is difficult to explain within the framework of the proposed model : the presence of potash salts and their accidental and even in the basal parts within the vertical succession of salts deposited. To explain this it is assumed that a part of the fluids expelled where of descendent origin, i.e. formed as the result of dissolution of an older salt formation of true evaporitic origin. Then the concentration of the expelled brines could attained more than 600 g/dcm³, resulting in rapid, extensive subaqueous precipitation of potash salts. Looking for the source-rocks of this old evaporite formation, the author (Liszkowski, 1989) has drawn attention that the Late Eocene to Early Oligocene Menilite Formation of the eastern part of the West-Carpathian and of the East-Carpathian Flysch belt exhibit many characteristics of a basal anoxic member of a complete evaporite sequence. The occurrence of gypsum intercalations and layers, globigerina oozes, pelocarbonates, silicites and quartz crystals, diatomites and quartz grains with eolian surface textures may been interpreted as additional particulars in support of the last hypothesis.

Thus the acceptance of the evaporative halogenetic model as universal theory or paradigm may be praemeture.

REFERENCES

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