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Comments on the article „Neogene tectono-sedimentary megacycles in the Western Carpathians basins, their biostratigraphy and paleoclimatology“ by the authors N. Hudáčková, M. Kováč, V. Sitár, R. Pipík, K. Zagoršek & A. Zlinská

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In the Slovak Geological Magazine No 3-4/96 among the articles summarizing the results of investigations carried out under the Project of Geodynamic Development of the Western Carpathians is a paper by Hudáčková et al. As leader of the Problem No 5. „Geodynamic Development of the Carpathian arc in the Neogene“ of the above mentioned Project I had the possibility to study the manuscript of the article, before publishing. I called attention of the authors to some shortages and provided references of papers to help them made correct or at least confront their views with opinion of other authors. It has not happened so, therefore I use the possibility for critical remarks to the concerned article.

The authors rather avoid to use the lithostratigraphical names, manifesting rigidity, proper to many Slovak geologists,

to the Anglo-Saxon system of geological terminology, which however, was codified by Hedberg et al., on the one hand and in the Code of Czechoslovak Stratigraphical Terminology on the other hand (Chlupáč et al., 1968), which is till now obligatory for the Slovak geological community. Unfortunately, it is not so, what does not contribute to the good name of Slovak geology. Therefore in the article the formations are characterized and/or designated by long descriptive names, as for instance their „Ottangian deposits of terrestrial or lake sediments without foraminifera“, corresponding to the Bukovinka Formation in present lithostratigraphical terminology. This formation is assigned by the authors to the Ottangian, based on older studies by Čechovič (1952), Vass et al., (1979). More recent studies show that this formation is Eggenburgian in age as

is shown by radiometric ages of rhyodacite tuffs intercalated in the formation, as well as by a subtropical to tropical flora. The Ottnangian is time period of global cooling (Vass et al., 1992; Vass 1995; and others). Conservatism in relation to lithostratigraphical terminology is documented by the authors using biostratigraphical terminology as Rzehakia (*Oncophora*) beds. The name is stiff and it is doubled, because there was a change of the index genus. Besides that, when acting as substitute for a lithostratigraphical unit, it should be translated in English not as Beds but as Member!

The mentioned Member (its formal name is Medokýš Member) is correlated with the Ottnangian. Any attention is paid to the evidences of the Member's younger age - Karpathian. The Karpathian age is proved by foraminiferal assemblage. The Medokýš Mb represents the transgressive part of global sea level fluctuation cycle Tejas B 2.2, dated as 17.5-16.4 Ma B.P. The whole cycle corresponds to the chronostratigraphical stage of Karpathian.

Surprising is the self-quotation (Kováč et al., 1993) in connection with the statement that after the Lower Badenian the South Slovakian region has remained permanently dry land. This fact is already evident from the papers by Čechovič (for instance 1952; also from later papers Vass et al., 1979, 1983). In the more recent paper by Vass & Elečko et al., (1992) this is expressly mentioned in p.18.

During the Karpatian and Early Badenian there was no active basic volcanism in the West Carpathian region, as it results from the text (p. 357).

The characterization of the tectonic regime in the Karpatian-Early Badenian time in the hinterland area is not exhaustive. The authors mention the situation in the Pannonian region, but tectonic regime of the North Hungary as well as southern and central Slovakia is significantly different (see Vass 1995; Márton et al., 1995).

The authors do not clear up the mechanism, which during the Middle Badenian to Early Sarmatian, by the deeping of the subducted plate, should have influenced formation of the Western Carpathian basins and caused stretching of the Western Carpathian Internides in northeastern, later in eastern direction (p. 357).

The authors mention as new the intraarc basin nature of the Transcarpathian Basin (p. 357). This statement was already done in the paper by Vass et al., (1988) the co-author of which is one of the authors of the commented article.

In the characterisation of volcanism in the Sarmatian to Pontian time the authors left unmentioned significant manifestations of acid volcanism the products of which are gathered in the Jastrabá Formation in the Central Slovakian region. Otherwise, manifestations of acid volcanism are also known in eastern Slovakia in this time.

Some average curve of eustatic sea level changes in Western Carpathian Neogene basins (Fig.1) is misleading. On the curve for the time of formation of the terrestrial, and/or fluvial Bukovinka Formation, may be read a relatively deeper-water environment than for the Pannonian period when there was a caspiabackish rather deep lake spreaded in the main basins of the Western Carpathians and of the Pannonia. The authors did not consider as necessary to mention the scheme of relative sea level fluctuation, which was elaborated by Vass (1995) for the South Slovakian region. It is a pity, because so they would learn, for instance, that throughout the Early Miocene (with the exception of the Karpathian) the influence of global sea level changes in the South Slovakian, but obviously also in the whole Pannonian region was suppressed by regional tectonic factors (Vass 1995).

For the climate characterization of the individual periods the authors used first of all the floristic indicators, although interesting knowledge on the climate results from ecological evaluation of fish fauna, e.g. from the Fíľakovo Formation (Eggenburgian) on southern Slovakia as well as from the study of foraminiferal plankton, for instance, from Early Badenian marine sediments of the Western Carpathian basins. The character of weathering and weathering crusts is also a good climatic indicator to which the authors did not pay attention.

Why the authors used bipartite subdivision of the Badenian and Sarmatian? In compendia dealing with neostatotypes of these stages both are biostratigraphically subdivided into three substages and this subdivision is applied generally.

The article is especially depending on the angle of sight, which is given by the region, best known to the authors from autopsy. From this point of view one can have serious objections to the universality (in the frame of the Western Carpathians) of the discerned tectonosedimentary megacycles. They are mostly suitable for the Vienna Basin, but difficulties arise in their application to other basins (for instance, the Early - Middle Miocene megacycle in the East Slovakian Basin is divided by the Karpatian crisis of salinity); in southern Slovakia only the lower part of the Eggenburgian corresponds to the Early Miocene megacycle. The higher cycle starts in the Ottnangian but ends after the Karpatian by huge erosional truncation. In the Early Badenian a new cycle begins, which disappears soon as a consequence of volcanic paroxysm in the Central Slovakian region and of uplift following after last counterclockwise rotation in this region. By the way, rotations about which one of the authors wrote pioneer papers for the Miocene time in the Western Carpathians, are not taken into consideration at all.

It results from the above mentioned that the authors had ambitious aims to characterize tectono-sedimentary cycles in Western Carpathians Neogene basins in a complex way, but have not mastered the complicated and comprehensive problems.