HOW DID THE RIFTING PROCESS INFLUENCE THE MIDDLE–UPPER TRIASSIC SEDIMENTATION IN NE HUNGARY?

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Abstract: according to sedimentological and paleontological investigations of Velledits (1998) and Kovács (1982) different parts of a rifting area can be reconstructed in North Hungary in the Middle-Upper Triassic. The Bükk Mts. represents the updoming part, the Aggtelek-Rudabánya Mts. represents the break-away side of a rifting ocean. Oceanic remnants can be traced between this to sides of the opening ocean in the Bódva Valley and Darnó Hill.

Key words: Middle-Upper Triassic, rifting, Bükk Mts., Aggtelek-Rudabánya Mts., NE Hungary

Studying the Middle-Upper Triassic sequences in North-Hungary we can reconstruct different parts of a rifting area.

The **Bükk Unit** represents the updoming side of the rifting area. This part is characterised by bimodal volcanic activity and by Anisian continental sediments. In contrary, the Aggtelek Unit is characterised by the lack of volcanism and terrestrial sediments.

Based on detailed sedimentological and paleontological investigations of the Middle-Upper Triassic carbonate platforms and basins of the Bükk Mts. we could distinguish the following evolution-stages: (1) Pre-rift stage: it is characterised by normal shallow marine Anisian dolomites and limestones. (2) The rifting began with updoming and erosion in the Early Anisian. We can separate two uplifting events: a smaller one in the Early Anisian, and a bigger one in the Illyrian. The first one can be correlated with the Piz de Peres or with the Voltago Conglomerate, the second one with the Richthofen Conglomerate in the Dolomites. The emergence is characterised by lacustrine marls (borehole: Felsőtárkány-7) and fluviatile conglomerates and breccias (Sebesvízvölgy, borehole: Miskolc-10). The uplifting is followed by the first volcanic event at the Anisian/Ladinian boundary interval.

In the Ladinian, the area subsided first very rapidly: some hundred meters during a few million years. (3) Later, in the post-rift stage, in the Late Ladinian–Early Carnian, the subsidence slowed down. This tendency of the subsidence can be proved in two sections (boreholes Felsőtárkány-7, Sebesvízvölgy). In the Ladinian-Carnian, the coeval platform-basin evolution can be reconstructed. On the platforms, Wetterstein and Dachstein reefs flourished, and lagoonal sediments were deposited. Between the platforms, intraplatform basins existed, some of which were restricted in the Ladinian. Geochemical character of magmatites belonging to the second volcanic event of the Late Ladinian is similar to that of extension areas.
Upbuilding of the platforms kept pace with the subsidence of the basement for a while, but later the platforms (or parts of the platforms) were drowned. So, the platform carbonates are covered by deep marine cherty limestone.

In the **Aggtelek Unit**, the farther we get from the rift-axis, the earlier the platforms were drowned (Kovács, 1982). In the *Bódvarákó facies* the Gutenstein dolomite is covered by Pelsonian cherty limestone. In the *Bódva fácies* the Steinalm limestone is covered by the deep water carbonates (Bódvalenke Limestone and Hallstadt Limestone). In the *Aggtelek facies* the platform was drowned in the late Carnian, whereas in the *Drnava facies* (Slovak Rebublic) carbonate platforms existed until the latest Norian.

Between the Bükk and Aggtelek Units small remnants of the Middle–Upper Triassic ocean (Neo-Tethys) can be traced. They are the *ophiolites in Bódva Valley* and *Darnó Hill*.

The evolution of these three parts of the rifting ocean can be correlated very well. The Anisian Steinalm Limestone is present in the Bükk Unit and in the Aggtelek unit. After the sedimentation of the Steinalm Limestone, the area of Bükk Unit uplifted, whereas the area of the Aggtelek Unit subsided. In the oceanic unit (Bódva Valley, Darnó Hill), the oceanic crust appeared in the Middle Ladinian.
The updoming part (Bükk Unit) is characterised by bimodal volcanic activity and by continental sediments, which are missing at the opposite side of the rifting ocean. Due to gradual thinning of the continental crust, the extension of the platforms decreased, while the basins conquered bigger and bigger areas at both side of the opening ocean.

References

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Fig. 1. Geographical and geological position of the mentioned Units. Compiled by: Márton Fórian Szabó in Velledits et al., in prep.

Fig. 2. Comparison of the main parts of a rifting area: Red Sea: a recent rifting (after Dixon et al., 1989) and North-Eastern Hungary: Middle-Late Triassic (Velledits 1998).

Fig.1.

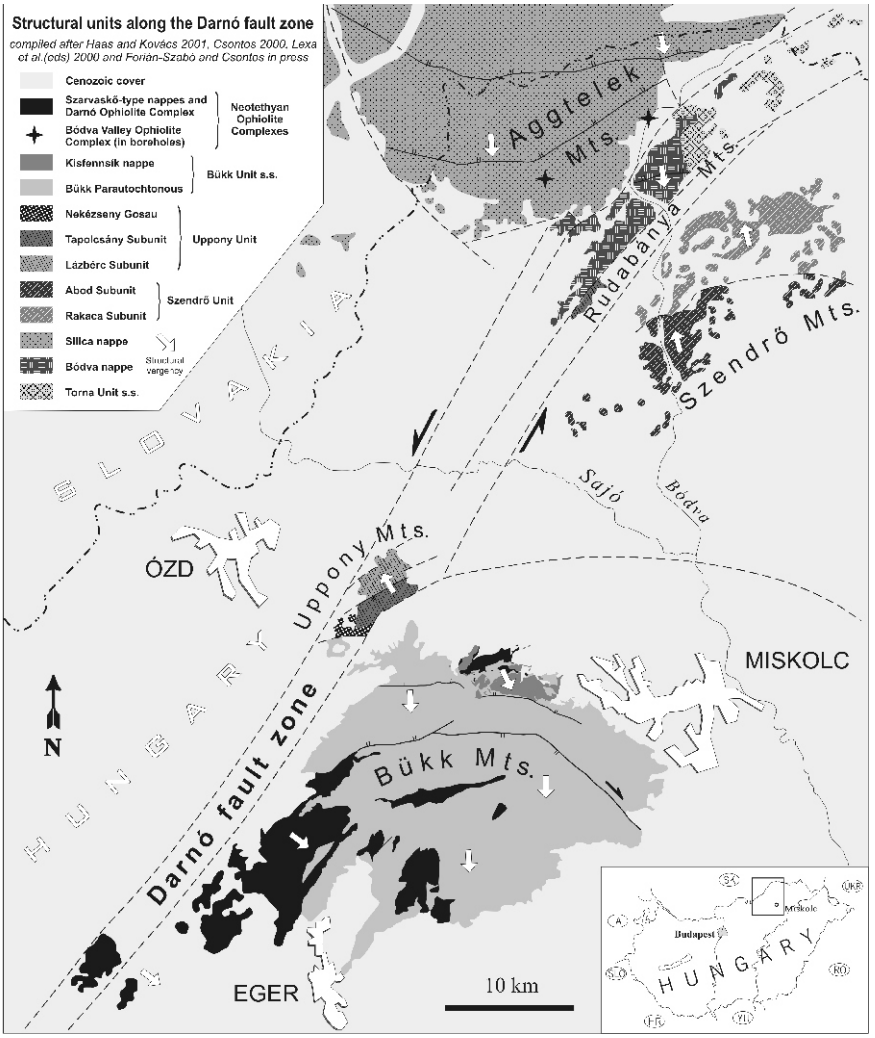

Fig. 2.

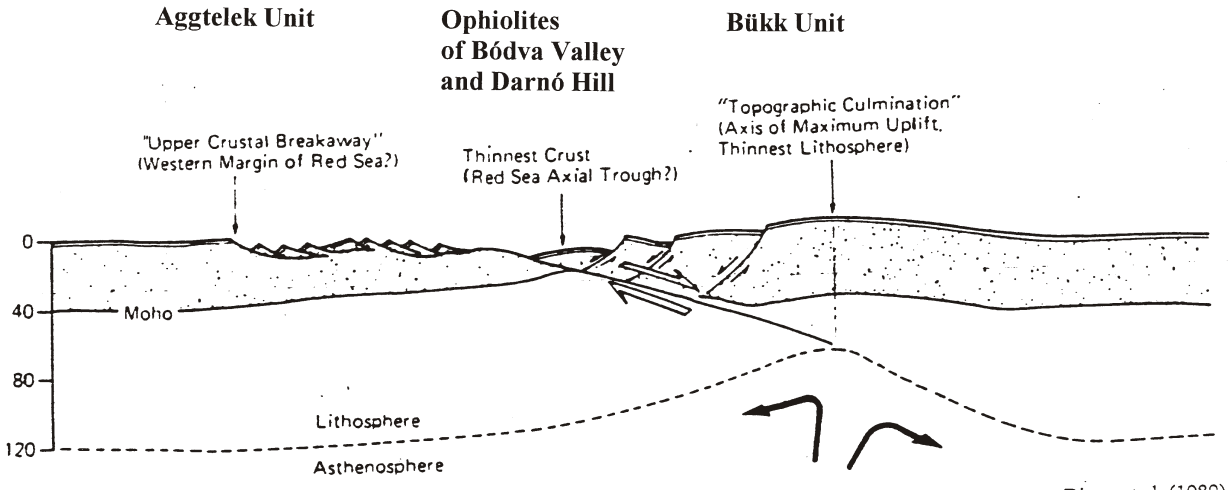

Fig. 2. Dixon et al. (1989)