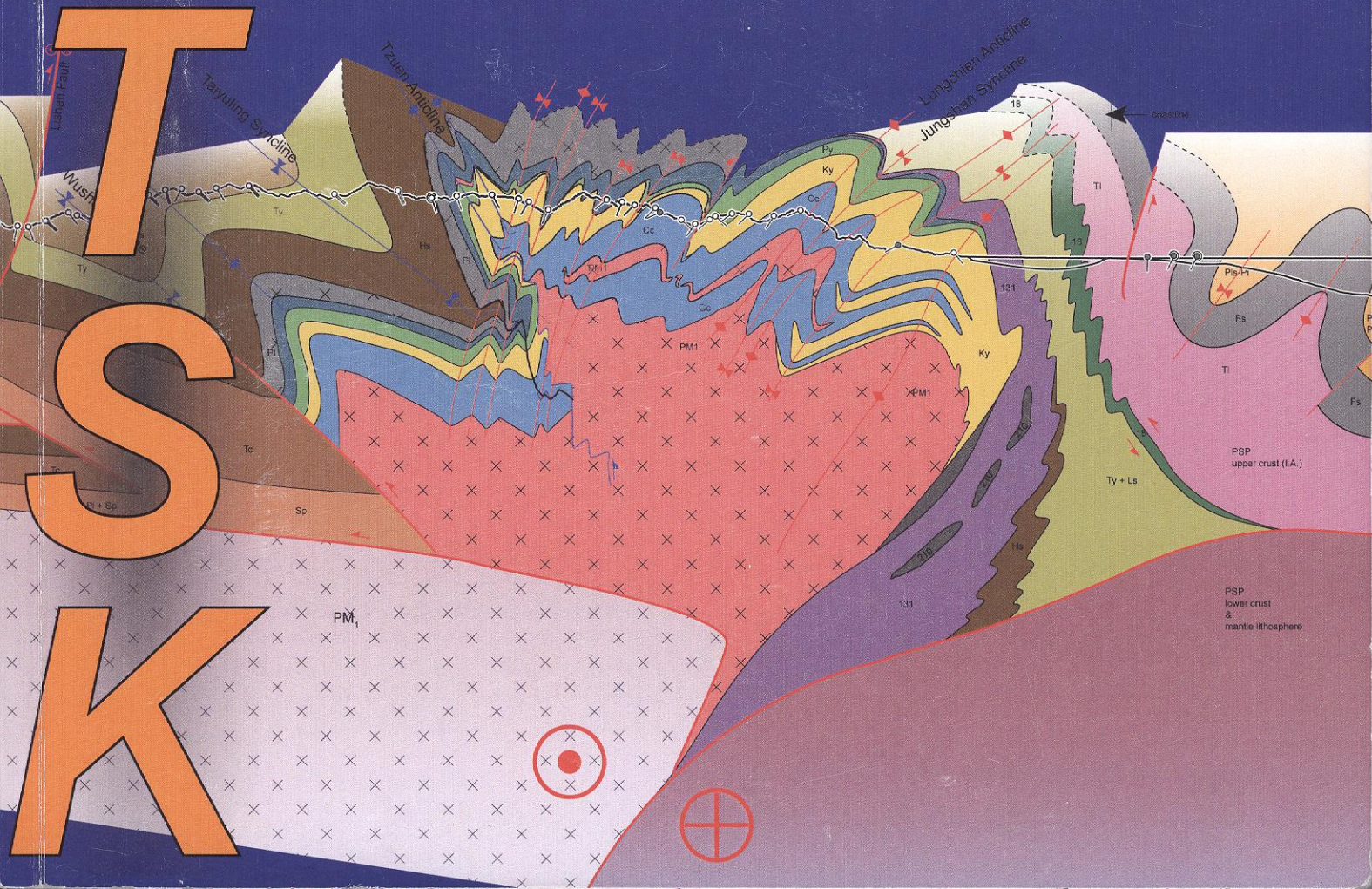




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Structural mapping, well data and stress field analysis in the surroundings of the Nekézseny Thrust Fault, NE Hungary

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The Bükk and Uppony Mts. located in NE Hungary are two adjacent structural units with different origins: while the nappes of the Bükk Mts. once formed part of the Inner Dinaric nappe system, the Uppony Mts. are correlated with the Western Carpathians (Schmid et al., 2008). The mainly S-SW-vergent Bükk and N-NW-vergent Uppony Units are separated by the Nekézseny Thrust Fault along which the Bükk-type Permomesozoic formations are thrust upon the Uppony-type Paleozoic and Senonian formations (Schréter, 1945).

Despite of its obvious structural importance, the structural evolution of the Nekézseny Thrust Fault hasn't been studied in details. The possible timing of its movements is between the Senonian and the Early Miocene. In their preliminary structural study Fodor et al. (2005) interpreted the results in the lights of the Paleogene deformation of the Darnó Deformation Zone. In contrast, based on paleogeographic considerations Schmid et al. (2008) consider the Nekézseny Thrust Fault as the suture zone of the Meliata Ocean thus assume that the age of this structural contact is Early Cretaceous.

Consequently, the aim of our study was to understand the deformation geometry and the timing of activity along the Nekézseny Thrust Fault. As part of the study core samples from boreholes that drilled through the supposed structural contact were reviewed, sampled and interpreted. Detailed structural mapping in the surroundings of the Nekézseny Thrust Fault was followed by stress field analysis and preparation of cross-sections. According to our preliminary results, at least five tectonic phases could be separated. Field work in the gently folded Senonian Nekézseny Conglomerate revealed both pre- and post-tilt low-angle thrust faults. While the pre-tilt thrust faults are clearly the results of NW-SE compression (D1), the post-tilt thrust faults can be separated into three groups that show slightly different N-S, NW-SE and E-W compression (D2). These deviations from the general NW-SE post-tilt compression only appear immediately at the Nekézseny Thrust Fault. The tilting itself is connected to NW-SE compression as well. The subsequent three deformation phases are connected to the later rotational events and extensional deformation history of the Pannonian Basin (D3: Early Miocene NNE-SSW extension, D4: Middle Miocene E-W extension, D5: Late Miocene—Pliocene NW-SE extension; Budai & Fodor 2008; Fodor et al. 2005). All this may contribute to understanding not only the deformation history of the Nekézseny Thrust Fault, but the role of the Darnó Deformation Zone during the Mesozoic structural evolution of the area.

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