



New interpretation of lithological trend diagrams in the Pannonian basin

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A method was devised by Szalay and Szentgyörgyi (1988) for subdividing the Late Miocene through Quaternary sedimentary rocks of the Lake Pannon, based on the fact that basin fill is made up almost exclusively of fine grained (clay, marl and silt) and coarse grained (sandstone and conglomerate) lithology. Alternation with depth of these two rock types can be determined from well logs (self-potential, gamma ray and resistivity) from layer to layer and the trend of lithological change in a borehole shown in the following way. Starting from the bottom of the borehole we draw a straight line with a 45 degree slope to the left and 45 degree to the right if the individual layer is fine grained or coarse grained, resp. The length of the line is determined by the thickness of the layer. The zig-zag curve constructed this way turns out to be very useful as it shows a consistent pattern of the trend of the lithological change. Five major lithological units were defined and correlated throughout the Pannonian basin. Originally, it was thought that they were sedimentary entities deposited during the same time interval (chronostratigraphic units).

We revise this approach and confirm that they actually represent lithostratigraphic units developed during the regression of the Lake Pannon on the morphological shelf, the shelf slope and in the deep basin (Juhász et al. 2006, Sztanó et al. 2013). We construct regional seismic profiles in the eastern part of the Pannonian basin and using borehole data we assign faults and the main unconformities: the Neogene basement, the early Middle Miocene boundary of the synrift and postrift strata and the Miocene/Pliocene boundary. Then, we interpret well logs in a couple of drillholes and determine lithological trend curves, which are superimposed on the seismic profiles. It will be shown that this enables joint interpretation to arrive at conclusions about the process of shelf progradation, the change of water depth and events of erosion and uplift in the eastern part of the Pannonian basin.