Groundwater dependent ecosystems in the Duna Valley

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Investigation of wetlands and groundwater dependent ecosystems are in the focus of hydrogeological research nowadays. In wetland areas there is a close connection between the vegetation and the groundwater, i.e. the amount of available water and its quality highly specify the type of vegetation. This prevails particularly in saline vegetation.

Our aim was to investigate this relationship by geophysical, hydraulical and hydrogeochemical methods in a study area in the Duna Valley, where two different types of vegetation change sharply: saline meadows and fresh water type marshes.

For geophysical measurement radio magnetotelluric method was applied. With this investigation we can gain information about the resistivity distribution of the subsurface. Since the shallow geological build-up is quite homogenous in the area – mainly consists of sand and pebble – resitivity measurement enables gaining information about the total dissolved solid content of the saturating groundwater. In addition, water level measurements and chemical measurements were carried out for the characterization of the flow systems in the area.

Comparison between the groundwater chemistry and the vegetation pattern (Biró 2011) unambiguously revealed a close relationship between the vegetation pattern and the groundwater flow systems. The results also highlighted the modifying effect of human interventions on natural flow- and natural vegetational conditions.

Biró M. (2011): Mapping of habitate in Felső-Szúnyogpuszta and historical characterisation of the vegetation and hidrology. Research report for the Kiskunság National Park, Vácrátót, pp. 106

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