

# Geothermal Waters on and out of the LMWL in the Pannonian Basin, Hungary

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In the central part of the Pannonian Basin geothermal waters with a temperature between 36 and 100 °C occur in the 600-2500 m depth interval. Chemical and isotope composition of formation water together with physical and geophysical features of the aquifer were evaluated to identify the source and evolution of these geothermal waters.

Three types of geothermal water were determined; they are located in distinct sub-regions of the study area.  $\delta D$  and  $\delta^{18}O$  suggest different origin for the three types. Three end-members were recognized: a fossil NaCl type water with a salinity similar to that of the former Lake Pannon, a paleometeoric  $NaHCO_3$  type water that infiltrated during the last glacial, and a  $NaHCO_3$  paleometeoric water that infiltrated in a warm period before the last glacial. These end-members are mixed, and result in different geothermal water types.

Elevation-pressure profiles [2] can explain the chloride concentrations and the mixing processes. In those two sub-regions where chemical and isotopic data indicate upward flow, the overpressure is high (around 10 MPa) in the strata just below the geothermal aquifer. From both areas, where overpressure is found, seismic profiles are available [1], and support the flow models. In the third sub-region, where water flow was not identified in the geothermal aquifer, hydrostatic pressure occurs at least as deep as 1500 m below the sampled beds.

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## References

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