Geophysical Research Abstracts
Vol. 20, EGU2018-11796, 2018
EGU General Assembly 2018

Hydrogeological characterization of the lukewarm spring lake in Kistapolca (South Hungary)

Katalin Csondor, Ádám Tóth, Imre Müller, and Anita Erőss

Eötvös Loránd University, József & Erzsébet Tóth Endowed Hydrogeology Chair, Budapest, Hungary (anita.eross@geology.elte.hu)

Considerable part of Hungary's thermal water resources is hosted by carbonate rocks. Owing to the favourable geological and geothermal conditions many of these reservoirs are characterized by natural thermal water discharge, usually at the boundary of outcropping carbonates and adjacent sedimentary basins. Since the current hydrogeological systems have artificially influenced discharge, because of water abstraction by wells, natural discharge phenomena such as springs have crucial role in the understanding their parent groundwater flow systems and the processes acting along the flow paths.

The Villány thermal karst area is situated in the southern part of Hungary. The karst aquifer consists of Mesozoic carbonates. The outcropping carbonates and their subsurface continuation covered by younger sediments in the adjacent basin basement form a thick (up to 1700 m) karst reservoir. Only one natural discharge known from the region, a lukewarm (20 °C) lake, which is fed by several lukewarm springs (24 °C). These springs were intensely researched and captured in the 1960s, but since then there is no record available, not even in the spring cadastre. In July 2017, a continuous measuring device (dataqua) was installed in the main spring outlet in order to continuously record the water level, temperature and electrical conductivity changes. Moreover, a comprehensive field study was accomplished in order to delineate and characterize the thermal water upwelling. According to the springs' temperature and the personal communication with local people the water is a mixed water, so a deep thermal and a local cold component can be supposed. Therefore the springs have a crucial role in the characterization of mixing and the temporal variability of mixing ratio. Since Kistapolca is located in the vicinity of several hypogenic caves (Beremend, Nagyharsány) these results may contribute to the understanding of the cave formation processes i.e. mixing corrosion.

The research was supported by the National Research, Development and Innovation Office – NKFIH, PD116227 project.