



Spring water supply in a plateau area, southward South Carpathians, Mehedinti district, Romania: isotopic composition, major-ion chemistry and radiocarbon dating

Ana-Voica Bojar (1,4), Stanislaw Chmiel (2), Carmen Varlam (3), Hans-Peter Bojar (4), Octavian Dului (5), and Andrzej Pelc (6)

(1) Salzburg University, Geographie und Geologie, Geologie, Salzburg, Austria (ana-voica.bojar@sbg.ac.at), (2) Faculty of Earth Sciences and Spatial Management, Maria Curie-Skłodowska University, ul. Kraśnicka 2cd, 20-718 Lublin, Poland, (3) National Research and Development Institute for Cryogenic and Isotopic Technologies, Râmnicu Vâlcea, Romania, (4) Studienzentrum Naturkunde, Universalmuseum Joanneum, Weinzöttlstraße 16, A-8045 Graz, Austria, (5) Mass Spectrometry Laboratory, Institute of Physics, UMCS, 20-031 Lublin, Poland, (6) Department of Atomic and Nuclear Physics, PO Box MG-11, RO – 077125 Magurele (Ilfov), Romania

The investigated area belongs to a plateau situated at 350 m elevation, between the South Carpathian to the North and Danube to the South. In the region, the natural source of water is related to natural springs and more recently, to wells. The aquifers consist of Pleistocene clastic deposits separated by clayey layers. Our collection of meteorological data indicates a high continentally index with a value of over 40.

In order to evaluate groundwater flow and water quality, we investigated isotopic and ionic compositions as well as radiocarbon ages of natural springs. A spatial analysis of the mapped aquifers indicates local differences along flow path. Examination of the major-ion chemistry of ground-water samples collected during this study suggests that there is a relationship between depth and ionic composition. Between June to September precipitations can miss for longer than one months, aquifer recharge ratio being higher for the cold season. Isotopic compositions indicate that the shallower aquifer is subject to evaporative processes during summer to early autumn, fact also supported by decreased water supply or even temporary drying up. The deeper aquifer show higher ionic contents and possible mixing with groundwater from the Younger Dryas aquifer recharge.