Geophysical Research Abstracts
Vol. 15, EGU2013-12066, 2013
EGU General Assembly 2013

Hydrogeochemical and stable isotopic investigations on CO_2-rich mineral waters from Harghita Mts. (Eastern Carpathians, Romania)

Boglárka-Mercedesz Kis (1), Călin Baciu (1), Krisztina Kármán (2), Ladislau Kékedy-Nagy (1), and Italiano Francesco (3)

(1) Babes-Bolyai University, Cluj Napoca, Romania (kisboglarka85@gmail.com), (2) Hungarian Academy of Sciences, Institute for Geological and Geochemical Research, Budapest, Hungary, (karman@sparc.core.hu), (3) Instituto Nazionale di Geofisica e Vulcanologia, Palermo, Italy

There is a worldwide interest on geothermal, mineral and groundwater as a resource for energy, drinking water supply and therapeutic needs. The increasing trend in replacing tap water with commercial bottled mineral water for drinking purposes has become an economic, hydrogeologic and medical concern in the last decades.
Several investigations have been carried out worldwide on different topics related to geothermal and mineral waters, dealing with mineral water quality assessment, origin of geothermal and mineral waters, geochemical processes that influence water chemistry and water-rock interaction
In Romania, the Călimani-Gurghiu-Harghita Neogene to Quaternary volcanic chain (Eastern Carpathians) is one of the most important areas from the point of view of CO_2-rich mineral waters. These mineral water springs occur within other post-volcanic phenomena like dry CO_2 emissions, moffettes, bubbling pools, H2S gas emissions etc. Mineral waters from this area are used for bottling, local spas and drinking purposes for local people. The number of springs, around 2000 according to literature data, shows that there is still a significant unexploited potential for good quality drinking water in this area.
Within the youngest segment of the volcanic chain, the Harghita Mts., its volcaniclastic aprons and its boundary with the Transylvanian Basin, we have carried out an investigation on 23 CO_2-rich mineral water springs from a hydrogeochemical and stable isotopic point of view.
The mineral waters are Ca-Mg-HCO_3 to Na-Cl type. Sometimes mixing between the two types can be observed. We have detected a great influence of water-rock interaction on the stable isotopic composition of the mineral waters, shown by isotopic shifts to the heavier oxygen isotope, mixing processes between shallow and deeper aquifers and local thermal anomalies.

Acknowledgements: The present work was financially supported by the Romanian National Research Council, Project PN-II-ID-PCE-2011-3-0537 and by the European Social Fund and the Romanian Government through the POSDRU project ”DOCTORAL STUDIES FOR EUROPEAN PERFORMANCES IN RESEARCH AND INOVATION - CUANTUMDOC” ID79407