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ABSTRACT BOOK

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451 - INVESTIGATING THE ORIGIN AND INTERACTION BETWEEN SURFACE WATER AND KARSTIC GROUNDWATER IN ARJAN BASIN, LOCATED IN ZAGROS MOUNTAIN RANGE – IRAN, USING ENVIRONMENTAL ISOTOPE (¹⁸O, ²H) COMPOSITIONS

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In this paper, in order to determine the origin and the interaction between surface water and karstic groundwater of Arjan basin, located in Zagros mountain range and about 60 km SW of Shiraz - Iran, the stable isotope (¹⁸O, ²H) compositions of precipitations, surface water (Arjan and Parishan lakes) and karstic groundwater samples of the area have been investigated. All ¹⁸O and ²H isotope data was provided by Iran water resources research institute. The Arjan local meteoric water line (AMWL - $\delta^2\text{H} = 7.76\delta^{18}\text{O} + 19.9$) was developed for the first time for the study region and it has almost the same slop as GMWL ($\delta^2\text{H} = 8.13\delta^{18}\text{O} + 10.8$), however, with average deuterium excess of about 19.0 ‰, which indicate different humidity sources. The source of humidity for precipitations of this area is Mediterranean air masses. This can be confirmed by the same d- excess of AMWL as EMWL ($\delta^2\text{H} = 8\delta^{18}\text{O} + 22$). Using the GMWL and AMWL as reference lines, all surface and karstic groundwater samples were plotted on $\delta^{18}\text{O}$ vs. $\delta^2\text{H}$ diagram. The deviation of surface (Arjan and Parishan lakes) water samples from local AMWL clearly indicate evaporation lost of the lake waters, especially during warm seasons. Some karstic water resources (Arjan, Renjan, Chenar Shahijan, Seyad Hossein karstic springs) plotted on local AMWL, indicate recharging directly from precipitations, however, some other karstic resources (Domeasb, Parishan and Ghalenarenji karstic springs) plotted away from local AMWL and fallow the lake waters pattern, depicts interaction with lake water resources.