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New isotopic surveys on the Poiano karst system

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This research deals with the application of stable isotope analyses to evaluate the most recent Poiano karst spring hydrogeological model proposed by Chiesi et al., 2010. The Poiano karst system is made up of Triassic gypsum/anhydrite evaporites outcropping in the northern part of the Apennine chain (Italy), and is bounded by the Lucola, Secchia, Sologno and Ozola rivers. According to the current hydrogeological model, this aquifer is mainly fed by the Lucola River. The Sologno River and meteoric recharge are believed to be secondary sources. The initial results from 46 water stable isotope analyses (d18O, dD) sampled monthly between Aug-2017 and May-2018 from the Poiano Spring, 3 shallow springs, and 15 river gauges were used as natural tracers to define the recharge shares for the Poiano karst system.
The preliminary isotope results point out a new highlight with respect to the recognized hydrological model. The d18O-dD analysis shows a scarce isotopic affinity of the Poiano Spring with the Lucola River, a strong isotopic affinity of the Poiano Spring with the Secchia River, and a moderate isotopic affinity among the Sologno River, Ozola River and shallow springs (effective recharge).
These results are not in line with the most recent hydrogeological model of the Poiano karst spring and they can use to define a new hydrogeological model. In particular, the isotopic analysis indicate that the Secchia River must be considered one of the main sources that contributes to the total discharge of the Poiano Spring.

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