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Geochemical and hydrogeological study of “Bagni di Triponzo” springs, Central Italy

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The present note takes into account some springs located along Nera River in Umbria Region, Central Italy, the so called “Bagni di Triponzo”. Spring waters - alkaline-sulphate type - have the same temperature of about 30 °C during the year. The aim of this work was to study the hydrogeologic basin which recharges the springs, and to assess the process by which waters become so hot. This goals are performed by means of a comprehensive structural geologic survey, chemical and isotopic analyses and geothermometer evaluations. The conclusions are about the nature of hydrogeologic basin recharging the springs, which is limited first by the monocline located at east of springs, which is the east wall of an anticline with NNW-SSE direction, and second by the limestone formation called “Calcare Massiccio”. The isotopic data and geothermometric evaluations have been useful for validating this suggestion. Another result concerns the estimated water balance, calculated from the measured rainfall in this area; rainwash is about 10% of rainfall, effective infiltration amounts to 50% of total rainfall, so the available water is 1700000 m3/year. The spring total discharge is around 1000000 m3/year, that is the evidence of good adherence of the proposed system to hydrogeologic basin.