

Isotope characterization of shallow aquifers in the Horombe region, South of Madagascar

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The present study deals with the problem of evaluation of the recharge mechanism and the characterization of the groundwater flow system in the basement shallow aquifer, which is one of the groundwater resource in the semi-arid South region of Madagascar. Stable isotopes (deuterium and oxygen-18) and tritium are used to achieve with accuracy the hydrogeological and geochemical dynamics study. Chemical analysis is used to provide complementary information to the investigation. A space distribution of tritium concentration and isotopic composition in groundwater shows evidence of two opposite categories of aquifers, which is confirmed by the chemical analysis results and by the geological features of the study site. Some groundwater flow path directions have been identified in the study area thanks to the tritium concentration space distribution and the geological formation. Besides, the groundwater recharge of the shallow aquifers in the South of Madagascar has been characterized by the exponential mixing model.

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