

Interactive comment on “Geochemical inverse modeling of chemical and isotopic data from groundwaters in Sahara (Ouargla basin, Algeria)” by R. Slimani et al.

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Authors report about previous and new geochemical and isotopic data collected in the area of Ouargla, Algeria. The paper is well organized but deserves some improvements before to be published. Anyway some features are unclear and should be better described. In particular it's unclear by tab.6 when samples were collected. Probably they were collected in relatively recent times. Within this assumption I set up the enclosed table which shows that Phreatic samples are obviously more rich in Tritium while Complex and Continental are relatively poor and consequently older. Authors report at pag.13 that precipitations were characterized by 16 TU in 1992. In what station? Anyway 1992 cannot reflect present day Tritium data and age evaluations should consider

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more updated values. IAEA-GNIP network data report that Tritium was 6.8 in Algiers in 1999, 10.39 in Ankara in 2002 and 1.99 in Tenerife in 2010. Time series analysis of mentioned sites reveals that Tritium is still constantly lowering in precipitations. Stations are far from studied area anyway a Medioterranean-North African trend in isotopic data is recognizable. It means that 16 TU is really an uncorrect value. More recent groundwaters are affected by a Tritium seasonal signal (phreatic-highest Tritium values), while samples characterized by 1-2 years of average permanence time could be suitable for a Tritium estimate which could be inferred by not too negative samples in $^{18}\text{O}/^{16}\text{O}$ (old groundwaters) and not too positive samples in $^{18}\text{O}/^{16}\text{O}$ (evaporation? Seasonal effects?) Thus values around 5-6 TU could be representative of present day rains (see also Martinelli et al., 2015, J.of Hydrology). More depleted waters in ^{18}O should be old groundwaters characterized by a relatively remote recharge area, hopefully to be preserved. No Deuterium data available? Phreeqc approach to water composition is interesting anyway Authors should exclude by geological or stratigraphic data eventual mixing with brine waters. If the existence of brines is not excluded Phreeqc could be somehow misleading.

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