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Quality control of waters in the Gafsa town (south west of Tunisia)

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In Tunisia, as in most semi-arid countries, the problems of access to water populations are acute especially with irregularity of rainfall and arid climate combined with the insufficiency of natural water resources and pollution. This study consists in the identification of the factors which influence the water quality parameters in the aquifer of Gafsa, located in the south–west of Tunisia. Rapidly increasing urban population, growth rates over the last few decades have been responsible for the production of huge quantities of wastewater, often evacuated without any particular treatment especially in the septic tanks. Groundwater samples for chemical and microbial analysis were collected from 19 drillings spread throughout the study area. Results showed significantly elevated levels of sodium, chlorides, sulfates, nitrates and coliform bacteria all over the urban area. High levels (NO3: 8.8–278 mg/l; Na:4002 mg/l; Cl:6526 mg/l; Coliforms [72/100 ml) can be related to more densely populated areas. Alternatively results showed a very variable salinity composition of groundwater, ranges from 0, 96 to 15, 03 mg/l. We also note that among pollutant elements, we found fluorine with maximum of 2.78 mg / l and manganese with 0.04 mg/l. Finally methods of controls must be established in order to stop this pollution.

Biography

Malik Nadia is student at the Faculty of Sciences of Tunis (Tunisia) preparing a Doctoral thesis. She got her Master's degree in Geology, Cartography and Planning specialty. She has done several internships: Microbiology laboratory, chemistry laboratory, in ONAS (National Sanitation Office) in the CRDA (Regional Commissary for Agricultural Development) of Monastir, DGAT (Directorate General of Land Territory) in Tunis. She has participated in several conference, WATMED3 (Lebanon), WATMED 6 (Sousse, Tunisia) National Conservation Park Ichkeul: Model of Sustainable Management (Gammarth, Tunisia). She has published 02 articles in *Desalination and Water Treatment* journal and in *Revue Méditerranéenne de l'Environnement*.

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Climate change impact on variability of rainfall intensity in Upper Blue Nile Basin

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Extreme rainfall events are major problems in Ethiopia with the resulting floods that usually could cause significant damage to agriculture, ecology, infrastructure, disruption to human activities, loss of property, loss of lives and disease outbreak. The aim of this study was to explore the likely changes of precipitation extreme changes due to future climate change. The study specifically focuses to understand the future climate change impact on variability of rainfall intensity-duration-frequency (IDF) in Upper Blue Nile basin. Precipitations data from two Global Climate Models (GCMs) have been used in the study are Hadley Climate Model Version 3 and Canadian Global Climate Model version 3 (CGCM3). Rainfall frequency analysis was carried out to estimate quantile with different return periods. Probability Weighted Method (PWM) selected estimation of parameter distribution and L-Moment Ratio Diagrams (LMRDs) used to find the best parent distribution for each station. Therefore, parent distributions for twelve stations from frequency analysis are Generalized Logistic (GLOG), Generalized Extreme Value (GEV), and Gamma & Pearson III (P3) parent distribution. After analyzing estimated quantile simple disaggregation model was applied in order to find sub daily rainfall data. Finally the disaggregated rainfall is fitted to find IDF curve and the result shows in most parts of the basin rainfall intensity expected to increase in the future. IDF parameter A, B, and C are estimated for each scenario period and return period with both HadCM3 and CGCM3 projections. For the IDF parameters sensitivity analysis was carried out by increasing 10% from estimated result and parameter C is highly sensitive than A, and B. It is also expected to have a change on extreme precipitation by 1 to 26% increase with HadCM3 projection and by 11 to 61% increase with CGCM3 projection for most parts of the study area. But at station Debre Birhan (2020s) and Debre Markos (2080s) with HadCM3 result and at Hayk (2020s) with CGCM3 result and Gondar (both GCMs) shows decreasing extreme precipitation. As a result of the two GCM outputs, the study indicates there will be likely increase of precipitation extremes over the Upper Blue Nile basin due to the changing climate. This study should be interpreted with caution as the GCM model outputs in this part of the world have huge uncertainty.

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