EGU21-9275
https://doi.org/10.5194/egusphere-egu21-9275
EGU General Assembly 2021

Evaluation of agricultural drought changes due to implementation of preventive drought management measures. Study case Torola basin

ana paez[1,2] and Gerald Corzo[1]
[1]IHE Delft Institute for Water Education, Hydroinformatics and Socio-Technical Innovation, Netherlands (a.paeztrujillo@un-ihe.org)
[2]Delft University of Technology, Water Resources Section, Netherlands (A.M.PaezTrujillo@tudelft.nl)

Agricultural droughts are becoming more frequent and severe, triggering a range of pervasive effects on society, environment, and economy. In drought-prone areas, multiple interventions aimed at efficient water use and protecting water resources have been used as preventive drought management measures. However, many of these solutions are colloquial or implemented inconsistently, and the actual contribution to drought preparation and response is limited or unclear. This study evaluates the applicability and effectiveness of preventive drought management measures (Hydrological-based measures). To achieve this goal, we divided the work into two stages. First, a quantitative analysis consisted of a review, classification, and mathematical representation of potential preventive drought management measures. Second, a modelling-based analysis compared droughts characteristics before and after implementing three selected measures from the first stage (rainwater harvesting reservoirs, afforestation, and intercropping). The study was developed in the Torola basin, a drought-prone area located in Honduras northeast. We applied the threshold level method to detect and analyse drought characteristics and the Soil Water Assessment Tool (SWAT) for hydrological modelling and representing the selected measures. We defined three scenarios for evaluating the effects of each measure. Results showed that selected measures increase infiltration and soil moisture content alleviating the severity and duration of drought events locally, but enhance the drought situation in surrounding areas.

Keywords: Agricultural droughts, preventive drought management measures, SWAT model.