

Risk Assessments of Longest Dry Spells Phenomenon in Northern Tunisia

Authors : Majid Mathlouthi, Fethi Lebdi

Abstract : Throughout the world, the extent and magnitude of droughts have economic, social and environmental consequences. Today climate change has become more and more felt; most likely they increase the frequency and duration of droughts. An analysis by event of dry event, from series of observations of the daily rainfall is carried out. A daily precipitation threshold value has been set. A catchment localized in Northern Tunisia where the average rainfall is about 600 mm has been studied. Rainfall events are defined as an uninterrupted series of rainfall days understanding at least a day having received a precipitation superior or equal to a fixed threshold. The dry events are constituted of a series of dry days framed by two successive rainfall events. A rainfall event is a vector of coordinates the duration, the rainfall depth per event and the duration of the dry event. The depth and duration are found to be correlated. So we use conditional probabilities to analyse the depth per event. The negative binomial distribution fits well the dry event. The duration of the rainfall event follows a geometric distribution. The length of the climatically cycle adjusts to the Incomplete Gamma. Results of this analysis was used to study of the effects of climate change on water resources and crops and to calibrate precipitation models with little rainfall records. In response to long droughts in the basin, the drought management system is based on three phases during each of the three phases; different measurements are applied and executed. The first is before drought, preparedness and early warning; the second is drought management, mitigation in the event of drought; and the last subsequent drought, when the drought is over.

Keywords : dry spell, precipitation threshold, climate vulnerability, adaptation measures

Conference Title : ICWSDM 2023 : International Conference on Water Scarcity and Drought Management

Conference Location : Tokyo, Japan

Conference Dates : July 17-18, 2023