Geophysical Research Abstracts
Vol. 16, EGU2014-2553-1, 2014
EGU General Assembly 2014

Rainfall Temporal Variability Analysis and the Use of Standardized Precipitation Index to Identify Dry and Wet Periods in Oman

Ghazi Al-Rawas (1), Luminda Hewawasam (1), Alvaro Silva (2), Fatima E. Santo (2), and Vanda Pires (2)

(1) Department of Civil and Architectural Engineering, Sultan Qaboos University, Muscat, Oman (ghazi@squ.edu.om), (2) The Portuguese Sea and Atmospheric Institute, Lisbon, Portugal

The objectives of this study are to analyze the rainfall temporal variability, use of the Standardized Precipitation Index (SPI) to evaluate, identify, and characterize wet and dry periods in Oman. The long time series of rainfall data in Muscat (1893-2012), in the north, and Salalah (1943-2012), in the south (1200 km apart), were used in this work. These two climatological stations, located in areas with different rainfall characteristics, were compared in terms of the duration and frequency of dry and wet events, related sometimes with, respectively, the occurrence of drought and flooding. One major concern nowadays, in this study region, is to investigate whether extreme rainfall events (e.g. cause flash floods) are becoming more, but also to better understand the high variability rainfall regime, with dry prolonged periods and the occurrence of droughts. In this way the SPI calculation, considering different time scales, using the above mentioned rainfall monthly data, is tested to assess the precipitation deficits patterns in the study period. The use of SPI in dry climates has some limitations, namely for short time scales. Thus, the SPI series investigated were calculated at 12 and 24 months scales.
Results in Muscat, for the worst drought years of 2000-2003, show SPI values less than –1.5. Trends were also investigated and in further research the use of other rainfall and drought indices should be carried on.

Keywords: Rainfall, SPI, Drought, Flash floods, variability