Geophysical Research Abstracts
Vol. 20, EGU2018-13773-2, 2018
EGU General Assembly 2018

Evaluation and Comparison of Drought Indices and Determination of Drought Events in Van Lake Basin, Turkey

Egemen Fırat (1), Koray K. Yılmaz (2), Harun Aydın (3), Serkan Kemeç (4), Serdar Sürer (1), Maruf Aras (5), Ahmet Murat Özaltın (5), Eser Bora (5), M. Deniz İtibar (6), and Batuhan Soyugür (1)

(1) Danish Hydraulic Institute, DHI Turkey (egef@dhigroup.com), (2) Department of Geological Engineering, Middle East Technical University, Ankara Turkey (yilmazk@metu.edu.tr), (3) Department of Environmental Engineering, Van Yuzuncu Yil University, Turkey (harun@yyu.edu.tr), (4) Department of City and Regional Planning, Van Yuzuncu Yil University, Turkey (serkankemec@yyu.edu.tr), (5) General Directorate of Water Management, Ministry of Forestry and Water Affairs, Turkey (eserbora@ormansu.gov.tr), (6) Su-Yapı Engineering and Consulting Inc., (deniz.itibar@suyapi.com.tr)

Drought can generally be characterized by three main aspects: severity, duration and spread over the region. A variety of techniques exist in the literature to quantify type, severity, intensity, duration and frequency of droughts. This study investigates the drought events in Van Lake Basin, Turkey across a cascade of levels including meteorological, agricultural and hydrological drought. The investigation is performed on the basis of multiple drought indicators - Standardized Precipitation Index (SPI), Palmer Drought Severity Indices (scPDSI, scPHDI, scWPLM) and Standardized Runoff Index (SRI) using long term ground-based datasets. Instead of direct use of the individual indices to detect drought events, we compared different indices and durations (e.g. SPI3-scPDSI, SPI6-scPDSI, SRI6-SPI6 etc.) to each other using correlation coefficient values. Through this analysis we were able to determine the most suitable indices that are capable of representing the level of drought events occurred within the study area in terms of meteorological, agricultural and hydrological aspects. Our presentation will highlight the compatibility of drought indices for different calculation periods and duration, frequency, intensity, severity of droughts occurred over the study area for three different drought levels.