



Analysis of Drought in North Darfur Region of Sudan: Application of the DPSIR Framework on Long Term Data

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Abstract

Darfur region in western Sudan is located in one of the world's most inhospitable environments, adjacent to the Sahara desert, conflicts and drought have severely degraded this fragile area, devastating the environment, livestock and people. Northern Darfur is bedeviled with frequent drought due to insufficient water resources, high summer temperatures, and poor precipitation. Monitoring drought and providing timely seasonal predictions is important for integrated drought risk reduction in the region. This paper evaluates drought conditions in North Darfur by applying meteorological, remote sensing and crop production data, as well as the Driving force–Pressure–State–Impacts–Response (DPSIR) assessment framework. Interviews, group discussions and participant observations were conducted in order to understand the DPSIR framework indicators. The relationship between the Reconnaissance Drought Index (RDI), Vegetation Condition Index (VCI) and Soil Moisture Content Index (SMCI) were evaluated utilizing data from all five North Darfur counties during 10 growing seasons (2004-2013). Our results showed a strong correlation between RDI, VCI, and SMAI. Also, a significant agreement was noticed between Yield Anomaly Index (YAI) and Rainfall Anomaly Index (RAI). Generally, a high correlation coefficient was obtained between the meteorology drought index and remote sensing indices, which demonstrates the effectiveness of the above indices for evaluating agricultural drought in the sub-Saharan area.

Keywords: Drought; Vegetation Condition Index; Reconnaissance Drought Index; Soil Moisture Content Index; North Darfur.