



Comparative analysis of two evaporation-based drought indicators for large-scale drought monitoring

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Currently, large-scale drought monitoring is carried out through the implementation of different drought indicators that use both remote sensing and ground-based data. Among the most promising are those that use remote sensing data variables, mainly soil moisture (SM) and evaporation (E), because of their link with agricultural drought impacts. Such drought indicators are for instance, the Standardized Soil Moisture Index (SSMI) and the Standardized Precipitation Evaporation Index (SPEI), respectively. In the last decade, new formulations on drought indicators based on E, have been proposed, but not yet implemented in large-scale drought monitoring. These include for example, Evapotranspiration Deficit Index (EDI), Evaporative Demand Drought Index (EDDI) and Standardized Evapotranspiration Deficit Index (SEDI). This research aims to conduct a comparative analysis of the spatial characteristics of drought calculated by using two drought indicators based on E: SPEI and SEDI. These characteristics include drought area and number of clusters in drought obtained through the application of Non-Contiguous Drought Area (NCDA) and Contiguous Drought Area (CDA) approaches. Global Land Evaporation Amsterdam Model (GLEAM) data is used to compute both drought indicators. Results indicate that there is a difference between the shape of the area in drought and the number of groups that compose it, this when using different drought indicator. This study suggests that SEDI presents an improved representation of the overall water availability and therefore could be used for more detailed analysis.

Key words: drought, space-time analysis, NCDA, CDA, SPEI, SEDI