



SPEI and SPI response comparison for future drought projections

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Due to their severe socio-economic impacts extreme drought events are of major concern under changing climate conditions. A comparative analysis is performed to validate the newly developed Standardized Precipitation Evapotranspiration Index (SPEI) and to analyse the main contributing factors for drought development, that are precipitation shortage and high evaporation rates in climate change scenarios (RCP4.5). For this purpose the projected changes of the SPEI are compared to the conceptual equivalent Standardized Precipitation Index (SPI) for time scales from 1 to 48 months. The differences between SPEI and SPI responses are used to investigate the contribution of evaporation changes on dryness extremes in dependence of varying time scales. Further, areas are detected where the drought development is governed mainly by reduced precipitation or solely by increased evaporation in the future climate. Additional, different potential evapotranspiration approximations are evaluated in respect to "true", climate model evaporation.