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CLIVAR-SPAIN contributions: Seasonal drought variability over the Iberian Peninsula and its relationship to global sea surface temperature and large scale atmospheric circulation

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Drought variability over Iberian Peninsula (IP) is investigated using two monthly global datasets, the self calibrated Palmer drought severity index (scPDSI) and the newly developed Standardized Precipitation-Evapotranspiration Index (SPEI). Both datasets have a spatial resolution of 0.5ß and provides temporal coverage for the period 1901-2002 and 1901-2006, respectively. Comparison between spatially averaged scPDSI and SPEI over the IP grid points at time scales of 3, 6, 9, 12, 18 and 24 months, for each season is made in terms of temporal evolution, frequency distribution and correlation coefficients. The variability of seasonal scPDSI and 24-month SPEI is compared in terms of explained variance, patterns of variability and temporal evolution of the time series of PC coefficients of the first three principal modes. A Canonical Correlation Analysis between each season 24-month SPEI over IP and the global Sea Surface Temperature (SST) points out on the existence of a lag correlation between IP seasonal drought patterns and global SST anomalies. The composite maps for the seasonal 24-month SPEI and the previous 6-month global SST and sea level pressure (SLP) for the driest years show coherent large scale field anomalies associated to IP seasonal drought.