



Seasonal moisture variability in Ebro basin and its relationship to large scale atmospheric circulation and global sea surface temperature

C. Boroneant (1) and P. Quintana Seguí (2)

(1) University Rovira I Virgili, Centre for Climate Change (C3), Geography Department, Tortosa (Tarragona), Spain (constantina.boroneant@urv.cat), (2) Observatori de l'Ebre (Universitat Ramon Llull - CSIC), Roquetes (Tarragona), Spain (pquintana@obsebre.es)

Seasonal moisture variability at six meteorological stations (Tortosa, Zaragoza, Huesca, Pamplona, Burgos, Soria) located in the Ebro basin is investigated using three indices of drought: the Standardized Precipitation Index (SPI), the self calibrated Palmer Drought Severity Index (scPDSI) and, the newly developed Standardized Precipitation-Evapotranspiration Index (SPEI) at time scale of 1, 3, 6, 12 and, 24 months. Comparison between spatially averaged SPI, scPDSI and SPEI over the Ebro basin and the series of river discharges is made in terms of correlation coefficients, temporal evolution and trends. The seasonal variability of the best correlated drought index with the river discharges is analyzed in terms of patterns of variability (EOFs), explained variance and temporal evolution of the time series of PC coefficients of the first three principal modes. Composite maps of the large scale anomalies of the mean sea level pressure (MSLP) and the global sea surface temperature (SST) were calculated based on the years when the values of PC1 series of coefficients were $\leq -1\text{stddev}$ (dry years) and $\geq +1\text{stddev}$ (wet years), respectively. The results show coherent large scale anomalies associated to moisture extremes in Ebro basin. The period of analysis is 1912-2008.