



El Niño influence on summer climate in Western Europe

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El Niño-Southern Oscillation (ENSO) is the dominant global climate mode at interannual timescales and the main source of predictability. Several studies point out that El Niño influence over European North Atlantic sector is consistent and statistically significant. Some hypotheses show that this influence, which lacks of stationarity, seems to be modulated by multidecadal oscillation of the anomalous Sea Surface Temperature (SST) over the Atlantic and Pacific basins (AMO and PDO respectively). A recent study has found how that the main El Niño teleconnection over European precipitation takes place in late winter and spring (February-March-April), being modulated by the Atlantic Multidecadal Oscillation (AMO), while in fall is the Pacific Decadal Oscillation (PDO) which appears to modulate this teleconnection. The authors have described how El Niño-Southern Oscillation impacts over the rainfall over the North of Spain.

The present study took a base point in the northern Iberian peninsula, which is representative of Western Europe, and perform a thoroughly analysis of the impact of El Niño on the region along the seasonal cycle and on time. Different variables -as anomalous precipitation, minimum and maximum temperature- were used in different seasons over the region of the Basque Country as a base point. We examined the atmospheric conditions and the possible teleconnection mechanism, using sensitive experiments in order to verify our hypothesis. This work was performed analysing a high resolution gridded dataset over Spain, Sea Level Pressure dataset (SLP) in the North Atlantic, European and Mediterranean region, as well as Geopotential Height at 850 hPa, 500 hPa and 200 hPa (Z850, Z500 and Z200), El Niño climate indices and SST dataset.

The results of this study show a non-stationary relationship between Western Europe precipitation, minimum and maximum temperature, and El Niño. This relation depends on the Pacific region considered and seems to be maximum in summer.