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The ENSO signal over Southwestern Europe and its impact on spring rainfall

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Predictability of European climate variability needs the identification of clear oceanic forcing factors. Former studies show how the tropical oceans, and in particular the Pacific, have an impact on European climate. The mechanisms that explain the ENSO teleconnections are non-linear, including tropospheric and stratospheric pathways through the extratropical Pacific (via PNA). Another hypothesis is the interaction with the Tropical Atlantic via Atmospheric bridge.
The present study explores the ENSO impact on Southwestern European rainfall, analysing the related anomalous atmospheric dynamics. In a previous work (Lorenzo et al., 2010) it has been shown a significant change, after the 1970's, in the correlation scores between the Northwestern Iberian Peninsula spring anomalous precipitation and ENSO, coinciding with the Climate-Shift phenomenon that took place between 1976 and 1977 as a result of the change in the sign of the PDO.
Results show the existence of a dynamical link, via Rossby waves, between winter ENSO events and the spring rainfall in the Southwest of Europe that get stronger after the Climate-Shift. Before this period La Niña events produced dry springs over Southwestern Europe while the Niño events did not affect rainfall. After the Climate-Shift the situation was the opposite and El Niño events produced rainy springs in the region under study whilst La Niña events do not show any significant relationship.

References:

Lorenzo M.N., J.J. Taboada, I. Iglesias and M. Gómez-Gesteira (2010): Predictability of the spring rainfall in North-west of Iberian from sea surfaces temperatures of ENSO areas. Climatic Change DOI:10.1007/s10584-010-9991-6.