



Intraseasonal effects of El Niño Southern Oscillation on North Atlantic climate

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El Niño Southern Oscillation (ENSO) is known to impact the North Atlantic – European (NAE) climate, with the strongest influence in late winter. In that period, the ENSO signal reaches the NAE sector via tropospheric and stratospheric pathways, projecting on a North Atlantic Oscillation pattern. However, this signal is not strengthening during winter. Some studies have suggested that the ENSO signal in NAE shifts from early to late winter, but the teleconnections involved in the first winter subperiod are still unclear.

Here we examine the ENSO teleconnection to NAE in early winter and aim to characterize the possible mechanisms involved in that teleconnection by means of observations, reanalysis data and the output of different types of model simulations. Our results show that the intra-seasonal winter shift of the NAE response to ENSO occurs for both El Niño and La Niña and is robust in observations and initialized predictions, but is not reproduced by free-running CMIP5 models. The teleconnection is established only through the troposphere in early winter and is related to ENSO-associated perturbations starting in the Gulf of Mexico that reach the NAE region. The origin of those perturbations might be associated with ENSO-related precipitation anomalies over the Gulf of Mexico and Central America.