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Multidecadal modulation of El Niño influence on the Euro-Mediterranean rainfall

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El Niño influence on the Euro-Mediterranean Rainfall (EMedR) has changed along the 20th century, and the reasons for this lack of stationarity, which represents an important issue in the climate change context, are still unclear. Here, the causes of this changing relationship are studied at interannual timescales. To this aim the EMedR is analyzed using observations from 1900 to 2008. Results confirm the lack of stationarity, showing how the teleconnections with El Niño appear modulated by multidecadal oscillations of the anomalous Sea Surface Temperature (SST) over the Atlantic and Pacific basins. The study presents statistically significant evidences about how the Atlantic Multidecadal Oscillation (AMO) seems to modulate El Niño teleconnection for late winter-spring, while modulation in fall could be controlled by the Pacific Decadal Oscillation (PDO). The results of this study have important implications in seasonal and decadal predictability, but they also represent a step forward in the understanding of the role of changes in the ocean mean state on the interannual teleconnections.