

The Impact of IOD on rainfall over Spain

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Previous studies have shown that the Indian Ocean Dipole (IOD) has a significant impact on land temperatures over southern Europe. However, whether IOD influences rainfall over this region and how this impact compares to that of El Nino Southern Oscillation (ENSO) have not been established. Here using the E-OBS gridded rainfall datasets for the period 1958 to 2012, we have analyzed the influence of IOD and ENSO on European rainfall. We find that IOD impacts are predominantly felt over southwestern Europe in a region covering Spain and Portugal during the peak phase of the event. Correlations exceeding 0.4 are observed over the central regions of Spain. We find that ENSO impacts on European rainfall are substantially weaker compared to that of IOD, but occur with a pattern similar to the latter. Partial correlation analysis suggests that the marginal ENSO correlations are a statistical artifact arising from the co-occurrence of a fraction of the El Nino events with positive IOD events. Possible dynamical mechanisms by which IOD impacts rainfall over southwestern Europe will be discussed.

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