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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Analysis of El Nino events from the Atlantic remote in [U+FB02] uence

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Recent studies have found an enhancement of the correlation scores between the Atlantic and Pacific Niños since early 70's, and also how the summer Atlantic Niño is able to alter the dynamics of the central and eastern Pacific windstress via anomalous Walker circulation,
triggering processes which are able to develop a Pacific La Niña during the next winter(Rodríguez-Fonseca et al., 2009).
In a former work, the analysis of the partially coupled simulations used in Rodríguez-Fonseca et al. (2009) showed a significant change in the winter windstress and thermocline depth over the equatorial Pacific after the 70's during the summer Atlantic Niño years, a change which was not present in the previous decades (Martin-Rey et al., 2010). In that work, the net heat fluxes and the horizontal advection terms of the heat budget were not able to explain the winter changes in SSTs, pointing to the possible contribution of the vertical mixing. Also, a change in the characteristic dynamical parameters calculated by the model for ENSO events (thermocline depth, SST and zonal wind) was present when comparing the decades before and after the 70's.
As a continuation of that work, the present study analyses the importance of the dynamical oceanic processes involved in the heat budget of the Equatorial Pacific during the Atlantic Niño events, in order to close the balance in winter in the last two decades. Also, an alteration of the thermodynamical processes involved in the ENSO development is associated with the Atlantic influence after the 70's. Finally, an statistical analysis of the ENSO events is done in order to
know the possible changes in type and intensity of these phenomena after the 70's, due to Atlantic remote influence, considering not only the interannual processes but also the change in the Pacific basic state (Martín-Rey et al.2011).
These Atlantic-Pacific connection has a great influence on the global climate during the last decades, through a modification of the global teleconnections due to this interbasin link.Changes in the rainfall of Guinea and Sahel regions, associated with the West African Monsoon
(Polo et al., 2008, Losada et al., 2010; Rodríguez-Fonseca et al., 2010, Mohino et al., 2011),as well as, an alteration of the variability modes of precipitation in Europe (López-Parages and Rodríguez-Fonseca, 2011) and in the Mediterranean basin (Losada et al., 2011) have been
shown related to these connection.