Geophysical Research Abstracts,
Vol. 11, EGU2009-9476, 2009
EGU General Assembly 2009

Have Atlantic Niños been leading Pacific ENSO events in recent decades?

B. Rodríguez-Fonseca (1), I. Polo Sanchez (2), J. Garcia Serrano (3), T. Losada Doval (4), E. Mohino (5), R. Mechoso (6), and F. Kucharski (7)

(1) Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (2) Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (3) Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (4) Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (5) Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (brfonsec@fis.ucm.es), (6) University of California at Los Angeles, (7) International Center for Theoretical Physics

Although tropical Pacific and Atlantic oceans host their own “El Niño” events, the link among them has been sought with modest success. Nevertheless, several recent papers have shown statistical connections between summer Atlantic Niños and next winter Pacific Niñas since the late 70’s; but no detailed analysis of these connections and no hypothesis on the dynamical mechanisms at work has been proposed so far.
This work presents an evidence that the Atlantic-Pacific connections have changed since the late 60’s and proposes an observational hypothesis, supported by ensemble integrations, by which recent Atlantic Niños (Niñas) can alter the tropical circulation and favour the development of next-winter Pacific Niñas (Niños). The hypothesis context is the observed warming of the tropical Atlantic basin, according to which interannual sea surface temperature (SST) anomalies are superimposed on a warmer background state. The increased deep-convection associated with the warmer Atlantic strengthens the ascending branch of the Walker circulation over this ocean and the surface wind divergence under enhanced descent over the central equatorial Pacific. In association with these changes in the atmosphere, the oceanic thermocline shallows under the enhanced surface divergence. This thermocline shallowing propagates eastward at a speed consistent with an upwelling Kelvin wave, and the Bjierkness feedback results in full La Niña conditions over the Pacific by the next winter.