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Atmospheric Bridge in the recent connection between Atlantic and Pacific Niños

B. Rodríguez-Fonseca (1), I. Polo (2), J García-Serrano (3), T. Losada (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

Recent studies have found how, since the late 60's, the summer Atlantic Niño is able to alter the dynamics of the central and eastern Pacific via anomalous Walker circulation, favouring the development of a Pacific La Niña during the next winter (Rodríguez-Fonseca et al., 2009). Here we investigate the evolution of the Atlantic El Niño and the way in which it alters the anomalous Walker circulation over the Pacific. In this way, the equatorial Atlantic warming is associated with a Gill-type atmospheric response to tropical heating anomalies, including two anticyclones straddling the equator at upper levels accompanied by local baroclinic structure with covergent inflow (divergent outflow) at lower-levels (upper-levels) surface wind convergence and divergence at lower and upper levels, respectively. An anomalous Walker circulation is established, with rising air and heavy rainfall in the eastern equatorial Atlantic, and sinking air and drier conditions in the central equatorial Pacific. The atmospheric bridge between the Atlantic and Pacific Niños, is studied using observations as well as with ensemble integrations with an atmospheric general circulation model coupled in the Indo-Pacific basin to an ocean model and forced in the Atlantic by the observed SSTs in the period 1949-2002.