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Air-Sea interaction in the Pacific La Niña evolution from Atlantic remote influence

I. Polo (1), B. Rodriguez-Fonseca (1), J. Garcia-Serrano (1), T. Losada (1), E. Mohino (1), F. Kucharski (2), and C.R. Mechoso (3)

(1) Facultad CC Físicas, UCM, Geophysics and meteorology, Madrid, Spain (ipolo@fis.ucm.es), (2) International Centre for Theoretical Physics (ICTP), Trieste, Italy, (3) Dept. of Atmospheric and Oceanic Sci., University of California Los Angeles, Los Angeles, USA

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 Pacific La Niña from the disruption of the system at the central Pacific by anomalous surface divergence. In association with these changes in the atmosphere, the oceanic thermocline shallows and this shallowing propagates eastward at a speed consistent with an upwelling Kelvin wave. The feedback mechanisms at work in the development of Pacific La Niña are investigated in the context of the particular tropical variability after the climate shift, 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.