



The Central Pacific El Niño Intraseasonal Kelvin wave

Kobi Mosquera-Vasquez (1), Boris Dewitte (2), and Serena Illig (2)

(1) Instituto Geofísico del Perú, Lima, Peru (kobi.mosquera@igp.gob.pe), (2) Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), Toulouse, France

In this study we document and interpret the characteristics of the Intraseasonal Kelvin wave (ISKw) in the Pacific over the 1989-2011 period, based on observations, a linear model and the outputs of an Ocean General Circulation Model (OGCM). We focus on the wave activity during the Central Pacific (CP) El Niño events contrasting with the extraordinary El Niño of 1997/1998. We find that ISKw activity is enhanced in Austral Summer (Spring) in the central Pacific (west of $\sim 120^{\circ}\text{W}$) during CP El Niño events. The linear model experiment indicates that the Austral Summer peak is wind-forced while the Austral Spring peak is not and consequently results from non-linear processes. In addition, a strong dissipation of the ISKws is observed east of 120°W which cannot be accounted for by a linear model using a Rayleigh friction. A vertical and horizontal mode decomposition of the OGCM simulation further confirms the sharp changes in characteristics of the ISKws as well as the reflection of the latter into first-meridional Rossby wave at the longitude where the maximum zonal gradient of the thermocline is found ($\sim 120^{\circ}\text{W}$). Our analysis suggests that the confinement of CP El Niño warming in the central Pacific may result from the reinforcement of the zonal gradient in stratification associated to the La Niña-like conditions since the 90s, leading to scattering of the energy of the ISKws in the eastern Pacific.