



Ocean-state dependency of the equatorial Pacific response to Westerly Wind Events

martin Puy, matthieu Lengaigne, gurkan Madec, jerome Vialard, and eric Guilyardi
France (martin.puy@locean-ipsl.upmc.fr)

Short-lived wind events in the equatorial Pacific strongly influence the El Niño/Southern Oscillation (ENSO) evolution. In the first part of this study, we found in observations that both westerly wind events (WWEs) and their easterly wind events (EWEs) counterpart are unambiguously associated with increased Madden Julian oscillation and atmospheric equatorial Rossby waves activity, i.e. that the atmospheric state influences the occurrence probability of WWEs. In the second part, we investigate how the oceanic state modulates the response to these WWEs by applying the same WWE forcing over a interannually-varying ocean state in an OGCM simulation. We find that the amplitude of the SST response, both at the warm pool eastern edge and in the eastern Pacific, can vary by a factor of up to two depending on the ocean state. The sea level and current response are also clearly modulated, with varying contributions of the second and third baroclinic modes depending on the oceanic stratification. We will discuss the mechanisms by which the oceanic state modulates the response to the WWE, and how this could contribute to their impact on ENSO