ENSO signatures in the Indo-Pacific ocean basins in past, present, and future climate simulations

Julie Leloup (1,2), Pascale Braconnot (2), and Matthieu Lengaigne (1)

(1) LSCE/IPSL, CNRS/CEA/UVSQ, Gif-sur-Yvette, France (jllod@locean-ipsl.upmc.fr), (2) LOCEAN/IPSL, UPMC/IRD/CNRS, Paris, France

ENSO signatures in the Indian and Pacific oceans are likely to depend on the characteristics of ENSO events (i.e. intensity, seasonality, spatial patterns, etc). There is hence a need to further investigate those signatures in order to better qualify and understand relationship between the variability of proxies in this region and ENSO.

In this study, we first analyze both the sea surface temperature and sea surface salinity as observed over the recent period using a neural network methodology to qualify and quantify the specific contributions of ENSO to the Indo-Pacific climate variability. Those analyses are then extended to long-term climate simulations from the PMIP3/CMIP5 database to identify the signatures as simulated by an ensemble of coupled models, evaluate their stability in different climates (past, present, and future), and further understand the mechanisms driving the surface response to ENSO events in the Indo-Pacific.