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Impacts of Different Types of ENSO Events on Thermocline Variability in the Southern Tropical Indian Ocean

Abstract

Interannual variability in the thermocline depth in the southern tropical Indian Ocean (STIO) is analyzed by using reanalysis data from 1980 to 2017. The El Niño-Southern Oscillation (ENSO) exhibits a significant relationship with thermocline depth anomalies in this region, as demonstrated in previous studies. In this study, we find that the positive and negative phases of thermocline anomalies in STIO are induced by asymmetric forcings from the two phases of ENSO. EP-El Niño and CP-La Niña events tend to cause larger thermocline depth anomalies in the STIO. Equatorial westerly and STIO anticyclonic winds during EP-El Niño events can induce downwelling that extends far toward the western Indian Ocean, which dominates the westward propagation of thermocline anomalies, while upwelling during CP-La Niña events cannot extend that far west.

Keywords

eastern-Pacific (EP) and central-Pacific (CP) ENSO、thermocline

Reference

Yang, G., Liu, L., Zhao, X., Li, Y., Duan, Y., Liu, B., Huang, K., & Yu, W. (2019). *Impacts of different types of ENSO events on thermocline variability in the southern tropical Indian Ocean*. *Geophysical Research Letters, 46*(L047xx). https://doi.org/10.1029/2019GL082818