

The mixed layer variations in the marginal sea off the western coast of Sumatra associated with the MJO passage during the Pre-YMC and YMC

*Qoosaku Moteki¹, Masaki Katsumata¹, Kunio Yoneyama¹, Kentaro Ando¹, Takuya Hasegawa¹

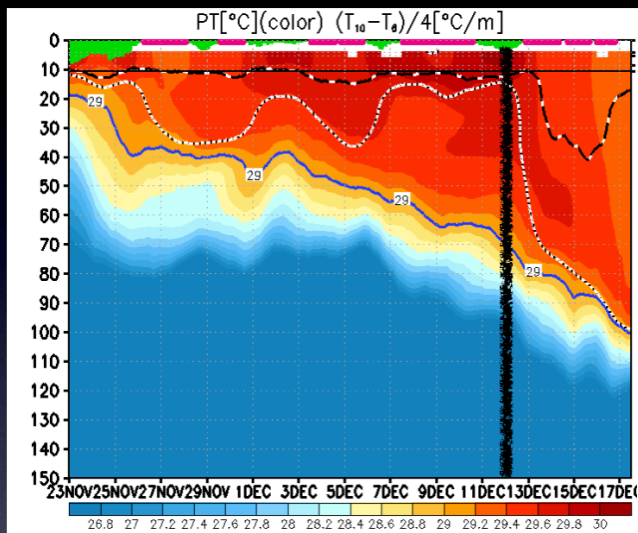
1. Department of Coupled Ocean-Atmosphere-Land Processes Research, Japan Agency for Marine-Earth Science and Technology

The mixed layer variations in the marginal sea off the western coast of Sumatra before and after the passage of the Madden Julian Oscillation (MJO) observed during the R/V Mirai cruises (Pre-YMC [Years of the Maritime Continent]: MR15-04 and YMC: MR17-08) are investigated. During the MR15-04 cruise, the halocline above 20 m depth was very strong before the MJO arrival, and the mixed layer depth (MLD) was very shallow (< 10 m). During the MR15-04 cruise, it was difficult to increase the MLD by the MJO wind bursts because of a very strong surface salinity stratification (> 0.1 psu/m) before the MJO. In contrast, during the MR17-08 cruise, the layer of 20-100 m was relatively mixed well in comparison with that in MR15-04 because of the stronger MJO wind bursts and the MLD was easily fluctuated due to the diurnal cycle of the surface heating. The difference of the MLD variations between MR15-04 and MR17-08 led the difference of the sea surface temperature tendency and could change the air-sea interaction processes under the MJO.

Keywords: ocean mixed layer, Madden Julian Oscillation

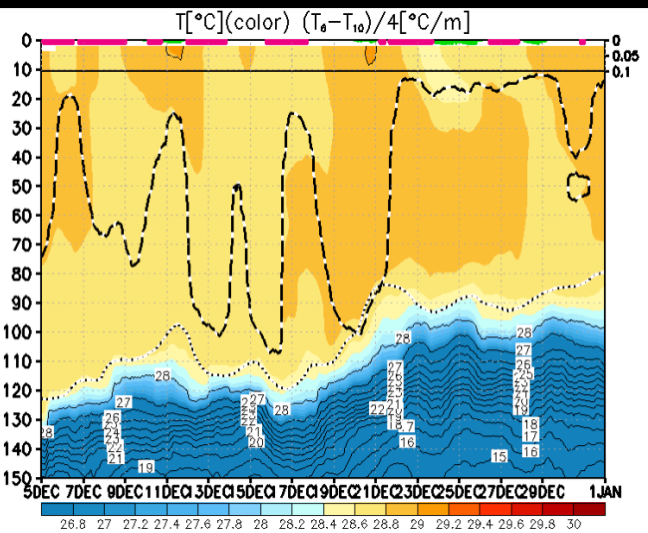
Pre-YMC2015

YMC2017



24h running mean
shallow ML/IL thin BL

before MJO



deep IL
fluctuating BL

after MJO