A NOVEL APPROACH TO IMPROVE THE ENSO AND IOD SIGNALS DETECTION IN THE INDONESIAN SEAS

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Abstract: Finding out the possible connections of two coupled ocean–atmosphere phenomena in the Indo-Pacific Oceans, El Nino-Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD), on sea surface temperature (SST), zonal-sea surface wind speed (U-WS) and rain rate (RR) of Indonesian Seas are challenging due to the location of Indonesian Seas that separates those two oceans. The characteristics of indices in Indonesian Seas are studied based upon data analysis of satellite observed datasets for the 10 year period from December 1999-November 2009. The results show that the indices are easily disturbed by a cyclic temporal variability, the 6 months variability; seasonal variability; and variability longer than 12 months. This cyclic temporal variability becomes a difficulty in separating the ENSO and IOD signals from the original signal of indices. The traditional method that used the 3 months moving averages of anomaly to detect the ENSO signal is more suitable for the area that free from a cyclic temporal variability. For this case, we have developed a method that generates ENSO and IOD signals by removing the cyclic temporal variability from the indices. This proposed method improves the detection of ENSO and IOD signal especially for the areas that show a cyclic temporal variability in the indices.

Keywords: Indonesian Seas, ENSO, IOD, cyclic temporal variability, moving averages.