

Determination of Indonesia Monsoon Index (INDOMI) based on the Equatorial Atmosphere Radar (EAR) and Wind Profiling Radar (WPR) data analysis

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This study is mainly concerned on determination of Indonesia Monsoon Index (INDOMI) based on the Equatorial Atmosphere Radar (EAR) at Kototabang, West Sumatera (0.2S; 100.32E, \pm 865 m from MSL). We have selected the zonal and meridional wind data of EAR for period of July 2001 to July 2008. By applying the bandpass filtering method that we call as the Fast Fourier Transform (FFT) and Wavelet (WL) technique, we have identified the characteristics of meridional wind velocity in frequency domain. The predominant peak oscillation that appear is Annual Oscillation (AO) for the meridional wind velocity that located between 8 to 18 km above mean sea level (MSL). While, the strongest of meridional wind is located around 14.1 km from MSL (that's equal to 200 hPa). At the same time period observation of EAR, we analyzed also the Global Monsoon Index as represented by the Indian Summer Monsoon Index (ISMI), Western North Pacific Monsoon Index (WNPMI), and Australian Monsoon Index (AUSMI), respectively. We found that all of the Global Monsoon Index have the same pre dominant peak oscillation as the AO, although they have different phases oscillation. By comparing that all the Global Monsoon Index and the meridional wind velocity of EAR, we found a good agreement between AUSMI especially, and the meridional wind velocity of EAR. By this result, we suspect that we can apply the AUSMI parameter to detect the Monsoon Signal over Indonesia, especially for the Western part of Indonesia region where EAR and other facilities observation is located now. A similar case, we are applying now the Wind Profiling Radar (WPR) data observation under the HARIMAU (Hydrometeorological ARray for ISV Monsoon AUtomonitoring) project to investigate the Monsoon Signal in the Upper Troposphere/Lower Stratosphere, especially over Pontianak and Biak. Detailed information of these results will be discussed clearly at this full paper.

Keywords: INDOMI, AUSMI, EAR, and WPR