

Preliminary Results of Identification of Rainfall Characteristics over Kototabang, Pontianak, and Biak Based on the EAR and WPR Data Analysis

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ABSTRACT

As we know that Kototabang, Pontianak and Biak are located in equatorial region, but they have different characteristics of rainfall intensity. Since, Kototabang is located nearby the center of deeply convection in the Indian Ocean, we suspect that most of water vapor will be propagated from Indian to the Pacific Ocean. Based on the EAR, WPR, in-situ rainfall data, NCEP/NCAR Re-Analysis, GPCP (Global Precipitation Climatology Project), and OLR (Outgoing Longwave Radiation) data analysis from March 2007 to February 2008, we found that Kototabang is mostly characterized by the Monsoon that slightly appeared December and June for wet and dry condition, respectively. The predominant peak of Westerly wind oscillation is usually occurred in December, while the Easterly oscillation in June, respectively. In Pontianak, we found that Westerly wind is dominated in both December, and June, respectively. While, in Biak the Easterly wind oscillation dominates both in December and June, respectively. The result of vertical profile zonal wind anomaly analysis shows that the Madden Julian oscillation (MJO) activities appears in all sides (Kototabang, Pontianak, and Biak), although with different effects. By applying the Power Spectral Density (PSD) analysis of zonal wind anomaly, we found that Kototabang and Biak has a similar predominant peak oscillation about 45 days, while Pontianak has 55 days oscillation. All those complicated problems due to the characteristics of zonal, meridional, and vertical wind anomaly taking from the EAR and WPR data analysis due to the characteristics and rainfall intensity over Kototabang, Pontianak, and Biak will be discussed in this paper.

Seperti diketahui bahwa Kototabang Pontianak, dan Biak memiliki lokasi di dekat ekuator, tetapi masing-masing memiliki karakteristik intensitas curah hujan yang berbeda. Dikarenakan Kototabang berlokasi di dekat pusat konveksi di Samudera Hindia, kami menduga bahwa uap air akan menjalar dari Samudera Hindia menuju Samudera Pasifik. Berdasarkan analisis data EAR, WPR, data insitu curah hujan, NCEP/NCAR Re-analysis, GPCP (Global Precipitation Climatology Project), dan OLR (Outgoing Longwave Radiation) dari Maret 2007 sampai Februari 2008, kami menemukan bahwa pola curah hujan Kototabang termasuk pola Monsun yang menunjukkan kondisi basah pada bulan Desember dan kondisi kering di bulan Juni. Puncak osilasi angin baratan biasanya terjadi di bulan Desember, dan angin timuran di bulan Juni. Di Pontianak, kami menemukan angin baratan mendominasi di bulan Desember dan Juni. Sedangkan, di Biak angin timuran yang mendominasi kedua bulan tersebut. Hasil analisis profil vertikal anomali angin zonal menunjukkan bahwa aktivitas Madden Julian oscillation (MJO) terjadi di Kototabang, Pontianak dan Biak, meskipun efeknya yang berbeda. Berdasarkan analisis Power Spectral Density (PSD) anomali angin zonal, kami menemukan Kototabang dan Biak memiliki puncak osilasi yang sama sekitar 45 harian, sedangkan Pontianak memiliki osilasi 55 harian. Semua kompleksitas masalah yang dikarenakan karakteristik anomali angin zonal, meridional dan vertikal yang diambil dari analisis data EAR dan WPR serta karakteristik dan intensitas curah hujan di Kototabang, Pontianak, dan Biak akan didiskusikan dalam paper ini.

Kata Kunci : Equator, EAR, WPR, Monsoonal, MJO, Super Cloud Cluster, and Cross Correlation