AOGS 2005

Seasonal Variations of Precipitation Properties associated with Monsoon over Palau in the Western Pacific

H. KUBOTA, R. SHIROOKA, K. K. REDDY, T. USHIYAMA, T. CHUDA, S. IWASAKI, and K. TAKEUCHI

Institute of Observational Research for Global Change,
Japan Agency for Marine-Earth Science and Technology (IORGC, JAMSTEC)

In this study, we focused on the seasonal variations of precipitation properties over the western Pacific, particularly those associated with the wind direction of the monsoon. An observational project over Peleliu Island in the Republic of Palau was carried out and data on precipitation, equivalent cloud amount, and precipitable water were collected from 28 June 2001 to 30 April 2002. First, we defined the monsoon season over Palau as a period with 850 hPa zonal wind sounding data with sustained winds exceeding 5 m/s. The westerly wind regime continued until 25 November 2001, and the next westerly wind regime began on 18 May 2002. The equivalent cloud amount increased during the period when the westerly wind intensified. The precipitation had a diurnal variation in the active phase of the westerly wind regime, increasing from nighttime to early morning and decreasing in the afternoon. The diurnal variation was weak in the inactive phase and had a lesser afternoon maximum. Precipitation intensity was high and its duration was short during the westerly wind regime.

The precipitable water decreased during the easterly wind regime when a dry period appeared, and precipitation was also suppressed during those days. However, there was small difference between the precipitation amounts of the westerly and easterly wind regimes. The equivalent cloud amount did not decrease as the zonal wind direction changed to easterlies during the easterly wind regime. We noticed no diurnal variation of precipitation during the easterly wind regime. These differences in the precipitation properties during westerlies and easterlies may be related to the seasonal variation of humidity in the environment.

Keywords: monsoon, precipitation properties, western Pacific