

Rainstorm Characteristics over the Northeastern Region of Thailand: Weather Radar Analysis

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Abstract : Radar reflectivity data from Phimai weather radar station of DRRAA (Department of Royal Rainmaking and Agricultural Aviation) were used to analyze the rainstorm characteristics via Thunderstorm Identification Tracking Analysis and Nowcasting (TITAN) algorithm. The Phimai weather radar station was situated at Nakhon Ratchasima province, northeastern Thailand. The data from 277 days of rainstorm events occurring from May 2016 to May 2017 were used to investigate temporal distribution characteristics of convective individual rainclouds. The important storm properties, structures, and their behaviors were analyzed by 9 variables as storm number, storm duration, storm volume, storm area, storm top, storm base, storm speed, storm orientation, and maximum storm reflectivity. The rainstorm characteristics were also examined by separating the data into two periods as wet and dry season followed by an announcement of TMD (Thai Meteorological Department), under the influence of southwest monsoon (SWM) and northeast monsoon (NEM). According to the characteristics of rainstorm results, it can be seen that rainstorms during the SWM influence were found to be the most potential rainstorms over northeastern region of Thailand. The SWM rainstorms are larger number of the storm (404, 140 no./day), storm area (34.09, 26.79 km²) and storm volume (95.43, 66.97 km³) than NEM rainstorms, respectively. For the storm duration, the average individual storm duration during the SWM and NEM was found a minor difference in both periods (47.6, 48.38 min) and almost all storm duration in both periods were less than 3 hours. The storm velocity was not exceeding 15 km/hr (13.34 km/hr for SWM and 10.67 km/hr for NEM). For the rainstorm reflectivity, it was found a little difference between wet and dry season (43.08 dBz for SWM and 43.72 dBz for NEM). It assumed that rainstorms occurred in both seasons have same raindrop size.

Keywords : rainstorm characteristics, weather radar, TITAN, Northeastern Thailand

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