

On the development an object-oriented tracking method for thunderstorms during summer monsoon season based on radar reflectivity over the middle of Thailand

Nattapon Mahavik (1*), Sasithon Chatsudarat (1), Aphittha Yodying (2), Kamonchat Seejata (2)

¹Department of Natural Resources and Environment, Faculty of Agriculture Natural Resources and Environment, Naresuan University, Phitsanulok, 65000, Thailand

²Department of Civil Engineering, Faculty Engineering, Naresuan University, Phitsanulok, 65000, Thailand

Email: nattaponm@nu.ac.th

Abstract: Monitoring thunderstorms activities are crucial part of operational tropical regions, including Thailand, to warn people for their safety life from potential hazard. Using reflectivity from ground-based radar, monitoring thunderstorm can be done on short-time prediction within few hours to inform, people that may have potential affects. In this study, we have focused on development thunderstorm tracking method based on 2-D radar data observed by Department of Royal Rainmaking and Agricultural Aviation (DRRAA). The observation frequency of DRRAA to scan radar is at every 6 min per volume. Thus, the spatio-temporal is very fine to be used in development of the tracking method. These radar data is publicly released after the processing by DRRAA as image. There is difficulty to users in their own usage this information in prediction thunderstorm for them due to the raw radar image is not well informative. Therefore, we intended to develop an object-oriented tracking method inspired by the method developed and used in Spain (Rigo et al., 2010; Rigo et al. 2004). The developed method is based on identification convective centroid to project the history path of those identified thunderstorm from 2-D reflectivity. Those identified path will reveal thunderstorm characteristics such direction, velocity, intensity. These all works are done in Python script. All of the developed codes will be transferred to DRRAA for their test toward assistance on their operations.

Keywords: radar tracking, radar reflectivity, middle of Thailand, thunderstorm