



Radar-derived characteristics of convective and stratiform storm in the Western Ghats region

Subrata Kumar Das, U. V. Murali Krishna, and Sachin M. Deshpande
Indian Institute of Tropical Meteorology, Pune-411008; e-mail: subrata@tropmet.res.in

Understanding the convective and stratiform precipitation is important due to their role in the release of latent heat. In general, the convective system forms a heating effect in the troposphere, while the stratiform regime generally cools the lower troposphere. The Western Ghats (WGs), located almost parallel to the west coast of the Indian peninsula receives enormous amount of rainfall (~6000 mm) during the summer season (June-September). Therefore, a comprehensive analysis is required over the WGs to understand the contribution of convective and stratiform storm to the total precipitation. The Doppler weather radar based on reflectivity measurements will be an ideal tool to diagnostically separate areas of convective and stratiform storm.

In this study, the data from the X-band (~9.53 GHz) scanning Doppler radar is utilized to examine the convective and stratiform fraction. The radar is deployed at Mandhardev (18.04°N, 73.87°E, ~1.3 km AMSL), complex mountain terrain of the WGs. A texture-based analysis is applied to radar data to separate into convective and stratiform components. The analysis is performed on the reflectivity data which has been corrected for the rain attenuation. Results showed the frequencies of stratiform components are much higher than those of convective fractions. An attempt has been made to understand the initiation and evolution of the convective and stratiform systems and examine their variability in the diurnal as well as in the intra-seasonal time scale. Details will be presented in the upcoming symposium.