



Precipitation measurements in Tropical Southern India-Case studies using Doppler weather radar

G. Viswanathan & Vikas Shellar

ISRO Radar development unit (ISRAD)

Indian Space Research Organization (ISRO)

A1, Peenya Industrial Estate, Peenya P.O.

Bangalore – 560058, India

E mail : gemsvi@yahoo.com, director@israd.gov.in

Fax: +91-80-28398257

With the development & commissioning of a long range Doppler Weather Radar System at the spaceport of India. Viz., Satish Dhawan Space Centre, Sriharikota (SDSC-SHAR), an Island on the East Coast of Southern India in the year 2002, paved the way for characterizing tropical precipitation in a quantitative way. The Doppler Weather Radar provides the three base products. Viz., precipitation intensity (Z), the Mean Doppler Velocity (V), and spectral width sigma, the three moments of the time series data. The Radar also provides a number of derived products like CAPPI (Constant Altitude Plan Position Indication), Vertically Integrated Liquid Level (VIL), Surface Rainfall Intensity (SRI) and Rain Fall Accumulation. Sriharikota being a tropical coastal location situated on the Bay of Bengal is visited by the North East Monsoon during the months September to November. As the southwest monsoon advances over the rest of the country land area around Sriharikota being mountainous will be visited by a number of thunderstorms in the summer months. The Radar also is ideally located to characterize the cyclones forming over the Bay of Bengal. Being located at ISRO's launch site the Radar provides information for launch commit criteria in terms of weather, a feature which is very crucial, when satellite launch vehicle missions are planned especially during the seasons when severe weather is encountered. The data products generated from the Radar have helped in providing the meteorologists of

both the India Meteorological Department as well as the Satish Dhawan Space Centre, sufficient advance warning with respect to these severe weather events. The paper provides a number of case studies in precipitation sensing during the different severe weather events like thunderstorms and cyclones.