

# **A case study of raindrop size distribution over a tropical Indian station**

A. P.K Kunhikrishnan(1), B. R.Sivaraman(2), C. Denny P Alappattu(1)

(1) Space physics laboratory, Vikram Sarabhai Space Centre. Trivandrum 695022, India, pk\_kunhikrishnan@vssc.org / Fax: +91-471-2706535, (2) Satcom and IT applications area ,Space Application Centre, Ahmedabad-380015

Models for drop size distribution is required for the evaluation of microwave and millimetre wave propagation effects due to rainfall. There is a dearth of raindrop size data and models for the tropics, especially over Indian continent. Under Ka band propagation experiment over Indian tropical region, disdrometers, microwave rain radars and tipping bucket rain gauge are installed at Ahmedabad, Thumba and Shillong. This paper describes the raindrop size distribution observed at Thumba, a tropical Indian coastal station, during southwest monsoon period. The disdrometer is operational from June 2005 onwards. Microwave rain radar (MRR) and tipping bucket rain gauge are installed on Sept 2005. Disdrometer data collected during July to September are analysed to study the rain drop spectra. During July to October 2005, 525 mm rainfall was received over Thumba. During this period rain intensity varied from 0.1 mm/hr to 130 mm / hr. Disdrometer measured rain is compared with rain gauge measurements and showed good agreement. The disdrometer data collected during the period was analysed to understand the drop size distribution for different rain rates. The analysis shows that the drop size follows a lognormal distribution for rain rate varying from 20 to 50 mm/hr fairly well. For rain rates more than 80 mm / hr the drop size spectra doesn't follow well the lognormal distribution. This is also the case with drop size distribution for rain rate less than 10 mm / hr. Details will be presented in the paper.