

Rain Drop Size Distribution during Convective and Stratiform Period over Pune

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OBJECTIVES:

- 1.To distinguish Convective and Stratiform Periods using Disdrometer datasets.
- 2.To study spacial variability of Rain Drop Size Distribution (DSD).

Data Used

• Disdrometer data

1. Laser Optical (Parsivel) Disdrometer (S. P. Pune University)

➤ The device works on the extinction principle and measures precipitation particles using the shadowing effects they cause when they pass through a laser beam.

The following parameters derived by the Parsivel Disdrometer were use for our study

- Size Spectrum
- Intensity of the precipitation
- Radar reflectivity
- Accumulated rainfall



2. Joss-Waldvogel Disdrometer (IITM)

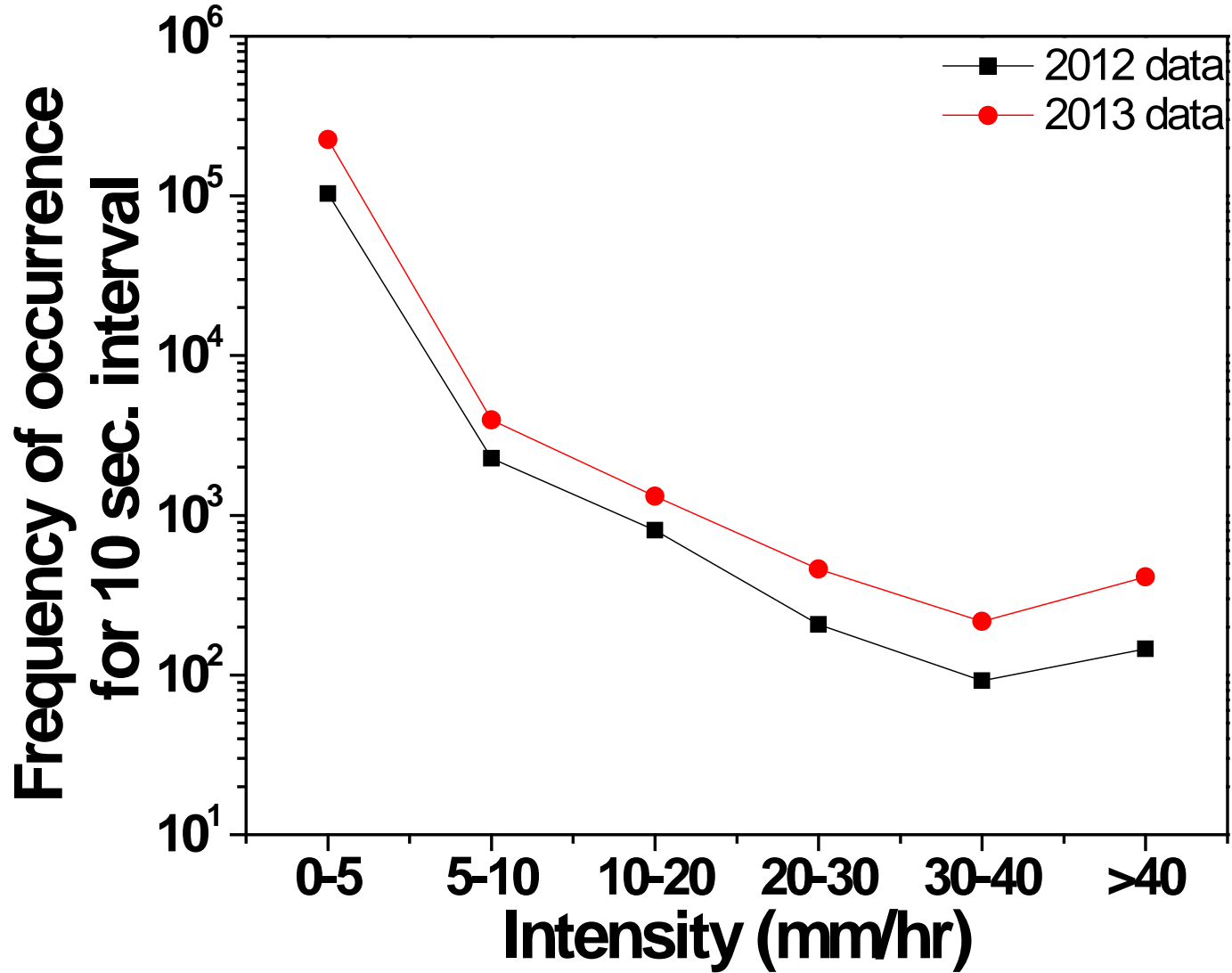
➤ The instrument transforms the vertical momentum of impacting raindrop into an electrical pulse whose amplitude is function of the drop diameter.

The following parameters derived from Joss-Waldvogel Disdrometer were use for this study:

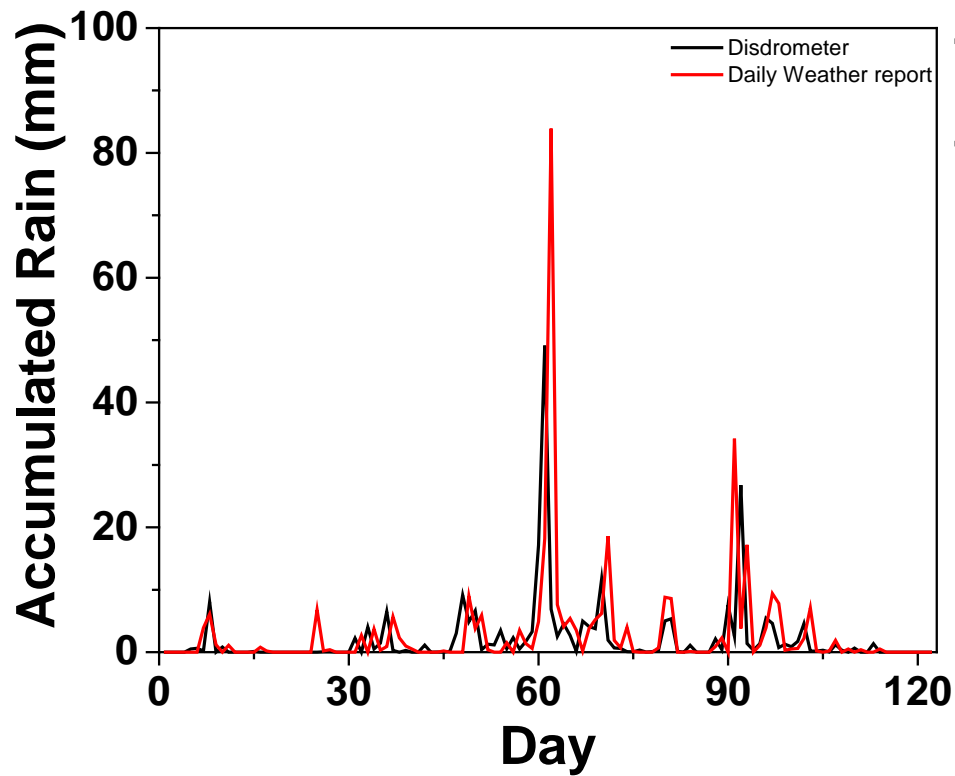
- Size Spectrum
- Rain Rate
- Radar reflectivity



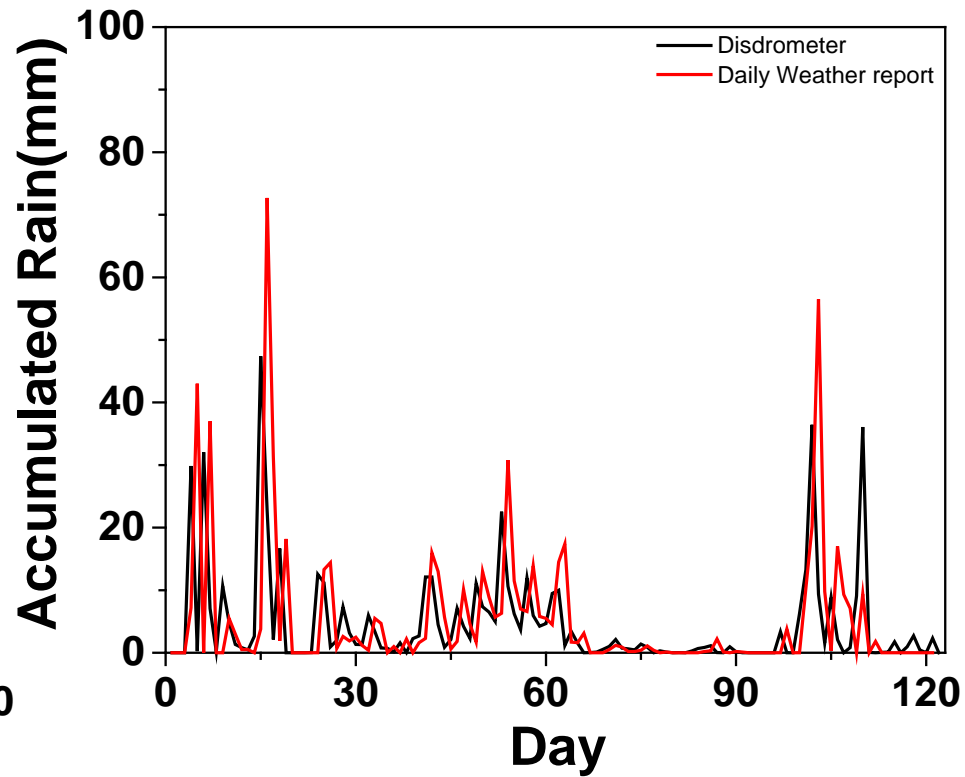
JJAS- 2012 and 2013 (Station-University of Pune)



2012



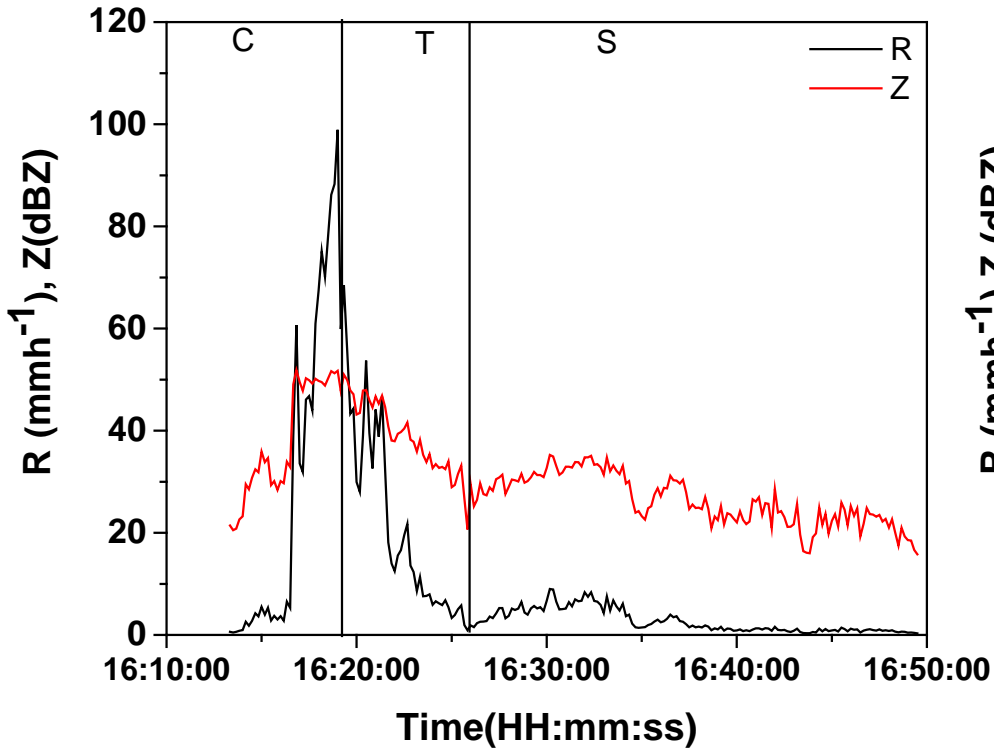
2013



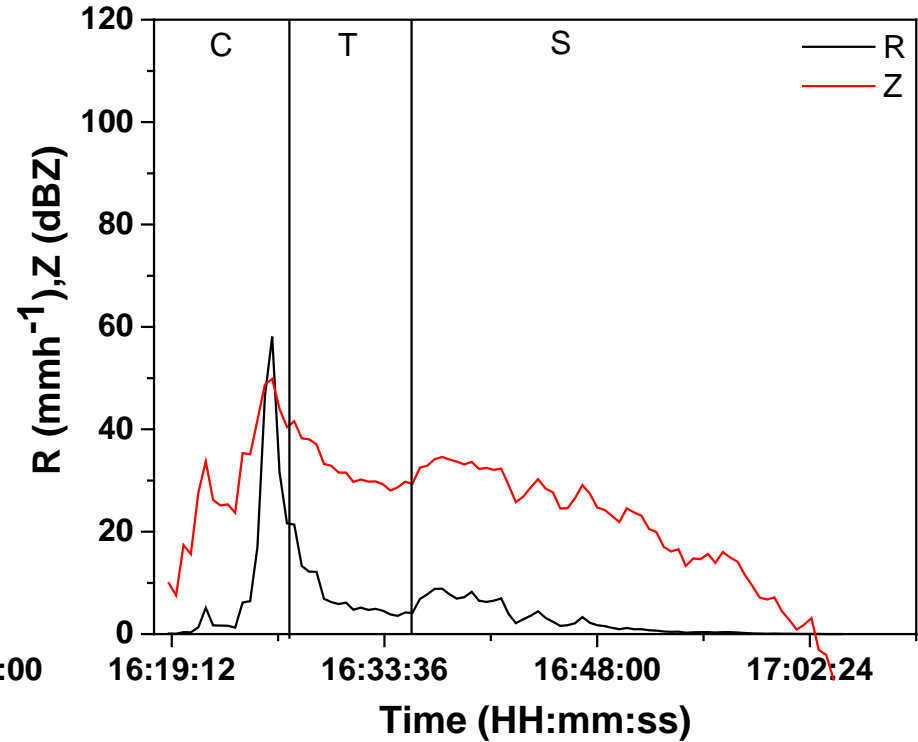
Inter comparison of two datasets :

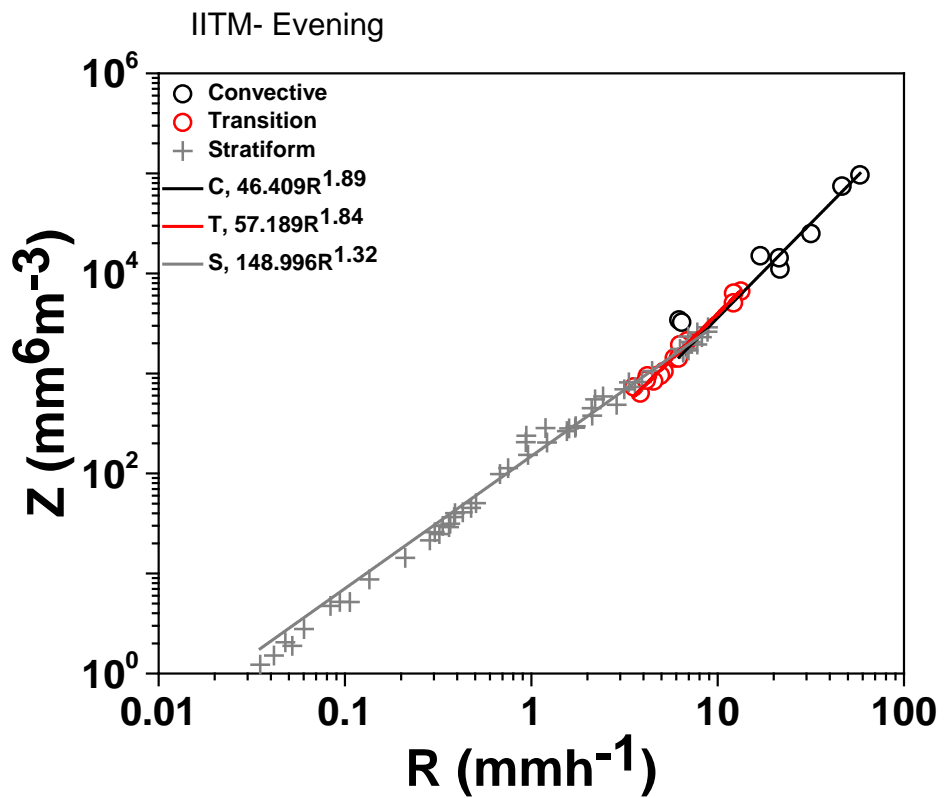
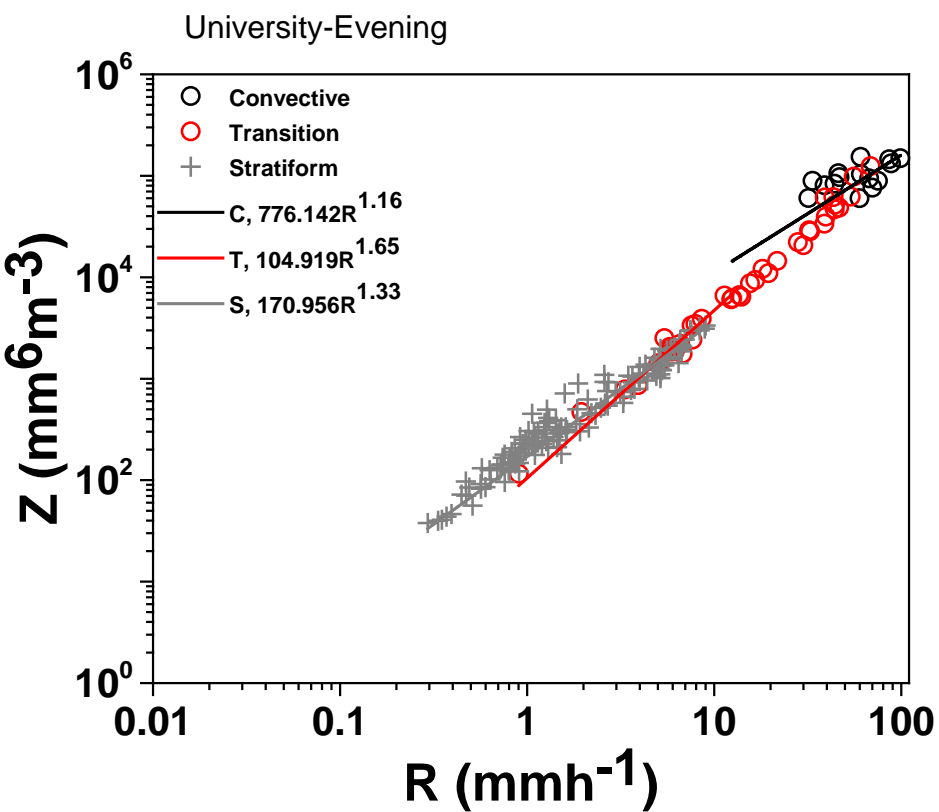
Data from University (Parsivel/laser-optical disdrometer), and IITM (Joss-Waldvogel disdrometer) - Case: 18-9-2013.

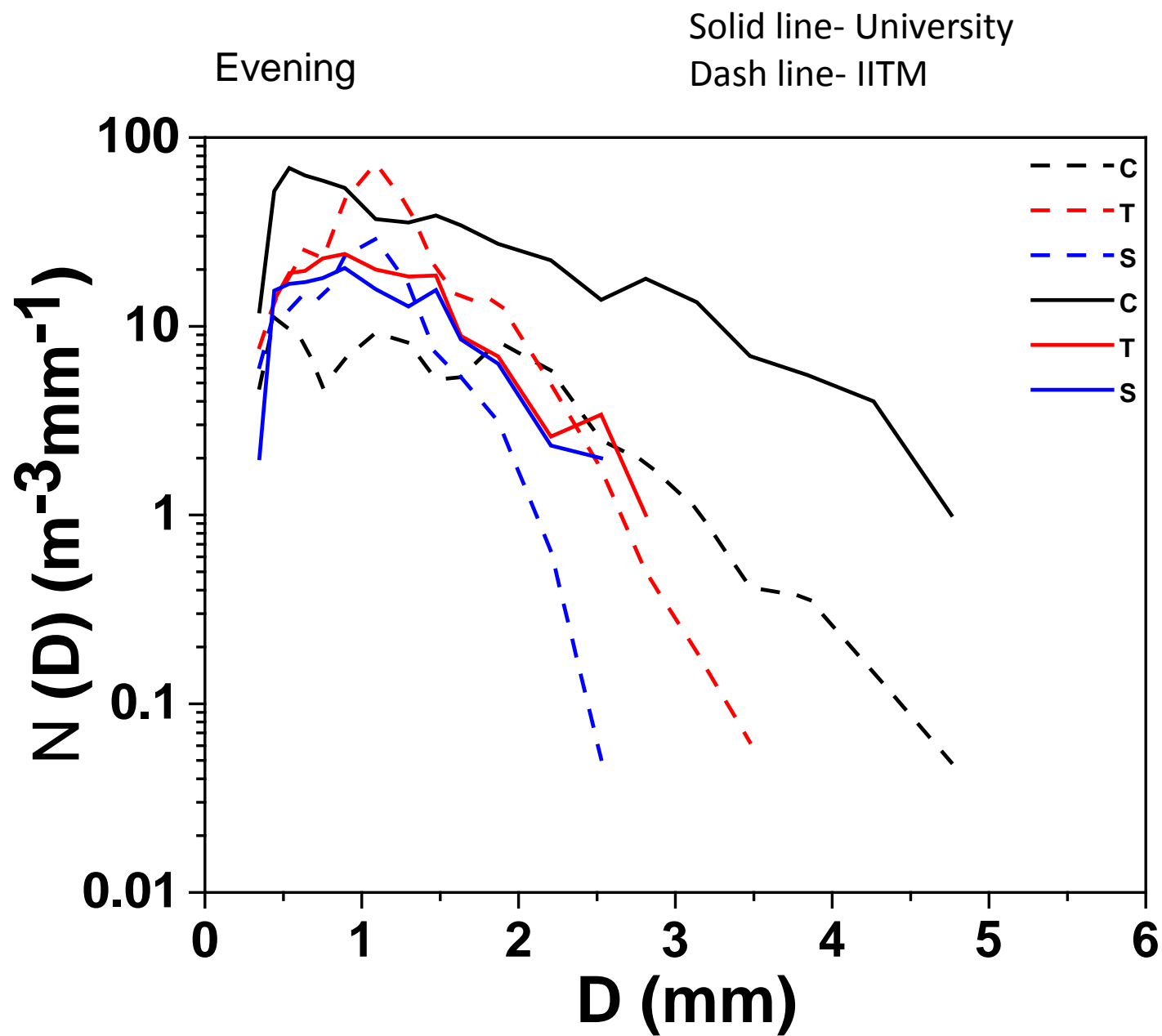
University- Evening

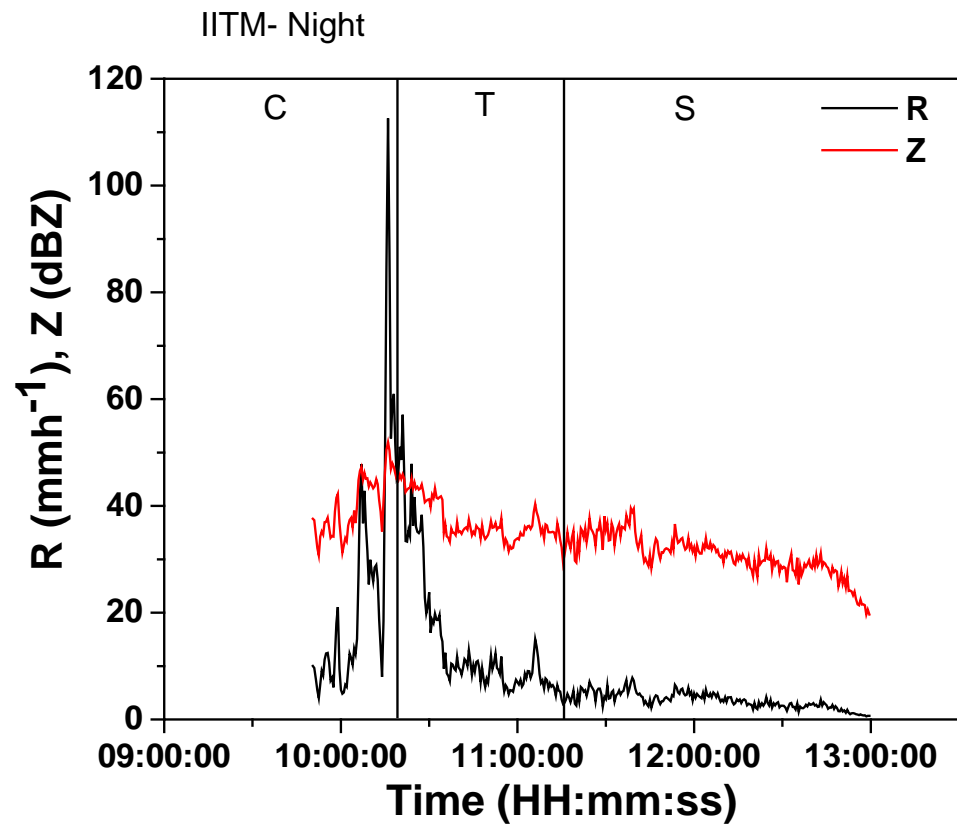
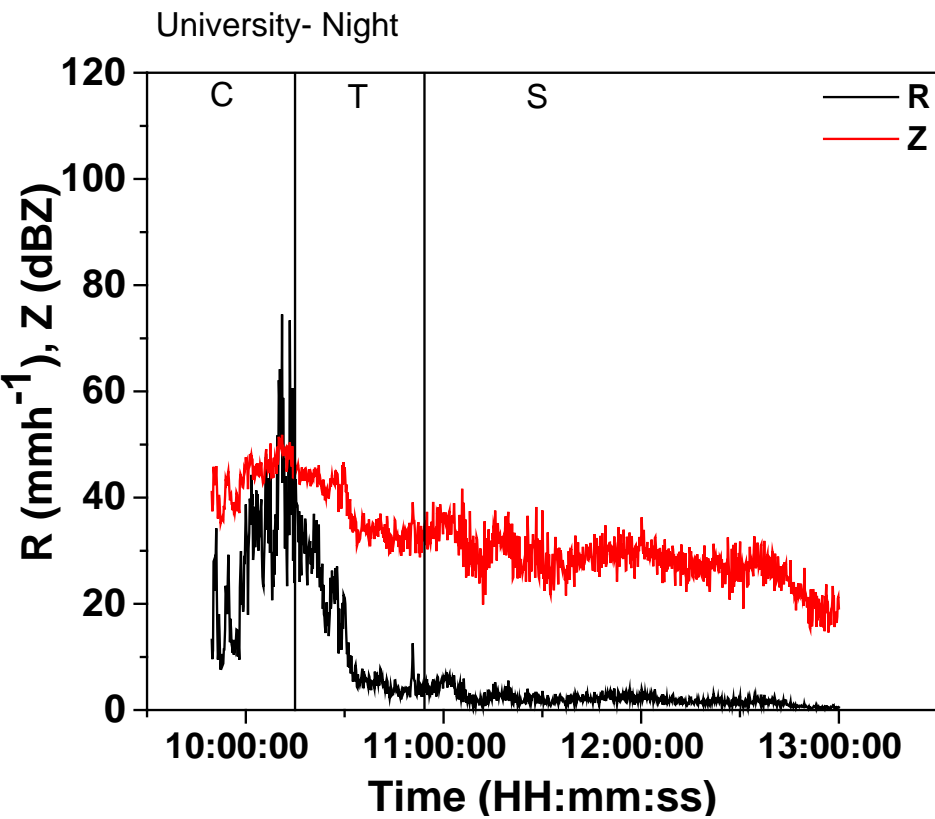


IITM-Evening

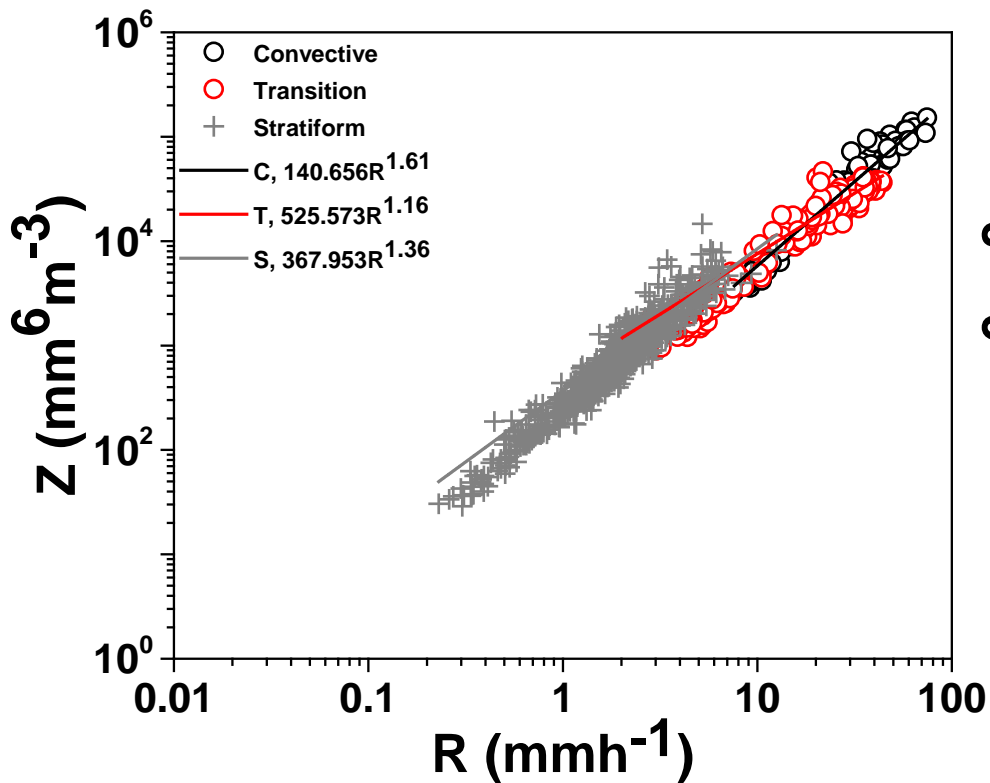




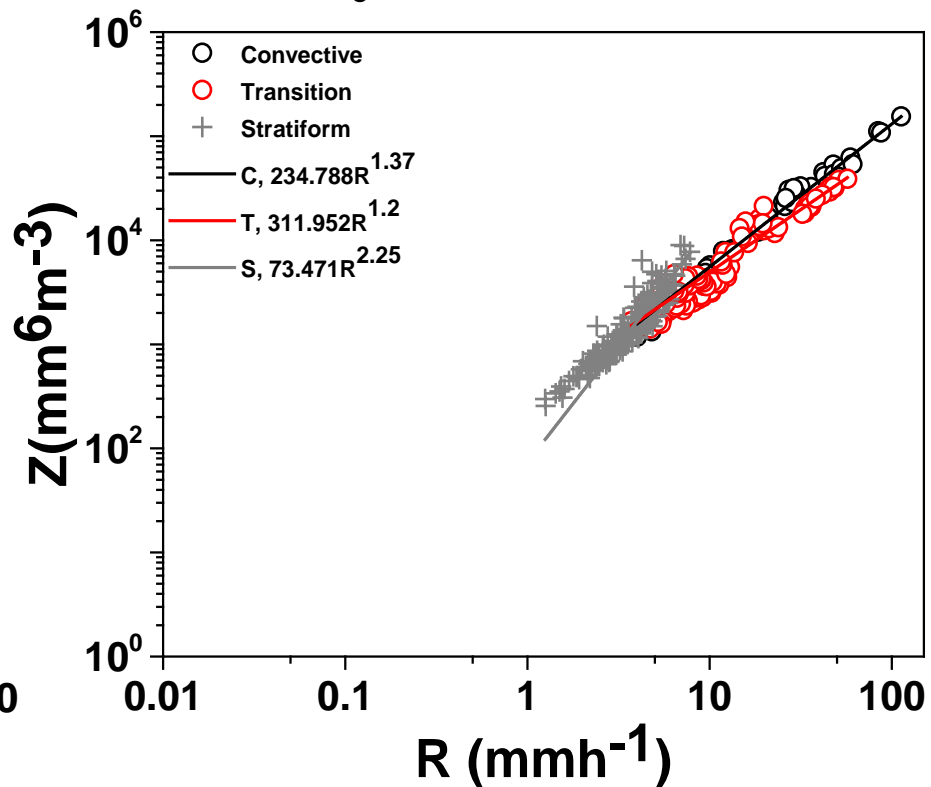




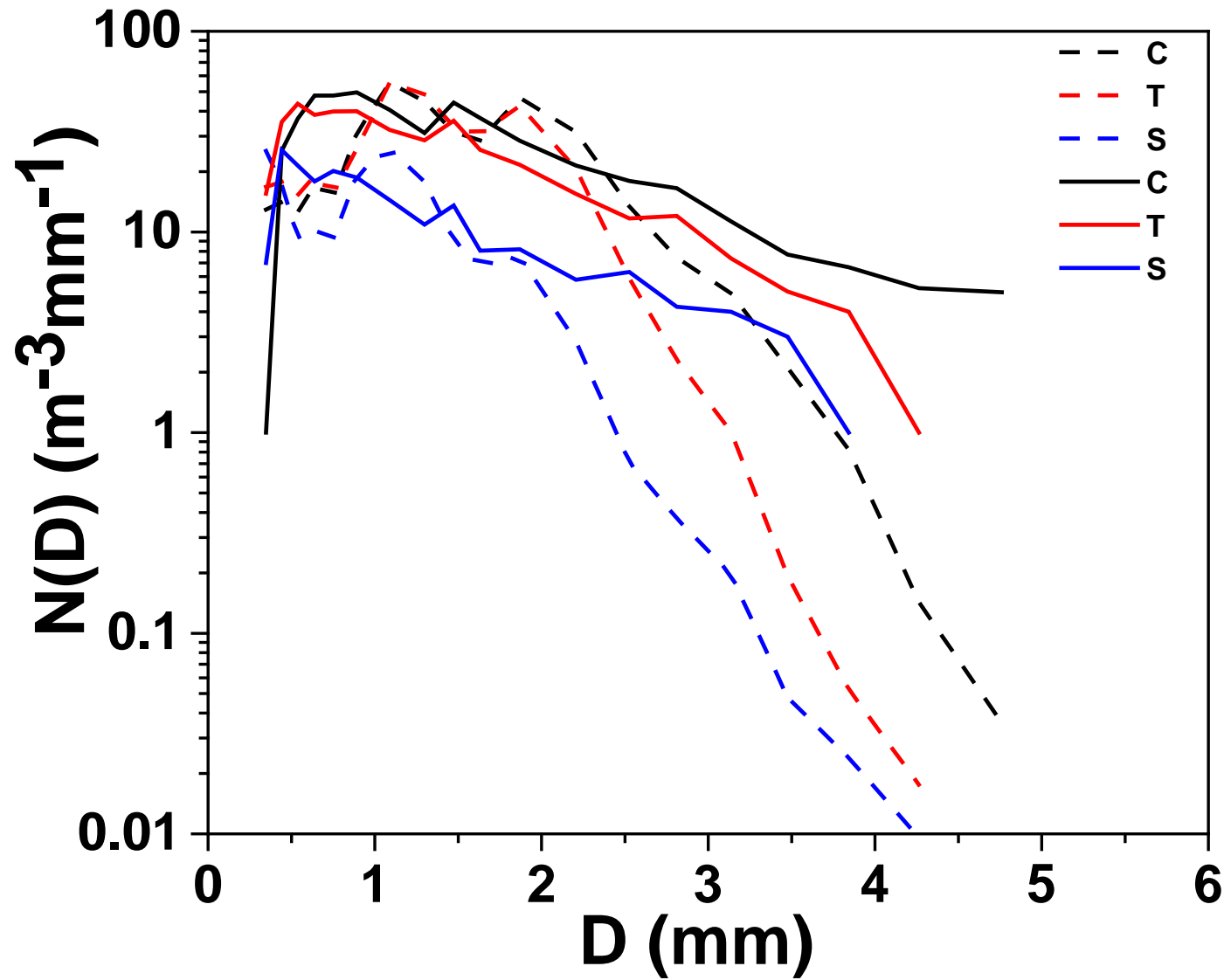
University- Night



IITM- Night



Night



CONCLUSIONS :

- Frequency of occurrence of different rain intensities in year 2012 is less than frequency of occurrence in year 2013.
- Accumulated rain(mm) obtained from Disdrometer and Daily weather report are in good agreement only difference is that, Disdrometer has tendency to slightly underestimate than Daily weather report values at high values of accumulated rain.
- For higher rain rates DSDs fluctuates within broad spectra of drop sizes.
- From case study of inter comparison between two datasets (University and IITM) it is observed that for higher 'a' values of Z-R relation we are getting lower 'b' values.
- For case study (Evening: 18-9-2013) we observed that the number of drops are less over IITM than over University which is attributed to a rain intensity spell.

THANK YOU