National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Analyzing the Air Pollution and Precipitation Interactions by Raindrop Size Distributions of Pre-monsoon Season over an Industrial Tropical Indian Station
Speaker	: Prof. Bhishma Tyagi
Supervisor	: 8125817908
Venue	: ER-303 Class Room
Date and Time	: 26 Sep 2024 (04:00 PM)
Abstract	: Precise quantitative precipitation estimation and forecasting depend on an understanding of raindrop size distribution (RSD). The present study examines the microphysical characteristics of RSD in both polluted and non-polluted contexts at an industrial tropical Indian station, Rourkela, Odisha. This study examined the impact of pollution on precipitation using pre-monsoon in-situ (disdrometer) and reanalysis (ERA5) data for the years 2018–2021. The air quality index (AQI) value over the Rourkela region was provided by the Central Pollution Control Board (CPCB), Government of India. This value was used to determine the day of polluted rains. Convective rainfall was found to have higher concentrations and larger mean diameters when precipitation on days with and without pollution was separated into stratiform and convective types. The RSD empirical relations (Z- R, $\mu - \lambda$, D m -R, N w -R) also showed a noteworthy difference between the polluted and non- polluted rainfall days. The results disclosed that non-polluted rainfall has higher concentration of small-diameter raindrops, whereas polluted day rain has higher concentrations of midsize and large-diameter raindrops.