

# **Physical Research Laboratory**

## **Ahmedabad**

### ***Space & Atmospheric Sciences Division***

#### **Division Seminar**

**Title: “Atmospheric composition over South Asia: Model simulations versus observations”**

**Speaker: Ms. Lakhima Chutia**

Centre for Atmospheric Studies, Dibrugarh University, Assam

**Date: 23 September 2019**

**Venue: Ground Floor Lecture Hall**

**Time: 11:00 hrs**

#### **Highlight of the talk:**

Atmospheric composition over South Asia has been changing rapidly in response to anthropogenic activities as well as the changes in the land-use and climate over the region, however, systematic observations over different environments are sparse here. Modeling studies that could fill this gap also remain highly limited in this region. In this direction, a regional (WRF-Chem) and a global atmospheric chemistry model (CAMS) are used to investigate the distribution of trace gases over South Asian region. WRF-Chem results for O<sub>3</sub>, CO, NO<sub>x</sub>, and SO<sub>2</sub> are seen to be in agreement with in situ observations showing the model's ability in reproducing contrasting chemical environments across the Indian subcontinent. This model further reveals the western coast, eastern India and the Indo-Gangetic Plain as the regional hotspots of intense photochemistry in agreement with the satellite retrievals. Lower ratio of glyoxal to formaldehyde suggested dominant influences of the anthropogenic emissions on the distribution of Volatile Organic Compounds (VOCs) over the Indian subcontinent, except the northeastern region, where biogenic emissions played important role. Analysis of a long-term CAMS simulation reveals rise in SO<sub>2</sub> until 2015 especially over the industrial regions related with power generation. SO<sub>2</sub> trend additionally influenced the distribution of sulfate aerosols over this region which has implications for the regional climate.

**All interested are welcome.**