Physical Research Laboratory
Ahmedabad

Space & Atmospheric Sciences Division

Division Seminar

Title: **"Strengthened Indian summer monsoon precipitation susceptibility linked to dust-induced ice cloud modifications"**

Speaker**: Piyushkumar N. Patel**

Date: **19 November 2018**

Venue: **Ground Floor Lecture Hall**

Time: **11:00 hrs**

Highlight of the talk:

Most previous studies have focused on the impacts of anthropogenic aerosols on monsoon rainfall and variability. However, recent studies showed that only 25% contribution of global emissions are from anthropogenic aerosol, whereas natural dust sources globally account for 75% of emissions. A growing body of research has underscored the radiative impact of mineral dust in potentially influencing the Indian summer monsoon rainfall variability. However, the various mechanisms remain poorly understood especially from an dust-cloud-precipitation interaction perspective, which is among the largest sources of uncertainties in climate forcing. Additionally, the radiative forcing due to aerosol-ice cloud interactions (reported to be between -0.67 W m-2 and 0.70 W m-2), represents the largest source of uncertainty in climate forcing, which needs to be better understood and constrained. This demands improved sub-grid scale process-level understandings using precise, stable and long-term measurements of dust and ice-cloud properties at regional and global scales. In this context, 11-years of multi-satellite observations along with reanalysis data revealed a dust-induced microphysical-dynamical coupling leading to the deepening of ice-clouds and strengthening of precipitation susceptibility. Some of these results and their relevance to climate change will be discussed in this seminar.

All interested are welcome.