# Physical Research Laboratory
# Ahmedabad

## *(Space & Atmospheric Sciences Division)*

## ***Area Seminar***

Title: **"An Impacts of FORMOSAT-3/COSMIC (GPS) Soundings for the prediction of severe weather systems"**

Speaker**: Dr. Anisetty S. K. A. V. Prasad Rao**
National Central University, Taiwan

Date: **03 March 2017**

Venue: **Ground Floor Lecture Hall**

Time: **16:00 hrs**

**Highlight of the talk:**

Global Position System(GPS) soundings are assimilated to explore the impacts of GPS data on prediction of super Cyclone Gonu in 2007. Other data, including satellite data, radiosonde soundings and bogus vortex are also assimilated to highlight the relative contribution of GPS data to model prediction. Cyclone Gonu formed in the south central Arabian Sea and tracked west-northwestward into the Straights of Hormuz, reaching a peak intensity of 145 knots and a minimum sea-level pressure of 898 hPa before making a landfall in Iran. A series of experiments initialized with GPS refractivity from FORMOSAT-3/COSMIC (GPS), Special Sensor Microwave Imager (SSM/I) retrieved precipitable water and near-surface oceanic wind speed, GTS, QuickScatterometer (QuikSCAT) and bogus vortex are assessed by the model prediction using the advanced Weather Research and Forecasting (WRF) model with three dimensional variational data assimilation (3DVAR) to ingest these observations. Significant differences in cyclone track and intensity prediction are observed in various assimilations. GPS experiment outperforms other experiments in track prediction, while SSM/I improve intensity prediction. Sensitivity tests were conducted to identify which GPS soundings play a more important role in improvement of track prediction. It was found that the GPS soundings in the vicinity of Gonu vortex appear to modulate the environmental moistening conditions that lead to the impact on track prediction. Other sensitivity experiments show that retrieved GPS data information at upper levels greatly contributes to track prediction.

**All interested are welcome.**