Title: - Analyzing Signatures of Tohoku-Oki Earthquake (Japan) in the Ionosphere

Speaker: Mr. Sunil Saini (RS-III yr)

Abstract: - Earth's active plate tectonics give rise to various seismic events, including earthquakes, tsunamis, and volcanic eruptions, particularly along plate boundaries. During large earthquakes, approximately 10^{-4} to 10^{-5} of the total seismic energy transfers into the atmosphere through mechanical coupling between the Earth and its atmosphere. Surface deformations above the earthquake hypocentre oscillate the overlying atmosphere through direct epicentral waves. Apart from these, Rayleigh wave-induced acoustic waves and tsunami-induced gravity waves also propagate to the atmosphere. These atmospheric waves propagate to the ionosphere, causing Co-seismic Ionospheric Disturbances (CIDs) through neutral-ion collisions. These disturbances can be measured using GNSS-derived Total Electron Content (TEC) data. As GNSS satellite signals propagate through the ionosphere, they experience delays proportional to the TEC along the satellite-receiver line of sight.

This presentation will provide an overview of these processes and discuss observations of ionospheric perturbations generated during the **Mw 9.1 11 March 2011 Tohoku-Oki Earthquake,** Japan.