

(For Session S7)

**AN OVERVIEW OF SCIENTIFIC AND SPACE WEATHER RESULTS FROM THE
COMMUNICATION/NAVIGATION OUTAGE FORECASTING SYSTEM (C/NOFS)
MISSION**

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The Communication/Navigation Outage Forecasting System (C/NOFS) Mission of the Air Force Research Laboratory is described. C/NOFS science objectives may be organized into three categories: (1) to understand physical processes active in the background ionosphere and thermosphere in which plasma instabilities grow; (2) to identify mechanisms that trigger or quench the plasma irregularities responsible for signal degradation; and (3) to determine how the plasma irregularities affect the propagation of electromagnetic waves. The satellite was launched in April, 2008 into a low inclination (13°), elliptical (400 x 850 km) orbit. The satellite sensors measure the following parameters *in situ*: ambient and fluctuating electron densities, AC and DC electric and magnetic fields, ion drifts and large scale ion composition, ion and electron temperatures, and neutral winds. C/NOFS is also equipped with a GPS occultation receiver and a radio beacon. In addition to the satellite sensors, complementary ground-based measurements, theory, and advanced modeling techniques are also important parts of the mission. We report scientific and space weather highlights of the mission after nearly four years in orbit.