

(For Session S7)

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

R. Pfaff, NASA/Goddard Space Flight Center, Greenbelt, MD 20771, USA
O. de la Beaujardiere, D. Hunton, Air Force Research Laboratory, Kirtland AFB,
Albuquerque, NM

R. Heelis, University of Texas at Dallas, TX

G. Earle, Virginia Tech University, VA

P. Strauss, The Aerospace Corporation, CA

P. Bernhardt, Naval Research Laboratory, Washington DC

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.