

Space Science Seminar
Tuesday, 2022 December 6
10:30 a.m.
NASA/MSFC TEAMS

Ionospheric Scintillation and Equatorial Plasma Bubbles: The Science of the SPORT mission

Dr. Linda Krause / NASA/MSFC

Host: Dr. Alphonse Sterling (Sponsored by ST13)

The Scintillation Prediction Observation Research Task (SPORT) satellite was developed by a joint team of scientists and engineers from the United States and Brazil to study terrestrial ionospheric space weather and its effects on satellite-based radio systems. The mission is tailored to take both in situ and remote sensing measurements of the near-Earth space environment and artificial radio signals to investigate the circumstances under which the Earth's ionosphere is susceptible to plasma instabilities that ultimately disrupt transionospheric radio waves in the form of ionospheric scintillations. SPORT was launched aboard the crew resupply mission CRS-26 to the International Space Station (ISS) on November 26th, 2022. The mission science objectives are to 1) Understand the unique role that longitudinal variability plays on the dynamics of equatorial plasma bubbles (EPBs), and 2) Understand the solar, geomagnetic, and ionospheric circumstances necessary for EPBs to cause scintillation of GPS signals. The satellite, expected to be deployed into a low-Earth orbit (LEO) before the end of 2022, is instrumented with miniature versions of some of the most sophisticated ionospheric instruments to be packaged into a 6U CubeSat to date. These instruments include a Langmuir probe, a plasma impedance probe, an electric field probe, an ion drift meter, a vector magnetometer, and a GPS receiver modified to make radio occultation, scintillation, and total electron content measurements. The 3-axis-stabilized satellite will be deployed into a quasi-ISS orbit (52° inclination, 408km altitude) for a nominal one-year mission lifetime. This seminar will provide a background of EPBs and ionospheric scintillation, an overview of the mission science objectives, technical architecture, and operational concept, a description of the instruments and measurement objectives, and external data sources and physics-based models necessary to provide context for the SPORT data necessary to close on the science objectives.

Microsoft Teams meeting

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Meeting ID: 286 704 537 441

Passcode: ua4bxex

[Download Teams](#) | [Join on the web](#)

Or call in (audio only)

[+1 256-715-9946,,199983240#](#) United States, Huntsville

Phone Conference ID: 199 983 240#

[Find a local number](#) | [Reset PIN](#)

ALERT: All meeting participants consent to, and will abide by, the terms and conditions viewable at the LEGAL link below. No ITAR/EAR content display or sharing without consent from Export Control.

[Learn More](#) | [Help](#) | [Meeting options](#) | [Legal](#)