

86 -- 2017-03-07 19:15:41

Session 2B Paper 3

Spann, James: NASA Marshall Space Flight Center (NASA/MSFC)

Swenson, Charles: Utah State University (USU)

Durão, Otavio: Brazilian National Institute for Space Research (INPE)

Loures, Luis; Heelis, Rob; Bishop, Rebecca; Le, Guan; Abdu, Mangalathayil; Krause, Linda;

Denardin, Clezio; Shibuya, Lidia; Casas, Joseph; Nash-Stevenson, Shelia; Muralikrishana,

Polinaya; Costa, Joaquim; Banik de Padua, Marcelo; Wrasse, Cristiano; Craig

The Scintillation Prediction Observations Research Task (SPORT): An International Science Mission Using a CubeSat

The Scintillation Prediction Observations Research Task (SPORT) is a 6U CubeSat mission to address the very compelling but difficult problem of understanding the preconditions leading to equatorial plasma bubbles. The scientific literature describes the preconditions in both the plasma drifts and the density profiles related to bubble formations that occur several hours later in the evening. Most of the scientific discovery has resulted from observations at the Jicamarca Radio Observatory from Peru, a single site, within a single longitude sector. SPORT will provide a systematic study of the state of the pre-bubble conditions at all longitudes sectors to allow us to understand the differences between geography and magnetic geometry.

SPORT is an international partnership between NASA, the Brazilian National Institute for Space Research (INPE), and the Technical Aeronautics Institute under the Brazilian Air Force Command Department (DCTA/ITA). It has been encouraged by U.S. Southern Command (SOUTHCOM) to foster increased cooperation and ties between academics, civilian space programs and the militaries. NASA Marshall Space Flight Center is coordinating this investigation by overseeing the launch to orbit and the flight instruments, which are being built by the Aerospace Corporation, University of Texas Dallas, Utah State University, and NASA Goddard Space Flight Center. The Brazilian partners are contributing the spacecraft, observatory integration and test, ground observation networks, and mission operations and data management. The science data will be distributed from and archived at the INPE/EMBRACE regional space-weather forecasting center in Brazil, and mirrored at the NASA GSFC Space Physics Data Facility (SPDF).

This poster presents an overview of the SPORT mission, observation strategy, and science objectives to improve predictions of ionospheric disturbances that affect radio propagation of telecommunication signals. The science goals will be accomplished by a unique combination of satellite observations from a nearly circular middle inclination orbit and the extensive operation of ground based observations from South America near the magnetic equator.

