

The SPORT Mission and an Ad-Hoc Constellation in the Mid and Low-Latitude Ionosphere

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The Scintillation Prediction Observations Research Task (SPORT) is a 6U CubeSat mission to advance the scientific understanding of the preconditions leading to equatorial plasma bubbles. The scientific literature describes these preconditions in both the ionospheric drifts and the density profiles related to bubbles forming several hours later in the evening. SPORT, being deployed from the ISS, will provide a systematic study of the state of the pre-bubble conditions at all longitudes sectors to enhance understanding between geography and magnetic geometry. SPORT is an international partnership between Brazil and the United States. This talk will present an overview of the SPORT mission, observation strategy, and science objectives to improve predictions of ionospheric disturbances that affect radio propagation of telecommunication signals. We will also discuss how SPORT observations combined with observations from the FPMU on the ISS and upcoming missions like LAICE, LLITED, and SORTIE can be used as an ad-hoc constellation to study tidal forcing and day-to-day variability of the Earth's ionosphere. The upcoming combination of satellite observations from multiple nearly circular middle inclination orbit and the extensive operation of ground-based observations from South America near the magnetic equator present a unique scientific opportunity to study ionospheric variability.

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