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Technical Page

Proposal Type:	Regular
General Category:	Terrestrial Aeronomy
Sub-Category:	Radar
Observation Category:	Ionosphere
Total Time Requested:	42 Hours

Proposal Title: High-resolution observation of the electric field and neutral wind inside the nighttime traveling ionospheric disturbances

ABSTRACT:

We propose to measure both the electric field and meridional neutral wind with the high temporal resolution provided by the dual radar beams in order to clarify the physical mechanism of nighttime traveling ionospheric disturbances (TIDs). The significant question regarding nighttime TIDs is whether TIDs are a passive response to the neutral wind, as described by the classical theory, or are electrodynamism nature, as indicated by the Arecibo radar in 1993 [Miller et al., 1997]. To solve this problem, the electric field and neutral wind will be observed by the Arecibo radar and the Fabry-Perot interferometer, and the two-dimensional structures of TIDs will be detected by an all-sky camera. TIDs have a few hundred kilometer scale size and travel to the southwest with a velocity of 100m/s. Therefore, high temporal resolution observations are crucial in determining the relationship between the electric field, the neutral wind and phase of the TIDs.

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I NA want to do remote observing.

Instrument Setup

430 G 430 CH receiver 430 CH radar

Atmospheric Optical Instruments:

Fabry-Perot Ionosonde

Description of Observer Equipment: All-sky CCD camera

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned