

Technical Page

Proposal Type: Urgent
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Thermosphere
 Total Time Requested: 48 Hours
 Minimum Useful Time: 5 hours

Proposal Title: Two-dimensional, high-resolution measurements of gravity waves in the Arecibo thermosphere

ABSTRACT:

Tracers of atmospheric gravity waves (AGWs) have been observed in the Arecibo thermosphere using a very sensitive measurement of electron density afforded by the incoherent scatter plasma line [3-5]. The electron density fluctuations as a function of time and altitude give information on the properties of the AGWs that perturb the neutral atmosphere and indirectly the ionosphere through periodic plasma advection and compression. We propose here to expand on previous observations to obtain information on the horizontal wavelengths of the AGWs. The measurements proposed here will allow (a) estimates of AGW spatial scales, amplitudes, directions of propagation, and AGW transport and deposition of momentum, (b) testing of the predictions of the new viscous dispersion relation for AGWs in the thermosphere, and (c) an assessment of the AGW sources that are most influential on thermospheric circulation, structure, and variability. This project received time before in September 2008, but most of the planned observations failed for technical reasons associated with transmitter issues.

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Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

430 G 430 CH receiver 430 CH radar

Atmospheric Observation Instruments:

Ionosonde

Special Equipment or setup: Dual-beam radar is requested

RFI Considerations

Frequency Ranges Planned