

Technical Page

This proposal has not been submitted before.

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Thermosphere
 Total Time Requested: 168 Hours
 Minimum Useful Time: 11 hours

Proposal Title: High-resolution Study of Arecibo’s Continuum of Gravity Waves Under Both Daytime and Nighttime Conditions

ABSTRACT:

Previous Arecibo observations have indicated that internal acoustic gravity waves (GWs) are continuously present in the thermosphere above Arecibo Observatory (AO) [Djuth et al., 1994, 1997, 2004, 2010; Livneh et al., 2007, 2009; Nicolls et al., 2014]. The waves are observed from approximately 110 km altitude to greater than 650 km altitude. Until recently high-resolution electron density measurements of GWs could be made only during the daytime. However, with the advent of the Arecibo coded long-pulse ion-line technique it is now possible to make high-resolution (300 m) measurements of electron density, ion/electron temperature, and ion velocity day and night. This greatly improves GW-TID modeling efforts, enhances the value of nighttime optical measurements of thermospheric winds for the determination of intrinsic GW periods, provides a new tool to assess the impact of GWs on tidal ion layers and lower thermospheric Na/K layers, and aids in the determination of GW source location

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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 Xmit

Atmospheric Observation Instruments:

Fabry-Perot Ionosonde Lidar

Special Equipment or setup: The ionosonde is required for all of the observations. All nighttime measurements require the Fabry-Perot interferometer and the lidar.

RFI Considerations

Frequency Ranges Planned

422 - 440