

Technical Page

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Middle-Lower Atmosphere
 Total Time Requested: 168 Hours

Proposal Title: Mesopause studies using the Arecibo ISR and optical instruments

ABSTRACT:

We propose to use the Arecibo ISR, potassium lidar, Fabry-Perot photometer, and spectrometer to do a number of mesopause studies by utilizing the recently available lidar temperature profiles. The objectives of the proposed study include: 1) cross-calibrate the three type of instruments, which will likely result in better estimate of the ion-neutral collision frequency for the ISR and help to determine the emission altitudes of the airglow (O₂, OH and O) layers, 2) study the composition of Es layers, 3) study the dependence of metallic/ionic chemistries on temperature, and 4) shed light on the low mesopause temperatures measured by the ISR and spectrometer. To accomplish these objectives, we request a total of 168 hours spread over one year's time. This proposal should be scheduled in conjunction with the proposal by Friedman et al. (1999) if possible.

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Instrument Setup

430 CH radar

Atmospheric Optical Instruments:

Tilt-Photometer Spectrophotometer Fabry-Perot Ionosonde Lidar

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

425-435

This proposal requires coordination with AFTWF within the band 425-435 MHz.