

Technical Page

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Thermosphere
 Total Time Requested: 48 Hours

Proposal Title: Radar and optical mapping of the midnight temperature maximum structure during summer nights.

ABSTRACT:

The midnight temperature maximum (MTM) phenomenon appears regularly over Arecibo every summer during summer nights between 00 and 03 LT causing temperature increases of 30 to 50 K typically. The goal of the proposal is to apply the new datataking technique of New MRACF and the 430 MHz radar in the double beam mode (Gregorian and 430 line feed) to observe the vertical structure of the MTM. A new instrument called the MiniME Fabry Perot interferometer would be installed in the optical laboratory extension wing to observe the thermospheric wind and temperature signature of the MTM during moon-down periods from early May to October of 2005. This instrument is designed to operate automatically with remote control by Internet access. Both the radar and the MiniME FPI instrument would obtain mapping information of the MTM structure with much better accuracy than that of previous measurements. The results will help us understand the ion-neutral coupling between the neutral atmosphere and the F-layer ionospheric plasma by comparing the observed results with modelling predictions generated by application of the TIEGCM of NCAR. 8 nights of 430 MHz radar time is requested for the time period of 23 LT to 05 LT during moon-down periods between the beginning of June and the beginning of October, 2005.

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Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

430 G 430 CH receiver

Atmospheric Observation Instruments:

Tilt-Photometer Fabry-Perot Ionosonde

Description of Observer Equipment: A miniaturized version of a Fabry-Perot interferometer to be installed in the new wing of the Optical Laboratory.

Special Equipment or setup: Access to the FabryPerot instrument via Internet from outside would be essential to the project.

RFI Considerations**Frequency Ranges Planned**