Proposal Identification No.: T2999 Date Received: 2015-Feb-19_16:12:33

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:	60 Hours
Minimum Useful Time:	12 hours

Proposal Title: Concurrent observations of the midnight temperature maximum

ABSTRACT:

The midnight temperature maximum (MTM) is an increase in neutral temperature around local midnight. The goal of this proposal is to observe the MTM concurrently with the Arecibo incoherent scatter radar (ISR) and the Millstone Hill ISR to better constrain how the MTM varies with latitude. We will characterize the MTM in terms of time of occurrence and amplitude. The Millstone Hill ISR will be pointing south to look at lower latitudes. These results can be used to attempt to validate the Whole Atmosphere Model (WAM) predictions for the MTM. A recent study (Hickey et al., 2014) looked at concurrent observations from past data but a designed experiment will be much more useful. We have time allocated for the Millstone Hill ISR for this experiment and doing concurrent observations with Arecibo would be very beneficial for understanding the MTM. The MTM is a useful tool for understanding coupling of atmospheric regions and ion-neutral coupling.

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Remote Observing Request

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

Instrument Setup

430 Xmit

Atmospheric Observation Instruments:

Fabry-Perot Ionosonde

Special Equipment or setup: The radar and the fabry-perot interferometers are the primary instruments need to measure both ion and neutral temperatures. The ionosonde would be helpful to get independent electron density measurements, but it as necessary as the other two.

RFI Considerations

Frequency Ranges Planned

430 MHz