Proposal Identification No.: H3104 Date Received: 2016-Jul-15_10:09:50

Technical Page

This proposal has not been submitted before.

Proposal Type:	Regular
General Category:	Astronomy
Observation Category:	Thermosphere
Total Time Requested:	20 Hours
Minimum Useful Time:	1 hour.

Proposal Title: Common-volume radar observations of heater-induced ionospheric irregularities from Arecibo and St. Croix

ABSTRACT:

We propose Arecibo heating experiments and radar and optical observations during the anticipated heating campaign. Experiments will involve the generation of artificial plasma density irregularities through thermal parametric instabilities. The E-region irregularities will be observed directly using our coherent scatter radar on St. Croix. F-region irregularities will be studied indirectly and through optics. We will study not only thermal parametric instability but also natural ionospheric features illuminated for the coherent scatter radars by heating. Likewise, artificial red- and green-line airglow will also be generated as a consequence of ionospheric modification. We will observe the airglow with the BU imager, looking for signatures of patchy sporadic E layers and MSTIDs in the airglow morphology. Resonance lidar observations will provide helpful context for understanding the E-region/ MLT component of our ongoing work, which focuses on neutral dynamical instability.

Name	Institution	E-mail	Phone	Student
David Hysell	Cornell University	david.hysell@cornell.edu	607 255-0630	no

Remote Observing Request

[X] Observer will travel to AO

[ ] Remote Observing

[ ] In Absentia (instructions to operator)

Instrument Setup

430 CH receiver 430 Xmit Heating Facility

Atmospheric Observation Instruments:

Ionosonde Lidar

Description of Observer Equipment: St. Croix radar, BU imager (supporting the BU team)

Special Equipment or setup: Heater is primary, ISR second, lidars and imager tertiary

RFI Considerations

Frequency Ranges Planned