Proposal Identification No.: T2961 Date Received: 2014-May-11_14:16:48

Technical Page

This proposal has not been submitted before.

Proposal Type:	Regular
General Category:	Terrestrial Aeronomy
Observation Category:	Ionosphere
Total Time Requested:	110 Hours
Minimum Useful Time:	11

Proposal Title: Solve the puzzle of what excites night-time plasma lines. (cover sheet was assigned ID 140508170733.0)

ABSTRACT:

The incoherent scatter radar (ISR) plasma line (PL) during the daytime is excited by photoelectrons (Perkins and Salpeter, 1965). Measure of its intensity (kTp) has been used for their study since the earliest days of ISR (Yngvesson and Perkins, 1968; Cicerone, 1974). At night in the absence of any other excitation mechanism the PL intensity should have a thermal amplitude level kTe, determined by the electron gas temperature Te. To the contrary Carlson found the nighttime PL over Arecibo was enhanced 3-10 times above thermal level intensities despite the absence of any known causative mechanism (e.g. Carlson et al, 1982). That remains true now (figure 2 herein). This proposal is to solve the puzzle of why. Benefits can include adding a new user Arecibo community once the new excitation mechanism is discovered, and we hope to enable future auto-self calibration of world day runs 24 hours/day.

Name	Institution	E-mail	Phone	Student
Herbert c Carlson	Utah State University	herbert.c.carlson@gmail.com	1 435 760 1831	no

Remote Observing Request

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

Instrument Setup

430 G

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned