

## Technical Page

Proposal Type: Regular  
 General Category: Terrestrial Aeronomy  
 Observation Category: Exosphere  
 Total Time Requested: 120 Hours  
 Minimum Useful Time: 4 hours

**Proposal Title:** Investigating The Thermospheric Hot Oxygen Controversy

*ABSTRACT:*

The thermal balance of the upper thermosphere, topside F region, and lower exosphere is investigated using nested diagnostics that have been developed over the past decade. This effort reconciles a controversy concerning the presence, or absence, of a hot oxygen corona in the region, and determines if the large HeII population detected (and published) in Arecibo Observatory ISR data may in fact be a misinterpreted hot OII population above the F2 peak. New diagnostics include isolation of the OII 732 nm airglow emission line profile, isolated from OH contamination using a Fabry Perot Interferometer with sensitivity enhanced 40 fold over previous efforts. The neutral temperature near 500 km is also determined from the 1083 nm metastable helium emission line profile, using a new infrared array detector. In combination with the usual topside ISR measurements of light ion composition and temperature, and the common F2 region 630 nm airglow temperature, this experiment will isolate any population of nonthermalized hot oxygen, that may exist in the upper thermosphere and exosphere.

Name	Institution	E-mail	Phone	Student
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### Remote Observing Request

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

### Instrument Setup

430 CH radar

**Atmospheric Observation Instruments:**

Tilt-Photometer Spectrophotometer Fabry-Perot Ionosonde

**Description of Observer Equipment:** IR Fabry-Perot

**Special Equipment or setup:** none

**RFI Considerations**

**Frequency Ranges Planned**