

Technical Page

Proposal Type: Long-term
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Thermosphere
 Total Time Requested: 960 Hours
 Minimum Useful Time: 3 hours

Proposal Title: Toward the development of a new [O] estimation technique using the twilight airglow OI 8446 Å emission

ABSTRACT:

Although atomic oxygen density, [O], is a key state parameter of the upper atmosphere, its empirical estimation is notoriously difficult. At mid-latitudes, OI 844.6 nm emission brightness is a potentially excellent proxy for [O], and recent improvements to its forward emission model warrant renewed effort to pursue ground-based sensing using this unique emission. This proposal represents a first step toward the development of this long-overdue capability. The scientific goals are two-fold: (1) to reduce the uncertainty in a key parameter – neutral meridional wind speed – of the forward model of 844.6 nm emission generation and (2) to assess the conditions for which the existing forward model is justified in its neglect of a key alternative source of 844.6 nm production – radiative recombination of O+. To this end, we propose several observational campaigns, spanning a variety of seasonal conditions, using combined passive optical and incoherent scatter radar instrumentation.

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Remote Observing Request

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

Instrument Setup

430 G 430 CH receiver 430 CH radar

Atmospheric Observation Instruments:

Tilt-Photometer Fabry-Perot

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned