2021 Workshop: Instrumentation and Calibration

Long title
Instrumentation and Calibration for Optical Observations of the Earth's Upper Atmosphere
Conveners
Jeff Baumgardner
Susan Nossal
Description

Accurate calibration is important for inter-comparison of observations, data/model comparisons, and long-term investigations. We invite discussion on a broad range of topics relating to passive optical and lidar observations and their analysis. Possible topics include: techniques for brightness calibrations; spatial scale determination; error analysis; correction for scattering within the lower atmosphere; spectral and velocity calibration; and spectral fitting approaches. Other topics of discussion could be: information on new detectors or other technologies that have been developed since the last workshop; or ideas for new instrumentation or techniques enabled by this new technology. In addition, we welcome modelers to discuss use of observations for model-data comparisons, and associated questions and challenges for model validation. We especially welcome and encourage presentations by students and international colleagues. Time will be set aside for a round table discussion of the idea of developing an “Optics School” along the lines of the well-established Incoherent Scatter Radar School.

Agenda

Calibration and preliminary analysis of Ebert-Fastie spectrometer data recorded from the Arecibo Observatory, Sukanta Sau (AO), Fabio A. Vargas(U of IL), Pedrina Terra (AO), Christiano G. M. Brum(AO), and Robert Kerr(CPI)

Neutral Wind Measurements in the Lower Thermosphere - ICON/MIGHTI and TIMED/TIDI Cross-validation, Manbharat Dhadly(NRL)

TBD, Don Hampton (U of AK)

Application of the imaging FPI to 630 nm dayglow observations, John Meriwether(NJIT)

Considerations for analysis and error assessment in multi-decadal data sets, Susan Nossal (U of WI)

Long term calibration of an All-Sky Imager using stars, Jeff Baumgardner(Boston Univ.)

Round table discussion on the possibility of creating an “Optics School” similar to the “ISR School” currently funded by the NSF, Everyone!

Justification

Accurate calibration, analysis, and error assessment provide the foundation for data that can be used to address a range of CEDAR strategic science topics, including coupling in the interaction region between the Earth’s atmosphere and the near space environment, lower-upper atmospheric coupling, Sun-Earth interactions, investigation of atmospheric dynamics through combination of observations such as wind measurements, and long-term climatology observations.

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