2023 Workshop: Impacts of data assimilation from ground to geospace

Long title
Evaluation of state-of-the-art models from meso- to planetary scales to assess the impact of data assimilation from the ground into geospace
Conveners
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Description

Advances in theory and observations of the last 20 years have been optimally aggregated using data assimilation systems. Such combination has the potential to finally bring upper atmosphere observations closer to the role and relevance that lower atmospheric observations have in traditional numerical weather prediction system. While a lot of ground has been covered already, some important questions are still eluding the CEDAR community, in particular those related to how to exploit observations in the upper atmosphere and which scales (both spatial and temporal) of existing and new observations can help advance predictions in the upper atmosphere. More broadly, the goal of this workshop is to bring heliophysics observations into a whole Earth system view.

Agenda

10:00-10:05

Sassi: Introduction

10:05-10:20

Dietrich (CU): *Physics-Based Approach for Neutral Density Specification through Data Assimilation*

10:20-10:35

Forsythe (NRL): *ANCHOR: A Novel Data Assimilation Model at NRL*

10:35-10:50

Fritz (NRL): *What is the utility of ultraviolet observations in assimilative models?*

10:50-11:05

Yudin (CUA/GSFC): *Variability of Tidal Dynamics:*

Retrospective and Operational Data Analysis in Whole Atmosphere Models

11:05-11:20

Wu (Clemson): *Evaluating ionosphere-thermosphere impacts of auroral and electric field assimilation at different resolutions*

11:20:11:35

Chartier (APL): *Validation of the SAMI3 model driven by AMPERE data*

11:35-11-45

Lightning talks

11:45-12:00

Open floor // Closing discussion

Justification

This session invites short presentations to (1) assess the state of the art of community models in terms of their ability to realistically represent variability across the range of spatial and temporal scales that are present in the middle and upper atmosphere; (2) quantify the benefits of data and data assimilation techniques toward improving modeled variability of and predictions in the thermosphere and ionosphere. The short presentations should be focused on advantages and benefits of existing and upcoming observational datasets, regardless of whether they are

space borne or ground based. Presentations including theoretical work, modelling, data assimilation, and observational data analysis are all encouraged. An expected outcome of this workshop is a community-motivated discussion of the necessary observations, their coverage and quality for use in modern data assimilation systems.

Related to CEDAR Science Thrusts:
Encourage and undertake a systems perspective of geospace
Manage, mine, and manipulate geoscience/geospace data and models
Workshop format
Short Presentations
Keywords
data assimilation , mesoscales , planetary scales , models
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