2020 Workshop: Meteoroids

Long title
Meteoroids and Space Debris
Conveners
Julio Urbina
Sigrid Close
Description

Meteors are routinely observed using a wide array of observational techniques in both the neutral and plasma environment and can be used as a tracer to study background parameters such as neutral winds, temperatures, and tides. Many open questions exist in the meteor field. These range from gaps in fundamental understanding such as 1) what is the scatter process that results in radar observed meteor head echoes? 2) what is the mass loading of the upper atmosphere by meteor ablation and why do estimates vary so drastically? 3) what is the relationship between meteor properties defined by the meteor input function and atmospheric phenomena tied to meteors? As with any study that uses the tools of system dynamics and system science one must first define the system (i.e. defining the boundaries, inputs, and outputs in a thermodynamic system) and then make the simplifying assumptions that yield the relevant physics to the problem at hand. For meteor related studies, this system definition has often been implicit and related to boundaries defined by meteor ablation heights. But, as our measurement capability and knowledge increase regarding the SMC, we continue to push these traditional boundaries to uncover new insight into the processes, drivers, and feedbacks related to meteors within the Earth-Atmosphere-Geospace system allowing us to learn more about the coupling and interactions that can be uncovered using meteor science.

Agenda

- **(11:00)** Welcome and Motivation - *Julio Urbina, Sigrid Close*
- **(11:15)** Atmospheric neutral density dynamics through meteor observations - *Nicolas Lee, Sigrid Close*
- **(11:30)** Atomic-Scale Simulation of Meteoroid Ablation - *Gabrielle Guttormsen, Alex C. Fletcher, Meers Oppenheim*
- **(11:45)** Discussion/Breakout Rooms

- **(12:00)** Development and Status of Zephyr: a Distributed MIMO Meteor Radar Network for Space Weather Research - *Ryan Voltz et al*
- **(12:15)** Meteor Head Echoe Research from Arecibo and Jicamarca - *Yanlin Li*
- **(12:30)** A Fully-operational Multi-static Meteor Radar System in Nothern Chile - *Zi-Shun Qiao*
- **(12:45)** Discussion
- **(1:00)** Adjourn

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