2019 Workshop: Generation Mechanisms of TIDs

Long title
Resolving the generation mechanisms and electrodynamical effects of Traveling Ionospheric Disturbances (TIDs)
Conveners
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Description

Traveling Ionospheric Disturbances have been observed at all latitudes and are a frequent feature in the ionosphere. It is believed that there are a number of processes responsible for their generation including: the Perkins instability, atmospheric gravity waves and high latitude forcing. This workshop will aim to better understand the origin of TIDs, classification and identification of different types of TIDs, and physical conditions necessary to generate conjugate behavior. We are interested in both modeling and data studies of TIDs. In particular, we are interested in using multi-instrument approaches to better understand the phenomena, as well as planning future campaigns to identify the origin of TIDs.

Agenda

•1:30-1:40 Angeline Burrell: ISR World Day observations

•1:40-1:50 Ethan Miller: Differences Between Daytime and Nighttime TIDs

•1:50-2:00 Rob Pfaff: C/NOFS observations of TIDs

•2:00-2:10 Matt Zettergren

•2:10-2:20 Gareth Perry: TIDs generated during the 2017 eclipse

•2:20-2:30 Pavel Inchin: Modeling of coseismic ionospheric disturbances driven by infrasonic waves

•2:30-2:40 Asti Bhatt

•2:40-2:50 Shunrong Zhang

•2:50-3:00 Cheng Sheng: LSTIDs simulated in GITM

•3:00-3:30 Discussion

Justification

This session addresses Strategic Thrust #1 (Encourage and Undertake a Systems Perspective to Geospace) and Strategic Thrust #4 (Develop Observational and Instrumentation Strategies for Geospace System Studies). In particular, we want to discuss future observational campaigns to better understand the origins of TIDs.

1. How the associated questions will be addressed: Through multi-instrument campaigns and the coupling of high-resolution meteorological models with ionospheric electrodynamic models.

2. What resources exist, are planned and/or are needed: Distributed ground-based networks of instrumentation (GPS, Ionosonde, Imagers) exist and are expanding. Future CubeSat missions from ISS orbit will measure in situ properties of MSTIDs.

3. How progress should be measured: Identifying the gaps in our measurement database to validate potential modeled generation mechanisms is key.

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