2021 Workshop: DASI networks

Long title
Distributed Arrays of Small Instrument (DASI) and satellite missions
Conveners
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Description

This session will present plans, initial results, and scientific goals from the different groups building DASI networks. Teams currently engage in the deployment, expansion, or upgrade of instrument arrays are invited to comment on their experiences and discuss preliminary data. We will use this opportunity to provide a forum to discuss deployment strategies and receive suggestions from the CEDAR community. We also welcome results derived from current and previous satellite missions that combine in-situ and ground observations.

During the last ten years, the necessity to have continuous measurements and probe extended IT system areas has become evident. In response, the space science community has deployed coherent scatter radars, ionosonde networks, Fabry-Perot interferometers, all-sky imagers, GPS/GNSS and RF receivers, the ICON satellite, the GOLD instrument in space, and the COSMIC II constellation. Some of the ground-based networks are built around incoherent scatter radar sites augmenting the observatories' capabilities. The observing ability that our community has built in the last five years is of an unprecedented scale. This session will try to explore what is needed to do to utilize all these resources more fully.

Justification

This workshop will address several points described in Strategic Thrust #4 "to develop Observational and Instrumentation Strategies for Geospace System Studies" and # 6 "to manage, Mine and Manipulate Geoscience Data and Methods." Specifically, we will discuss joint multi-instrumented campaigns or perform analysis that uses one or more types of instruments (in space and ground). We will also present results of data mining that include extensive resources provided by distributed observatories and incoherent scatter radars and conduct: • Continued evolution of data assimilation schemes to integrate data with physics-based models

for improved predictive capability. • Develop advanced analysis techniques needed for efficient fusion of observations into sophisticated inference models. • Discussion of data distribution and network management required for long-term science and space weather support. This workshop aims to studying the ionosphere-thermosphere system in an integrated fashion and improving the space weather and climatology capabilities emphasized in the 2013-2022 Decadal Survey.

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