2017 Workshop: Distributed Networks

Long title
Distributed Networks of small instruments: low and middle latitude structures and modeling
Conveners
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Description

Distributed networks of small instruments include arrays of GPS receivers, magnetometers chains, Fabry-Perot interferometer networks, ionosondes, coherent radars, all-sky imagers and RF receivers. The session welcomes studies that include single or multiple clusters of instruments covering significant areas. This workshop is dedicated to present and discuss new observations gathered with any of these types of observatories. It is also encouraged presentations on recent results of assimilation, modeling, or forecasting employing observables acquired by distributed observatories. The motivation of this workshop is based on the property of the distributed observatories of providing more comprehensive views of the ionosphere climate, the weather, the plasma electrodynamics, and the coupling to other layers of the low and middle latitude ionospheres. Projects to be discussed, but not limited to, include: (1) longitudinal variability of E×B drifts, TEC, and the thermospheric wind system, (2) longitudinal/temporal variability of plasma depletions and scintillations and their seeds, (3) onset and conjugacy of nighttime MSTIDs (also called electro-buoyancy waves).

Justification

This workshop will address several points described in the 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 coordinated multi-instrumented campaigns and perform

statistical analysis that use more than one type of instrument. We will also present results of data mining that include the large resources provided by distributed observatories 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 effective 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 is also related to the study of the ionosphere-thermosphere system in an integrated fashion and the effective space weather and climatology capabilities emphasized in the 2013-2022 Decadal. The format of the meeting will consists of short presentations (10 min) followed by panel discussions. The questions will be formulated during each presentation and then will be addressed during the discussion part of the workshop. Progress will be described in the final report of the workshop.

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