2018 Workshop: storm campaigns

Long title
CEDAR science enabled by geospace storm observational campaigns
Conveners
Shunrong Zhang
Shasha Zou
Asti Bhatt
Description

Magnetosphere-Ionosphere-Thermosphere-Mesosphere (MITM) coupling processes are some of the main themes of the CEDAR science. Observations from ground-based and space-based instruments are essential for advancing CEDAR sciences and making new discoveries. Historically, observational campaigns were the main mode to collect key parameters from multiple instruments at locations of various geophysical importances during specific geophysical events.

This session is dedicated to the geospace storm study to focus on upper atmospheric responses and their drivers from high to equatorial latitudes. A number of recent solar storms are of particular interest where worldwide campaigns were conducted with participation of NSF geospace facilities (including incoherent scatter radars, SuperDARN, FPIs, etc); these include the Sept 2017 solar flares and geomagnetic storms with minimum Dst -142 nT, and the Oct 13, 2016 ICME storm with minimum Dst -104 nT. We welcome short presentations associated with these and other geospace storm campaigns that can stimulate discussions on the MITM coupling processes of various spatial and temporal scales. Both ground-based radio (including radars and GNSS) and optical remote sensing (including FPIs and Imagers) and coincident satellite observations are solicited. Simulation and data assimilation that help understand in depth the mass and energetic exchange processes during those geospace disturbances are also welcome.

Agenda

Confirmed speakers as of June 19

04:00—04:!5 Larry Lyons

04:15—04:30 Asti Bhatt

04:30—04:45 Shasha Zou

04:45--05:00 Roger Varney

05:00–-05:15 Ashton Reimer

05:15–-0530 Liying Qian

05:30—05:45 Anthea Coster

05:45—06:00 Shunrong Zhang

Justification

The multivariate-system nature of our geospace research requires simultaneous and carefully coordinated sets of observations spanning the varied aspects and regions of the system utilizing both ground-based sensor networks and satellites. This campaign tradition is continued in recent years, focusing on space weather, with a significant worldwide extension, but the NSF Geospace facilities have been still playing central roles. The goal of this workshop is to address the stormtime coupled SAIR (Space Atmosphere Interaction Region), the target area of the CEDAR science using some of the recent observational campaigns. The proposed workshop addresses the CEDAR Strategic Thrust #2: Explore Exchange Processes at Interfaces and Boundaries. It is also directly relevant to two of the four science goals from the Heliophysics Decadal survey (Solar and Space Physics: A Science for a Technological Society). They are: 2. Determine the dynamics and coupling of Earth’s magnetosphere, ionosphere, and atmosphere and their response to solar and terrestrial inputs; 4. Discover and characterize fundamental processes that occur both within the heliosphere and throughout the universe.

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