2013 Workshop: Equatorial Ionosphere

Long title
Equatorial Ionospheric Electrodynamics and Low-Latitude Space Weather
Conveners
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Description

The equatorial ionosphere behaves very differently under different solar, geomagnetic, and atmospheric conditions. Extreme solar winds and geomagnetic storms cause plasma redistribution and large-scale disturbances in the low-latitude ionosphere. Atmospheric tides and waves cause longitudinal structures of the low-latitude ionosphere and trigger the generation of equatorial spread F and plasma bubbles. This session focuses on how the equatorial ionosphere responds to magnetic storms, penetration electric fields, high-speed solar wind streams, magnetospheric energy input at high latitudes, and atmospheric disturbances, as well as the seasonal and solar cycle effect on the ionospheric response to forcing from above and below. The ionospheric conditions necessary for the generation of plasma bubbles, the role of atmospheric gravity waves and other ionospheric structures in seeding plasma bubbles, and ionospheric scintillation caused by plasma bubbles will be also discussed. We welcome observational, theoretical, and modeling studies that address these topics.

Agenda

"The Mesoscale Ionospheric Simulation Testbed (MIST) Regional Data Assimilation Model" by Joseph Comberiate et al.

"Characterizing Ionospheric Irregularities using Wavelet Analysis of In Situ Ion Drifts" by Russell Stoneback and Rod Heelis

Justification

The low-latitude ionosphere is an important part of the geospace system, and the equatorial ionospheric electrodynamics is driven from above by solar and

magnetospheric processes and from below by atmospheric processes. Advancing understanding and prediction capability of the equatorial ionospheric electrodynamics and low-latitude space weather is related to CEDAR strategic thrusts #1, #2, and #3. This workshop is also related to the study of the ionosphere-thermosphere-mesosphere system in an integrated fashion and the effective space weather and climatology capabilities emphasized in the 2013-2022 Decadal Survey for Solar and Space Physics.

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