2024 Workshop: Recent Developments in Equatorial Aeronomy

Long title
Recent Developments in Equatorial Aeronomy
Conveners
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Description

This workshop will highlight the latest discoveries in equatorial aeronomy, along with new developments in experimental, theoretical, and computational methods that expand our understanding of the dynamics of this region. The focus will be on observations and research at the Jicamarca Radio Observatory. Results obtained with closely related projects and instrumentation, including the regional optical network and the regional radio/radar network, are also welcomed. The session will combine a few review presentations with several brief science highlights.

Agenda

- Danny Scipión: Jicamarca radar updates (20 min)
- Fabiano Rodrigues: Incoherent and coherent radar scatter observations with AMISR-14 (15 min)
- Marco Milla: Analyzing the aspect angle dependence of incoherent scatter spectral measurements with AMISR-14 (15 min)
- Brian Harding: The pre-reversal enhancement observed by ICON: Drivers of longitudinal and seasonal patterns (15 min)
- Alexander Green: Concurrent Observations of Non-specular Meteor Trails using the Jicamarca Radar and AMISR-14 (12 min)
- Edgardo Pacheco: New developments for scintillation and irregularities characterization and forecasting in Peru (12 min)
- Aaron Kirchman: Forecasting Spread F using a Regional Model driven with Jicamarca Data (12 min)

- Susan Palacios: Climatology study of equatorial spread F using deep learning during solar cycles 23-24 (12 min)

Justification

Three recent developments prompt this workshop. One is a series of upgrades at Jicamarca that will fundamentally alter and expand its capabilities. Among these are the medium power solid-state transmitters that will allow perpetual incoherent scatter measurements and the fully implemented automatic beam switching that will allow the fast reconfiguration of experiments. Also, the deployment of two LWA-type radio arrays in Peru to support and augment the capabilities of the Jicamarca ionospheric radar. Finally, the recently announced NASA-sounding rocket campaign that will take place in Peru during 2028 opens the possibility of discoveries and research projects. Preparation should begin immediately for these developments to be fully exploited by the community.

Related to CEDAR Science Thrusts:
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Explore processes related to geospace evolution
Develop observational and instrumentation strategies for geospace system studies
Fuse the knowledge base across disciplines in the geosciences
Manage, mine, and manipulate geoscience/geospace data and models
Workshop format
Short Presentations
Keywords
Jicamarca, equatorial aeronomy, geospace facility
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