2024 Workshop: Equatorial Ionization Anomaly (EIA) and ionospheric irregularities

Long title
Understanding of Equatorial Ionization Anomaly (EIA) and ionospheric plasma irregularities over low and mid latitudes using ground and satellite measurements and modelling studies.
Conveners
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Description

This session invites presentations related to space and ground-based measurements and modeling efforts that contribute to a better understanding of the development and variability of EIA and ionospheric irregularities (e.g., Scintillations, Equatorial Plasma Bubbles, Spread-F) over low and mid-latitudes.

Agenda

Session Zoom Link: https://cuboulder.zoom.us/j/94164351847

Wednesday, June 12, 2024, 13:30 – 15:30 PM (120 Minutes)

1. [13:30 to 13:45 PM] – Joe Huba

Impact of Meridional Winds on Equatorial Plasma Bubble Development
2. [13:45 to 14:00 PM] – Minjing Li

Dayside E-region strong neutral wind shear and its effect on F-region plasma irregularities
3. [14:00 to 14:15 PM] – Erich Becker

Are equatorial plasma bubbles observed by GOLD triggered by multi-step vertical coupling over Europe?
4. [14:15 to 14:30 PM] - Ercha Aa

Impacts of the Sudden Stratospheric Warming on Equatorial Plasma Bubbles
5. [14:30 to 14:45 PM] - Shantanab Debchoudhury

High-resolution plasma measurements at low latitudes from the Langmuir Probe onboard the LLITED CubeSat
6. [14:45 to 15:00 PM] – Deepak Kumar Karan

Merging of EIA and Aurora during the 2024 May Mother’s Day Geomagnetic Storm
7. [15:00 to 15:15 PM] - Katrina Bossert

Influences of the Quasi-Two Day Wave and Middle Atmospheric Dynamics on Plasma Bubble Activity over South America

Justification

Equatorial Ionization Anomaly (EIA) and ionospheric irregularities (e.g., Scintillations, Equatorial Plasma Bubbles, Spread-F) have been a major focus of the low and mid-latitude ionospheric research community. The behavior of the IT system is influenced by the solar forcing from above, wave activities from below, traveling atmospheric/ionospheric disturbances (TADs/TIDs) from mid/high latitudes, and the equatorial dynamo process. These factors along with the dynamic processes manifest various thermospheric and ionospheric irregularities (e.g., Scintillations, Equatorial Plasma Bubbles, Spread-F). Further, the geometry (such as magnetic declination angle, terminator alignment), geomagnetic activities, and other conditions (e.g., winds and wave activity) regulate the morphology and variability. Determining these conditions and understanding their interactions have challenged the research community for decades. New and existing satellite measurements, ground-based observations, and modeling approaches have revealed several new, interesting characteristics about the EIA variability and ionospheric irregularities.

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Keywords
Equatorial Ionosphere, Plasma Irregularities, Plasma processes, Observations and modelings
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