2025 Workshop: Equatorial Aeronomy in Data Sparse Regions

Long title
Equatorial Aeronomy in Data Sparse Regions
Conveners
Dustin Hickey
Angeline Burrell
Shunrong Zhang
Anthea Coster
Alanah Cardenas-O'Toole
dustin.a.hickey.civ@us.navy.mil
Description

The equatorial ionosphere is home to a variety of unique phenomena, such as the Equatorial Ionization Anomaly (EIA) and Equatorial Plasma Bubbles (EPBs). Recent studies have highlighted the significant longitudinal variability of these phenomena, prompting a need for further research in regions with limited data. This workshop focuses on the equatorial ionosphere in data-sparse areas, including regions around islands, over oceans, or other locations with sparse measurement coverage. We are particularly interested in ionospheric research over the Pacific Ocean. In addition to studies conducted in these data-deficient regions, we also welcome any presentations on the longitudinal variability of equatorial ionospheric processes.

Agenda

1. 330-1343: **Min-Yang Chou** “Climatology of gravity waves and EPBs”
2. 1343 -1356: **Endawoke Yizengaw** “Impact of Quiet Time Ionospheric Irregularities on Radio Propagations!”
3. 1356-1409: **Rafael Mesquita** “Unraveling the 2D Spatial Structure of the Equatorial Electrojet: The *Smartest* Way to Place Magnetometers”
4. 1409-1422: **Jhassmin Aricoche** “Equatorial Ionospheric radio beacon signal analysis and parameter estimation using automatic differentiation”
5. 1422-1435: **Dupinder Singh** “Longitudinal Variation of NmF2 Asymmetry at Conjugate Ionosondes”

6. 1435-1448: **Mary Smirnova** “Fusing ground-based TEC and GOLD inferred TEC using statistical calibration method”
7. 1448-1501: **William Longley** “The turbulence properties of 150-km echoes”
8. Virtual 1501-1514: **Enrique Rojas Villalba (Kike)** “EIA TEC observations”
9. Virtual 1514-1527 **Rezy Pradipta** “Southeast Asia GNSS observations”

Topic: 2025 CEDAR: Equatorial Science

Time: Jun 25, 2025 01:30 PM Central Time (US and Canada)

Join Zoom Meeting

https://mit.zoom.us/j/97918040099

Justification

While the equatorial ionosphere and its associated processes have been extensively studied, many questions remain unanswered. The longitudinal differences in the equatorial ionosphere are not yet fully understood, largely due to the lack of dense measurements in many regions across the globe. This workshop aims to bring together datasets from these data-sparse areas to improve our understanding of this critical region. Additionally, equatorial plasma bubbles are known to disrupt communication and navigation signals, so gaining a deeper understanding of this phenomenon could help mitigate these impacts.

Related to CEDAR Science Thrusts:
Encourage and undertake a systems perspective of geospace
Explore processes related to geospace evolution
Develop observational and instrumentation strategies for geospace system studies
Workshop format
Short Presentations
Keywords
Equatorial, EIA, EPB, Ionosphere
View PDF