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Poster

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Project: Distributed CASES Array for Mid-Latitude Ionospheric Characterization

Abstract

In ionospheric research, GNSS receivers and sensors are commonly used to measure the effects of space weather and solar events on space and ground systems. The primary areas that have been studied are polar and equatorial regions, while far less work has been done in the mid-latitude regions. For this project, a distributed network of CASES receivers is being deployed to three sites located within 2 km across the West Point Military Reservation in New York to gain visibility into mid-latitude space weather effects. From GPS observations, total electron content, amplitude scintillation, and phase scintillation will be inferred. Ground magnetometers will be utilized to acquire information about the ground-induced currents, field-aligned currents (if any), and local magnetic perturbations. This data will then be used to characterize structures in the regional ionosphere that cause signal offsets and are characterized in terms of density, velocity, and decay rate. At the time of the workshop, any collected data on solar events and a solar eclipse using collocated receivers will be presented. This data will be used to inform future analysis of the expected phenomena to be recorded with the distributed operational system. At the conclusion of this project, valuable ionospheric data and analysis will be added to the body of work on the mid-latitudes, a method for creating a relatively low-cost receiver network will be documented, and a distributed laboratory will be established for use in future GPS coursework at the United States Military Academy.

Poster category:

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Ionosphere and Thermosphere Research and Applications

Poster session day

Wednesday, April 17, 2024

Poster location

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Meeting homepage

[Space Weather Workshop 2024](#)

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