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Poster
The D-region is the lowest and most anomalous region of the ionosphere, spanning the altitudes where the atmosphere quickly decays into a weakly ionized plasma. As such, the region is too low for in situ satellite monitoring, too high for balloons, and too sparse for conventional radar measurements. Previous studies (Richardson et al.) have used the Very Low Frequency (VLF) broadband impulsive emissions from lightning, known as sferics. to determine the average electron density of the D-region along the path from sferic to magnetic-field receiver. While these studies established and verified methods for converting noisy, scattered, and incoherent data into electron density estimates, the associated pipeline was not computationally capable of processing large volumes of data.
This software is scaling into an operational product, designed for scalability to global distances and engineered to support real-time processing, enabling continuous estimates of D-region electron densities. With this capability, we detect and present geophysical phenomena (such as solar flares and solar eclipses) in large datasets. We then explore how this capability could enable new operational and decision-making paradigms across multiple industry sectors.
Poster session day
Wednesday, April 29, 2026
Poster location
13
Meeting homepage
2026 Space Weather Workshop
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