

# **2026 Workshop: Database to Discovery in CEDAR**

## Long title

From Database to Discovery in CEDAR Research: Interoperability, Metadata, and AI Enabled Workflows Across Geospace Repositories

## Conveners

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## Description

CEDAR science increasingly depends on combining data and metadata across multiple repositories, instruments, and communities, but researchers and database teams still face recurring barriers in discovery, access, interpretation, interoperability, and reproducible analysis. This session will bring together database administrators, cyberinfrastructure developers, and research users from Madrigal, SuperDARN, SuperMAG, OMNIWeb/CDAWeb, GIRO, AMISR, and related resources to discuss practical advances in geospace data infrastructure. Topics will include interoperable APIs and metadata (for example HAPI and SPASE aligned workflows), AI assisted data navigation and interpretation, community repositories of analysis tools and notebooks, scientific visualization, and strategies to assess how database infrastructures improve research productivity and usability for the CEDAR community.

## Justification

This session is motivated by a shared CEDAR need: frontier atmosphere-ionosphere-magnetosphere studies now require multi-source data synthesis, but the effort required to discover, access, align, interpret, and reuse data remains high and uneven across repositories. The proposed session is designed to be useful for both database teams and research scientists. For database administrators, it provides a venue to compare implementation strategies for metadata, APIs, provenance, discoverability, and user support. For researchers, it focuses on practical workflows that reduce time to science, improve reproducibility, and make cross-database studies easier to execute. We specifically want to invite perspectives from various database teams so the discussion is centered on common design patterns, pain

points, and opportunities for coordinated progress across CEDAR and neighboring heliophysics data ecosystems. A useful outcome would be a short community roadmap identifying near-term pilot collaborations, shared priorities for metadata/access improvements, and candidate evaluation metrics for user-facing tools.

Related to CEDAR Science Thrusts:

Encourage and undertake a systems perspective of geospace

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

Panel Discussion

Keywords

data infrastructure, interoperability, metadata and APIs, AI

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