Fall 2025 Joint Committee Meeting

(Times are Mountain Standard Time)

Wednesday, September 24, 2025, 1:00pm – 5:00pm: (Users Committee)

[Meet online and in UCAR FL4-1201 (Unidata conference room)]

Meeting Commences After Lunch at 13:00

13:00 – 13:05 Administrative Items (Chairs /Tanya)

13:05 – 13:25 Welcome/Introductions (Mohan Ramamurthy/Chairs)

- Name, Institution, Role

13:25 – 13:45 NOAA NCEP Agency Report

13:45 – 15:15 NSF Unidata Portfolio Presentations and Discussion

15:15 – 15:45 Review Day's Proceedings, Actions, and Wrap-up

15:45 – 16:00 Walk to FL2

16:00 – 17:00 DeSouza Award Presentation and Q&A (Dr. Brian Blaylock, FL2-1022)

17:00 Adjourn

Thursday, September 25, 2025, 9:00am – 4:30pm (Joint Committee)

[Meet online and in the Damon Room (Mesa Lab (ML) campus)]

08:00 - 09:00 Drive / Shuttle from CG/FL to ML (Shuttle leaves CG at 08:03 and 08:33)

09:00 – 09:30 Administrative Items and Welcome (Chairs/Tanya)

- Committee Members Thank You and Welcome
- Introductions - Member Highlights

Reflect: Setting the Stage

09:30 – 10:00 Director's Opener

10:00 – 10:30 Share-Out Community Assessment Survey Results

10:30 – 10:45 Break

Restore: Refocused planning through renewed priorities – who needs what we offer, why us, why now?

10:45 - 10:50 Introduce MoSCoW Prioritization Planning Activity and Outcomes (Tanya)

10:50 – 11:05 Restore: NSF Unidata Planning Proposal of MoSCoW Prioritization (Mohan)

11:05 – 12:00 Restore: Joint Committee MoSCoW Advisory Activity (Committee)

12:00 – 13:15 LUNCH at NCAR ML Cafeteria

13:15 – 14:45 Restore: Joint Committee MoSCoW Advisory Activity Continued

14:45 – 15:00 BREAK

15:00 – 15:30 MoSCoW Activity Group Share-Out

15:30 – 15:45 **Recast: Recasting our future path, NSF Unidata Moving Forward**

- Closing from NSF Unidata Senior Leadership and Chairs

15:45 – 16:00 Vote on Committee Model

16:00– 16:15 Administrative Items and Wrap-Up

16:15 Adjourn

16:30 Drive / Shuttle from ML to CG/FL (Shuttle leaves ML at 16:30 and 17:00)

18:00 Dinner at The Post, 2027 13th St., Boulder, CO 80302 (map)

Friday, September 26, 2025, 9:00am – 1:00pm (Strategic Advisory Committee)

[Meet online and in UCAR FL4-1201 (Unidata conference room)]

09:00 – 09:15 Administrative Items and Welcome (Chair/Tanya)

09:15 – 09:35 TBD

09:35 – 09:55 NOAA NWS Agency Report (Scott Jacobs)

09:55 – 10:15 USGS Agency Report (David Blodgett)

Recast Continued: Moving Forward, Project/Activity ideas for creating sustainable and monetized opportunities for impact

10:15 – 11:35 Introduce Recast Activity: Generating Ideas that Benefit Wider Community and Potential Partners

11:35 – 12:00 Group Share-Out of Recast Ideas

12:00 – 12:30 Committee Model Implementation and Open Discussion

12:30 – 12:40 Administrative / Wrap Up

12:40 – 13:00 All Other Business/Lunch/Meeting Adjourned

Status Reports Executive Summary

March 2025 - September 2025

Unidata Program Center Staff

This summary is compiled from the full status reports, available online:
Staff Status Reports: March 2025 - September 2025

Visualization and Analysis Software and Tools

AI/ML

NSF Unidata ML Staff wrapped up classroom work with our colleagues at MSU Denver and published the final two modules of the Supervised Machine Learning Readiness eLearning series.

As part of the UCAR President's Strategic Innovation Fund program, began work on a needs assessment on AI/ML training in the classroom, and barriers to teaching AI/ML. A survey has been circulated throughout the Earth Systems Science community, seeking feedback on how UCAR programs can facilitate educators' use of AI/ML in the classroom or provide training.

The two primary members of NSF Unidata's AI/ML team, Nicole Corbin and Thomas Martin, both left the program during the previous six months to pursue other opportunities. As a result, new activities in this space are currently paused.

AWIPS

We currently have one build (version 23.4.1) available to support RHEL/Rocky 8 and 9 that was originally released back in June 2024 as beta, but is now in production as of July 2025. We have decommissioned all older builds due to running on old RHEL7 systems. EDEX, CAVE, and python-awips are available for install as well as source code available. I am working on a release for the end of the year which will focus on updating Java from version 11 to 17.

The National Weather Service (NWS) has halted on adding new functionality into AWIPS builds. Their focus in the next one-to-two years is to move AWIPS to the cloud. Initially they are focused on transitioning the current capabilities to run in a cloud environment. Eventually, they will focus on refactoring the architecture to take advantage of cloud-native services and break down the EDEX services into microservices.

Based on feedback from Universities running a Windows Lab, we've created a CAVE installer for Windows that installs at the admin level. This way, CAVE only needs to be installed once, but all users on that machine can use CAVE.

We will be hosting an AMS Student Workshop focusing data visualization within metPy, python-awips, and CAVE.

IDV with RAMADDA

We continue to support, update, and enhance the 3D data visualization and analysis tool IDV for our community. Our current activities include: coordinating with netCDF-Java group to add new data formats, collaborating with the SSEC developers to enhance the VisAD library, and working with our community to promote the usage of the IDV in research and education.

Python

Unidata's Python efforts continue to encompass: training on the use of Python for the community; development and maintenance of several tools for the community (most notably MetPy but also Siphon and data processing scripts); and participation within the broader scientific Python community. As a result of changing resource availability, MetPy Mondays production is paused, and we are de-prioritizing synchronous training events to instead prioritize authoring high quality asynchronous online examples and engineering new technical solutions to learning problems in the community. We will present a workshop in collaboration with Python-AWIPS at the 2026 AMS Student Conference. Siphon development is low in immediate priority, but is supported by stable infrastructure and a simmering community engagement. MetPy development continues through 1.7.0 (released April 2025), 1.7.1 bugfix (released August 2025), and 1.8.0 slated for release late Fall 2025. MetPy 1.8.0 will include our C++-based performance enhancements. Also new is our public MetPy Benchmarks metrics. Community and intern contribution to the project prove key to its continued success. We are exploring new collaborations with other Unidata staff projects, and seeking new project planning and funding opportunities to support MetPy and Siphon development and resume production of MetPy Mondays. MetPy's impact on science continues to grow, with 419 theses and peer-reviewed publications mentioning or citing MetPy, including 49 so far in 2025

Questions for the Committee

1. [AWIPS] Are there any new datasets, visualizations, capabilities you would like to see added to Unidata's AWIPS?
2. [IDV] We have noticed that many advanced features of the IDV, such as formulas and trajectory displays, have not been widely used in the community and many data servers that the IDV can directly access are less well known to IDV users. We would like to provide help to classes, research groups and project teams to use these resources. Can committee members help to establish such connections?

Data Access/Formats/Dissemination

Community Data Standards and Technical Engagement

Engage with federal science agencies, international standards bodies, and other communities focused on data and technology including NASA, NOAA, USGS, World Meteorological Organization (WMO), Open Geospatial Consortium (OGC), Earth System Information Partners (ESIP), CF Conventions for netCDF community, OPeNDAP, and the Zarr and GeoZarr community.

Unidata's netCDF teams continues to engage with the Zarr community on:

1. Zarr support in both the netCDF-C and netCDF-Java libraries;
2. the development of the Zarr version 3 specification; and
3. the development of the GeoZarr convention.

IDD, LDM, and WIS 2.0

NSF Unidata's LDM developer and IDD maintainer continues to update LDM source code and operating paradigms with ever-changing computing implementations and user requests. The IDD continues to be enhanced with data redundancy and inclusion of new data.

IT

Our role is to maintain and enhance the productivity of the staff and assist with the resolution of issues in service to the community. Primarily, that consists of keeping end-user and developer systems secure, and keeping servers and services highly available, patched, and operational for the community. This report is informational and there are no pressing issues.

NetCDF

The netCDF team continues to work towards maintaining the sustainability and viability of the netCDF libraries. While facing challenges when prioritizing work against the resources available, we are fortunate to have an engaged community of users and developers.

The status of the netCDF project can be summarized as follows:
NetCDF is healthy and remains viable, thanks to the engagement and support of our community.

Our efforts to serve the community are reciprocated, through high levels of engagement and contributions, for which we are immensely grateful. The netCDF team lacks the resources to quickly evaluate every potentially useful emergent technology or address every bug report, and we must therefore triage based on what best serves our communities interests at large. We continue to advocate for our community through participation in external data-oriented/focused groups.

THREDDS

This THREDDS status report, covering March to September 2025, highlights recent releases of netCDF-Java and the TDS, alongside ongoing efforts to transition to a more sustainable, cross-language architecture while maintaining backwards compatibility. Key activities include investigating new architectural options, renewing documentation efforts, and releasing updated versions with bug fixes and security improvements. Also introduced is a prototype Python-powered backend for the TDS which opens up a 6 TiB collection of ERA5 analysis stored in an icechunk store for access by the various TDS services. Overall metrics indicate over 1,900 unique IP addresses started the TDS in the past five months, with a total of over 47,000 unique startups since 2014. A recent deep dive identified 108 publicly accessible TDSs, roughly split between US and non-US institutions, with 20 US academic institutions operating one or more servers. When compared to startup metrics, this deep dive provides a better understanding of the actual number of TDSs running around the world.

Questions for the Committee

1. [NetCDF] How can we encourage additional community engagement, from students and/or faculty? We benefit greatly from the involvement of our community, making netCDF truly a collaborative effort. How can we encourage/expand this collaboration? What makes it rewarding to engage with the netCDF developers?
2. [THREDDS] We are actively creating a requirements document for the next generation THREDDS Data Server, and your input is critical. When thinking about accessing data from thredds.ucar.edu, what are your most important features? Does that look different when considering other TDSs? Please reach out to Sean with your thoughts (sarms@ucar.edu)–your input is very important to us!

Community Services and Educational Efforts

Science Gateway & Cloud Computing Activities

- Submitted an NSF Jetstream2 ACCESS request for CPU and GPU resources to support ongoing Science Gateway activities.
- Successfully deployed autoscaling JupyterHub clusters with OpenStack Magnum, improving efficiency and scalability.
- Enabled browser-based access to IDV and AWIPS CAVE on JupyterHub using virtual desktop streaming, now being used in live classroom settings.
- Explored AI-based NWP workflows (FourCastNet, Pangu) on GPU-enabled JupyterHubs using NVIDIA's earth2mip package.
- Improved logging and monitoring with Kubernetes FluentBit on Jetstream2 JupyterHub clusters.
- Continued collaboration with Millersville University to deploy a single-column WRF model for instructional use.
- Provided customized JupyterHub environments for 411 students across 20 institutions and workshops since Spring 2025.

- Collaborated with the LROSE team to integrate radar meteorology tools into JupyterHub environments with desktop streaming.
- Preparing an NSF GEO OSE proposal with LROSE and NSF NCAR EOL to advance open science infrastructure in radar meteorology.
- Transitioned Kubernetes deployments from Kubespray to Magnum in collaboration with Jetstream2 experts.
- Maintained and scaled AWIPS EDEX services in the Jetstream2 cloud, with up to 300 daily clients.
- Delivered or submitted several presentations and papers for AMS 2026, Gateways 2025, and the Improving Scientific Software conference.
- Preparing for upcoming conference engagements, including Gateways 2025 and AMS 2026.

Community Services

The Community Services group has predominantly focused on the four major prioritized projects or initiatives: the Science Gateway Reimagined and Integrated Educational Hub Project; the three modules for the CyberTraining – Machine Learning in the Earth Systems Sciences Project; the Community Assessment Initiative – Communications Plan & Delivery, and Survey Execution, Analysis, and Reporting; the new NSF Unidata Website – Phase 1: Baseline Website Launch. While some of these initiatives have downstream activities, we are pleased to report that each project is complete.

We also drafted and submitted the interim and annual report to NSF and progressed additional reporting and community communications, facilitated the 2025 NSF Unidata Community Equipment Awards, participated in outreach to the Earth Systems Science community, and learning and development offerings such as AI/ML training at University of Northern Colorado, supported cross-program and cross-organizational collaborations and activities, and NSF Unidata Advisory Committee activities and communications, including progressing the final Committee Charter, New Committee Member Selection, Russell L. DeSouza Award, and Joint Meeting planning.

From May-early June, the NSF Unidata Community Services team was not in operation resulting in a reduction in activities over that time period. Additionally, on May 30th, Community Services lost a team member, Nicole Corbin, resulting in a reduction in scope for active instructional design activities.

Support

- A new User Support Portal was launched with the new website.
- The online archive of previously answered support questions is no longer receiving updated information.
- Users can now subscribe, unsubscribe, and change their own mailing list subscription options via a web interface.

- Additional methods other than mailing lists for facilitating community-provided support are being sought.
- We are looking to address deficiencies in our software documentation to make the information they contain more user-friendly and discoverable.

Questions for the Committee

1. [Science Gateway] We are excited to offer in-browser access to NSF Unidata's IDV and AWIPS CAVE with streaming desktop technology (no local installation required) via our PyAOS JupyterHub offerings. Would you be willing to pilot this in a course or workshop and share brief feedback on user experience and performance?
2. [Support] What methods for seeking support or engaging in discussions within a community have you used and found particularly effective? E.g., Discourse? Forums? GitHub Issues or Discussions?

Prepared *September 2025*