Agenda:
Spring 2025 Strategic Advisory Committee Meeting

Virtual Meetings (All times are MDT)

Monday, 14 April 2025, 11:00 – 13:00 MDT

11:00 – 11:05 Welcome and Admin Items (Kevin Goebbert and Tanya Vance)

11:05 – 11:20 Around-the-table Reports (Committee)

11:20 – 12:05 Director's Report (Mohan Ramamurthy)

12:05 – 12:25 Budget Report (Richard Michel)

12:25 – 12:45 NSF Report (Bernard Grant)

12:45 – 12:55 Set up Portfolio Review/Community Needs Assessment Discussion (Kevin Goebbert)

12:55 – 13:00 All other Business and Close Session

Wednesday, 16 April 2025, 09:00 – 11:00 MDT

09:00 – 09:05 Convene and Outstanding Items (Kevin Goebbert and Tanya Vance)

09:05 – 10:55 Portfolio Review/Community Needs Assessment Discussion

10:55 – 11:00 All other Business and Close Session

Wednesday, 23 April 2025, 11:00 – 13:00 MDT

11:00 – 11:05 Convene and Outstanding Items (Kevin Goebbert and Tanya Vance)

11:05 – 12:15 Committee Model Discussion

12:15 – 12:35 NOAA Report (Scott Jacobs)

12:35 – 12:55 USGS Report (David Blodgett)

12:55 – 13:00 All other Business and Close Session

Thursday, 24 April 2025, 09:00 – 11:00 MDT

09:00 – 09:05 Convene and Outstanding Items (Kevin Goebbert and Tanya Vance)

09:05 – 10:45 Open Forum - Follow up on other agenda items

10:45 – 11:00 Close Meeting

Status Report: Strategic Advisory Committee Actions

September 2024 - March 2025

Unidata Program Center Staff

Actions from the Previous Meeting (September 2024)

Action 1

Committee Model Structure Revamp — Send straw poll to move forward for Spring semester adoption – iterative process to bring NSF Unidata leadership in and for committee to produce something to present to NSF Unidata. [Tanya Vance and Alex Davies]

Result

In progress. The NSF Unidata committee chairs, Kevin Goebbert, Casey Davenport, and Alex Davies have been progressing discussions related to the committee model structure revamp in collaboration with committee members. A Committee Model discussion is on the agenda for the Spring Meeting.

Action 2

Make the Unidata conference room less sad and barren [UPC]

Result

Complete. The pennants have been put back on the NSF Unidata conference room walls. Thank you Sean Arms and Doug Dirks for leading along with all program staff who helped in this effort.

Action 3

Next meeting (April); poll committee for dates and times [Tanya Vance & chair]

Result

Complete

Action 4

Share actions asynchronously to confirm before publishing [Tanya Vance]

Result

Complete

Action 5

Incorporate more time for discussion in SAC meeting and elsewhere [Tanya Vance]

Result

Complete. An Open Forum discussion time has been added to the Spring Meeting agenda.

Action 6

Defining and Refining Internal SAC/UPC Recommendation Process [SAC to fully flesh out and share with UCP leadership by end of November]

Result

Complete. SAC members collaborated on a document outlining preferred structure for different styles and feedback for the program center and sent it to UPC Director. UPC Senior leadership and Community Services Manager met with the chair to discuss and will report out at the Spring meeting.

Action 7

Portfolio questions and potential rubric for SAC for evaluation by end of March for Spring Mtg [UPC]

Result

This action has been delayed, but is in progress.

Action 8

Federal agency support request effort [Mohan Ramamurthy]

Result

TBD. Federal agencies activities and resources have been impacted by the change in administration.

Action 9

SAC potential to support proposal review/input [SAC]

Result

Ongoing. Proposal development and funding opportunity search is ongoing. Some proposal activities were postponed due to the changing landscape. UPC will seek opportunities to

collaborate with SAC as proposals arise and deemed appropriate.

Prepared *March 2025*

Status Reports Executive Summary

September 2024 - March 2025

Unidata Program Center Staff

This summary is compiled from the full status reports, available online:
Staff Status Reports: October 2024 - March 2025

Visualization and Analysis Software and Tools

AI/ML

Unidata ML Staff have been working on educational materials, Jupyter Notebooks, technical work, and blog posts. The Cybertraining Award from NSF is wrapping up with our colleagues at MSU Denver for in classroom AI/ML content and materials. **The first module is available today, with the remaining two modules will be available by the end of April. All three modules with learning objectives, and activities will be available for use this fall.** Please get in touch if you are interested in implementing these modules in your classroom.

Recently, we won an internal grant to do a needs assessment on AI/ML training in the classroom, and barriers to teaching AI/ML. Expect a survey link this fall, but feel free to reach out before then if you have questions or feedback on how better to have AI/ML in the classroom or training for your students.

AWIPS

We currently have one build (version 23.4.1) available to support RHEL/Rocky 8 that was released back in June 2024. We have decommissioned all older builds due to running on old RHEL7 systems. EDEX, CAVE, and python-awips are available for install, but source code cannot yet be released. The National Weather Service still has not released this version operationally, so we are limited in what we can release to the public, but we wanted to make sure we had something out there to address the RHEL7 EOL. A new release of python-awips has been made available via pip/conda and source code. The notebooks have been updated to be able to run with the latest packages (ex. Numpy > 2.0, shapely > 2.0).

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.

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. We have offered fewer synchronous training events in this period, instead focusing our limited resources on authoring high quality asynchronous online examples and prioritizing our presence at the American Meteorological Society (AMS) Annual Meeting. Unfortunately the AMS 2025 Short Course was preemptively cancelled due to low registrations; given past success, this is likely due to the 2-day nature. Siphon saw a 0.10.0 release in December 2024, incorporating some bug fixes as well as some needed maintenance for the library as well as supporting infrastructure. MetPy development continues with the 1.7.0 release in Spring 2025, which centered around min/max identification and S3 cloud data clients, updated calculations for saturation vapor pressure and an analytic LCL calculation, as well as incorporating some community contributions. This release's time frame was delayed due to the work on Siphon. MetPy's impact on science continues to grow, with 372 theses and peer-reviewed publications mentioning or citing MetPy, including 13 so far in 2025.

Questions for the Committee

1. For future Unidata AI/ML training efforts, should it focus on direct to student instruction or train-the-trainer (faculty education and support)?
2. 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

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.

Unidata's LDM team has begun running a WIS 2.0 Node using the WMO's wis2box package with the goal of better understanding how WIS 2.0 might impact the community and our data distribution infrastructure.

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 team 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

New versions of netCDF-Java and the TDS were released in January. As was the case last report, there is currently one developer working on the THREDDS projects (up from zero). The next year will be focused on moving towards a more sustainable, cross-language architecture for the TDS while maintaining as much backwards compatibility as possible.

Questions for the Committee

1. 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. 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 TDSes?

Community Services and Educational Efforts

Science Gateway & Cloud Computing Activities

- Provided cloud-based PyAOS JupyterHub resources to 416 students across 17 universities and workshops.
- Development of new administrator documentation for NSF Unidata PyAOS JupyterHubs.
- We are testing autoscaling JupyterHub clusters on Jetstream2 for more efficient use of resources and enabling new technologies.
- We are testing and experimenting with virtual desktops with JupyterHub environments to run legacy desktop applications such as IDV and AWIPS CAVE.
- We tested and experimented with NVIDIA's AI-driven weather models (earth2mip) on Jetstream2.
- Collaboration with CSU and NCAR EOL continues to integrate both desktop and command-line LROSE radar meteorology tools into their science gateway.
- Science Gateway Re-Imagined project progressing through phased development with new features.
- Hosting of AWIPS EDEX servers on Jetstream2 continues for real-time atmospheric data distribution.
- Continued support for NOAA Big Data Project with THREDDS-based Nexrad radar data server.

Community Services

In January, our group experienced a shift in some of our community activities and focus to be compliant with the Presidential actions and executive orders, including ending all diversity, equity, inclusion, accessibility, and justice related projects and activities. This compliance also resulted in updates and changes to our current webpages and documentation.

The group has predominantly focused progress around four major projects or initiatives including: the Science Gateway Reimagined and Integrated Educational Hub Project, the CyberTraining Project, the Community Assessment Initiative, the new NSF Unidata Website launch.

We also participated in outreach to the Earth System Science community at conferences, workshops, and working groups. We also facilitated the 2025 NSF Unidata Community Equipment Awards, supported NSF Unidata UsersCommittee and SAC activities and communications, progressed NSF Unidata's reporting, worked to advance cross-program and cross-organization collaborations and activities, and expanded learning and development materials, resources, and offerings.

Support

Unidata has been looking at improving online sef-support services for our community.

Questions for the Committee

1. NSF Unidata Science Gateway staff maintain a THREDDS Data Server (TDS) on Jetstream2 (https://tds.sciqw.unidata.ucar.edu) that largely mirrors the datasets

available on https://thredds.ucar.edu, but with a shorter archive. This TDS serves as an experimentation and staging ground for thredds-docker, which sees significant community adoption. Moreover, while it does receive some use—such as by Daryl Herzmann at Iowa State, who notes when it is unavailable—overall, its utilization appears to be limited. Do you have any suggestions for how we might enhance the value and impact of this TDS? Are there particular datasets or services that would make it more useful to the broader atmospheric science community?

2. When seeking information or support about Unidata software, data, or projects from ***online*** sources, which of the following do you use?
    a. Software documentation
    b. Support archives
    c. Mailing list archives
    d. Don't know, I just use a search engine or ChatGPT
    e. None of the above
3. Do you find the information that you are looking for?

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