

# **Agenda: Fall 2023 Joint Committee Meeting**

*(Times are Mountain Standard Time)*

## **Wednesday, November 1, 2023 (Users Committee)**

11:00 – 12:00 New Committee Member Orientation

Meeting Commences After Lunch at 13:00

13:00 – 13:15 Welcome/Introduction (Mohan Ramamurthy/Chair)

13:15 – 13:20 Administrative Items (Chair/Tanya)

13:20 – 13:45 Users Workshop Follow-up Report on Outcomes and Impact (Chair)

13:45 – 15:15 Status Reports Discussion (Committee/Staff)

- Visualization Software/Tools
- Data Access/Formats/Dissemination
- Community Services/Educational Efforts

15:15 – 15:30 BREAK

15:30 – 16:30 Core Proposal Community Hubs and MSI Partnerships Discussion (Mohan)

16:30 – 16:45 Administrative / Wrap Up Day 1 (Review/Discussion, Actions, Spring Meeting Dates)

## **Thursday, November 2, 2023 (Joint Committee)**

09:00 – 09:10 Welcome and Administrative Items (Chair/Tanya)

09:10 – 09:45 Thank you to parting/transitioning members and welcome to new committee members

- Introductions (abbreviated round table) – highlight what doing and excited about
- Committee Chairs Update

09:45 – 10:15 Agency Update (NOAA – Joint Update, Scott Jacobs with William Boll/Carissa Klemmer)

- 10:15 – 10:45 Agency Update (USGS – David Blodgett)
- 10:45 – 11:00 Break
- 11:00 – 11:30 Agency Update (NASA – Doug Newman)
- 11:30 – 12:00 Program Center Project Updates (CyberTraining and Pythia)
- 12:00 – 13:00 LUNCH
- 13:00 – 14:00 Director’s Report (Mohan Ramamurthy)
- 14:00 – 14:30 Joint Committee Topic (AI in ESS Coursework)
- 14:30 – 14:45 BREAK and walk to FL2-1001 (the small seminar room)
- 14:45 – 16:00 Hybrid DeSouza Presentation and Q&A (Andrea Zonca and Jeremy Fischer)
- 16:00 Meeting Adjourn, Handing over of the Users Committee Chair(s) Gavel
- 18:30 Dinner and Collaborative Discussion on the Day’s Proceedings at: [Bacco | Trattoria & Mozzarella Bar](#), 1200 Yarmouth Ave, Boulder, CO 80304 ([map](#))

## **Friday, November 3, 2023 (Strategic Advisory Committee, Executive Session)**

- 09:00 – 09:15 Welcome and Administrative Items (Chair/Tanya)
- 09:15 – 10:15 Core Proposal – Unidata Reimagined: New Approaches to Community Data Services (Mohan Ramamurthy)
- 10:15 – 10:30 BREAK
- 10:30 – 11:00 Open Discussion
- 11:00 – 12:00 Budgets and Staffing (Mohan Ramamurthy, Joshua Neidigh)
- 12:00 – 12:15 Wrap Up, Review of Day’s Proceedings / Discussion, Admin (Actions, Spring Dates and Location)
- 12:15- 13:00 All Other Business/Lunch/Meeting Adjourned

# Status Report: Users Committee Actions

*April 2023- November 2023*

*Unidata Program Center Staff*

## **Actions from the Previous Meeting (March 30-31 2023)**

### **Action 1**

Convene McIDAS-X power users to give guidance for easing transition as Unidata ends support [UPC: MikeZ and TomY]

#### **Result**

MikeZ continues to work closely with COD to address any concerns there; of recently there have been none aside from a request for updated McIDAS maps, which he is working on.

MikeZ and Tom recently attended the McIDAS Users' Group (MUG) meeting in Madison Wisconsin. New relationships have been formed between MikeZ and SSEC, and he gave a presentation at the MUG meeting showcasing how and the scale at which McIDAS-X is used at COD. SSEC reinforced that McIDAS-X will be supported through at least the GOES-R series lifetime (2030's), and there are no known data changes on the horizon that would require new features to be added. As long as Unidata maintains its sub award with SSEC, our users will be able to continue to use Unidata's McIDAS-X, with the understanding that support and development have ceased.

There are plans to sunset the mcidas-support email list and write the McIDAS-X Users email list to make some final announcements, including a transition to that email list for any/all inquiries. We have not yet made this announcement.

### **Action 2**

Set up Users Committee virtual session to discuss consolidating data-centric e-mail lists [UPC: TanyaV]

#### **Result**

[In Progress]

### **Action 3**

Remove unused NWS-Changes e-mail list [UPC: JenO or DougD]

#### **Result**

The NWS-Changes list is no longer active, but the message archives are still available to the

public for viewing.

## **Action 4**

Start e-mail discussion with the committee regarding NEXRAD L3 products that are available but not distributed via NOAAPort. Does the community want any of these added to Unidata's distribution mechanisms? [UPC: MikeZ]

### **Result**

There has been some interest in a number of the NEXRAD L3 products that we would be able to add to the IDD. During internal discussions on how best to proceed with that, we realized this taps into a larger issue concerning the LDM Feed Types, their purposes, and how the UPC could/would/should add data to the IDD in a way that would minimize impact and confusion to users. These additions are on hold until we can form better plans around these larger issues.

## **Action 5**

Evaluate data on CONDUIT that could potentially be delivered via NWSTG-LDM instead; have discussion at the Fall committee meeting. [UPC: MikeZ, TanyaV. NCEP: Margaret Curtis or Anne Myckow]

### **Result**

Little progress has been made on finding data products that could be moved to NWSTG-LDM. However, discussions have recently resumed concerning duplicate NDFD data on the IDD. A course of action has yet to be decided, but the cause of the duplicate data is being investigated on NCEP's side.

## **Action 6**

National Association of Geoscience Teachers (NAGT) have pre-made rubrics where they assess activities. Casey Davenport can get the team in contact with someone at NAGT who might be able to provide insight on their process. [UPC: NicoleC, AnaE Committee: Casey Davenport]

### **Result**

Casey pointed us to NAGT's Teach The Earth project, specifically their submission form for contributions and their peer review process. A similar procedure could be implemented for contributions to the Unidata Science Gateway (USG), however it is still unclear the extent to which the USG team has the capability to review contributions. Furthermore, as we envision a variety of contributions, e.g. tutorials, scripts, and workflows, maintaining those contributions takes extra time and scheduling as their dependent software packages inevitably will fall out of date. Collaboration with Unidata staff and community members may help alleviate some of these problems.

## **Action 7**

Draft DeSouza award announcement and share with committee [UPC: DougD]

### **Result**

While the award announcement is traditionally published after the honorees have had a chance to give their seminar, some introductory text was shared with committee members.

## **Action 8**

Investigate whether DeSouza seminar can be shared with some other UCAR or NCAR seminar series. [UPC: DougD]

### **Result**

Discussed with UCAR multimedia group (who stream/publish UCAR seminars). Most NCAR seminars are focused on the science of a particular lab or program, so we'd have to find a good fit for a specific DeSouza topic. Many seminar series have set schedules/days, so it might be difficult to coordinate with Users Committee meetings.

Question: should we investigate further?

## **Action 9**

To gather future DeSouza nominations, investigate contacting committee alumni, geoscience department chairs, maybe partner with AMS? [UPC: TanyaV or DougD]

### **Result**

[In Progress]

## **Action 10**

Add agenda item to Fall meeting schedule to talk about the role of webinars and other outreach/branding activities as well as status checks for Equipment Awards. [UPC: TanyaV]

### **Result**

Delayed until Spring meeting.

# Status Reports Executive Summary

*April 2023- November 2023*

*Unidata Program Center Staff*

This summary is compiled from the full status reports, available online:

## Visualization and Analysis Software and Tools

### AI/ML

Unidata ML Staff have been working on educational materials, project pythia cookbooks, and blog posts. The Cybertraining Award from NSF will be a focus moving forward with our partner at MSU Denver for in classroom AI/ML content and materials.

### AWIPS

Since the last status report, the team has been developing the Beta, version 20.3.2 of AWIPS, while maintaining our production version of 18.2.1. Both versions have had production and development EDEX systems hosted on the Jetstream2 platform since last summer. The team is excited to announce that we are planning on releasing a production version of 20.3.2 before the end of the year, and fully transitioning away from v18 – the first major upgrade of AWIPS for this team.

Throughout the year, for version 20, we have released significantly simplified and improved installers of CAVE for both MacOS and Windows, as well as a full EDEX installation for CentOS as well as continuing a Centos7 Virtual Machine option (available on both CentOS and Windows).

We have been supporting a publically accessible beta EDEX available at [edex-beta.unidata.ucar.edu](http://edex-beta.unidata.ucar.edu) for v20. For each of the subsequent releases of the beta, we have encouraged users to submit bugs and issues using [our reporting form](#). This has allowed us to track and address many user-identified problems.

Aside from AWIPS development, the team is proud to host our first AWIPS workshop at the 2024 AMS Student Conference in late January. We have also completed more than two consecutive years of releasing [AWIPS Tips blogs](#) every other week.

### 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.

## McIDAS

Unidata McIDAS-X/-XCD development has officially ceased. Our MUG membership with SSEC will be maintained; Unidata sites can continue to download and use Unidata McIDAS-X. SSEC will continue to support their McIDAS-X software through at least the GOES-R series (through December 2036).

Future updates to Unidata McIDAS-X/-XCD will be few and far between, and will primarily be done at SSEC rather than in-house at Unidata. These updates will likely be limited to critical fixes and possibly small enhancements.

Users should continue to contact [support-mcidas@unidata.ucar.edu](mailto:support-mcidas@unidata.ucar.edu) for download requests. We will continue to host the [mcidas-x@unidata.ucar.edu](mailto:mcidas-x@unidata.ucar.edu) email list.

This will be the final McIDAS status report.

## 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 continue to lead and support a variety of educational efforts, including our first on-site non-AMS regional Python workshop since the COVID pandemic. We are also furthering development of asynchronous training materials through Project Pythia, where we are working to migrate our existing workshop and gallery materials into a so-called "cookbook" within the broader project. MetPy development continues with the 1.5.0 feature release (largely based around plotting surface analyses) and a 1.5.1 bugfix release. We are planning a 1.6 release which will largely include community contributions, many of which were created at a sprint at SciPy 2023. Community use of the library is proving extensive, with 74 theses and peer-reviewed publications mentioning or citing MetPy in 2023; this brings the total count to over 250. We continue to assist the broader community with participation within matplotlib, cartopy, and conda-forge, though it has become increasingly difficult to dedicate time to these efforts given the full portfolio of responsibilities.

## Questions for the Committee

1. Is anyone using the Zarr format (<https://tp.zarr.dev/>) in the classroom or in research?
2. Do you use AWIPS in the classroom, if not, what's the biggest obstacle keeping you from doing so?
3. 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

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 continues to be active in efforts to advance the Climate and Forecast (CF) Conventions for netCDF.

Unidata continues to be active in several international standards bodies and other communities focused on data and technology including the World Meteorological Organization (WMO), the Open Geospatial Consortium (OGC), and the Earth System Information Partners (ESIP).

## Data Services

Progress on the RTSTATS Revamp has been made, before pausing to get started on IDD Cataloging. RTSTATS development will resume shortly.

IDD Cataloging is underway. Presently, a week-long database of Product IDs is retained, which has already been rather helpful in assisting staff, as well as to identify duplicate data on CONDUIT which has recently been remedied.

Other primary duties include working with other teams and staff to assist in their needs. By working alongside the other engineering teams at Unidata, new opportunities have been exploited; for example the THREDDS team will be using the TIG stack as part of their performance testing and I am assisting in that deployment. I have also been helping the AWIPS team test new versions of CAVE on various platforms.

User support of course continues to be a primary focus. See the **Status Report: Support** for inquiry metrics.

## GOES

Unidata continues to operate satellite downlink facilities for the NOAAPort Satellite Broadcast Network (SBN) and GOES-East and GOES-West rebroadcast services on behalf of UCAR/NCAR and the Unidata community. All received products are then provided via the Internet Data Distribution system (IDD) in various feeds and via remote access provided by AWIPS EDEX, McIDAS ADDE and THREDDS Data Servers.

Details on various efforts related to maintaining this capability are presented below.

## IDD

Unidata continues to support, update, and enhance the data available via the IDD for the benefit of research and education. Included but not limited to adding new data formats, bridging the knowledge gap in newly introduced data, and providing statistics of data flow

and composition.

## 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.

## LDM

Unidata's LDM team continues to update source code and operating paradigms with ever-changing user demographics and user requirements, particularly in the area of security and inclusiveness of data.

## NetCDF

The netCDF team continues to work towards maintaining the reliability of the netCDF libraries, while keeping one eye forward as to the future needs of our community. We have continued our community engagement efforts and collaborations whenever and wherever possible; examples of this include our involvement with the Zarr Community meetings and our membership on the Zarr Enhancement Protocol (ZEP) committee. We have also expressed interest in being part of the forthcoming reboot of the HDF Group's Technical Advisory board.

We continue to address the issues associated with the proliferation of new mainstream architectures (Apple Developed M1-M2/ARM), evolving compilers and standards, and extending our collaborations with tangential, but related, projects (conda-forge libnetcdf feedstock, for example).

## THREDDS

TDS version 5 is now the only supported version of the TDS, and inflow of bug reports is slowing. We have started plans for netCDF-Java version 6 and begun development on TDS microservices, to include: gCDM, File Service, and Catalog Service.

## Questions for the Committee

1. Does the committee have any recommendations for other products or services based on our existing satellite ingest that would be beneficial for the community?
2. Unidata is looking into the possibility of repurposing several current LDM Feed Types. **Is anyone using any of the GPS, GPSSRC, FAA604, FNMOC or WSI feeds?** Would you have any negative impacts if we repurposed these feeds for other uses?
3. As intimate stakeholders in data distribution and access for research and education, please let us know about any data distribution software needs that you personally experience that are not currently fulfilled by use of LDM.

# Community Services and Educational Efforts

## Science Gateway & Cloud Computing Activities

From April to October 2023, we made significant advancements in our Science Gateway and Cloud Computing offerings and infrastructure. We secured an 8 million SU allocation from the ACCESS program on Jetstream2, marking our largest allocation since 2015. We streamlined the JupyterHub request process, enhanced Docker container projects, and expanded the capabilities of the Unidata demonstration server with GPU support enabling projects in the artificial intelligence and machine learning arena. We've been actively enhancing our AWIPS EDEX server on Jetstream2 to ensure seamless data delivery and to prepare for upcoming infrastructure changes like CentOS 7's End of Life. Collaborations with institutions such as Colorado State University and the NCAR EOL for the LROSE project have been fruitful, resulting in knowledge sharing and technology development. We successfully deployed the Weather Research Forecast (WRF) system on Jetstream2, enabling numerical weather prediction in classroom and research settings. Furthermore, the redesign of the Unidata Science Gateway is underway, with key components including a JupyterHub portal. We also continued to expand on PyAOS JupyterHub offerings and actively participated in several workshops, serving many students. This period saw significant engagement and growth, serving users, expanding technological capabilities, and fostering collaborations.

## Community Services

In addition to “normal, day-to-day” activities of communication and coordination with community members, the Community Services group’s efforts in the past six months have been focused on:

- Outreach to underserved communities and active engagement and activities with tribal colleges and universities and the Data Sovereignty Network project partners including sensor install and site configurations at SIPI, WRF output for NTU, and the addition of The Haskell Foundation and Nebraska Indian Community College to the Sovereign Network
- Outreach to the Earth System Science community through participation at ESIIIL Innovation Summit, Rising Voices, CUAHSI, AMS, and AGU conferences, the NCAR NESTs Coastal Resiliency Community Workshop, February AIHEC TCU Data Workshop, and Earth Data Relations and ESIIIL NSF working groups
- Expansion of learning materials, resources, and offerings
- Prototyping the Reimagined Science Gateway and Integrated Educational Hub to make our educational services more discoverable on the web as well as promoting the variety of educational services we are able to provide
- Received [NSF Award #2319979](#) for a series of introductory AI/ML educational resources
- Providing support for the planning and implementation of the 2023 Unidata Users Workshop
- Facilitated CSU Python Readiness Blended Learning Series including Train the Trainer, NCAR|UCAR Intern Professional Development Workshop Series on Data Management and Visualization, and the UMBC Regional MetPy for Quantitative Analysis of Meteorological Data Workshop with Howard University, Morgan State University, UMBC, NCAS-M, and John Hopkins University
- Partnered with COMET and USGS on development of a series of NetCDF/CF microlearning resources and delivery of the Metpy for Quantitative Analysis training

- Support creation of Unidata’s next core funding award proposal

## Support

Unidata staff have started vetting replacement packages for our current eSupport system. We hope to have a new support package in use before the end of 2023.

With the retirement of Tom Yoksas, McIDAS development at Unidata has been curtailed, but support for the current software will continue for the immediate future. Unidata will continue to license the software on behalf of the community (via a MUG membership) for the foreseeable future as well.

## Questions for the Committee

1. As we are in the redesign phase of the Unidata Science Gateway, are there specific features or components that the committee would like to see included or prioritized?
2. With our collaborations with institutions like Colorado State University and the NCAR EOL, are there other institutions or organizations that the committee believes we should be partnering with?
3. What changes/recommendations would you like to see in Unidata support or how Unidata conducts support? Are you subscribed to any of the unidata software package mailing lists?

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Prepared *October 2023*