

Director's Report

Joint Policy and Users Committee Meeting

18 September 2012

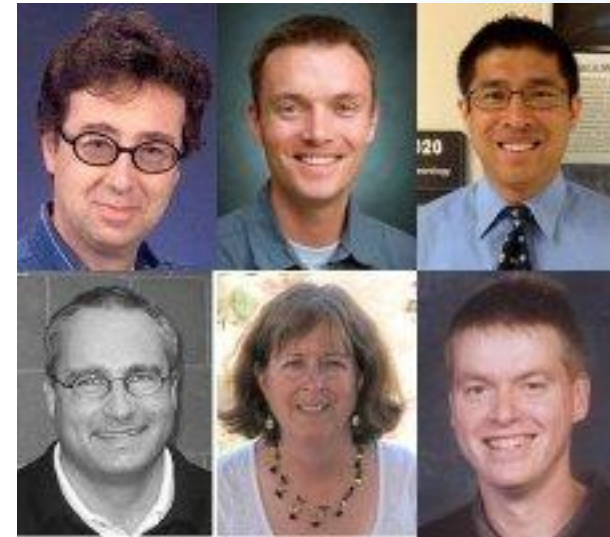
Boulder, CO

Mohan Ramamurthy
Unidata Program Center
UCAR Community Programs
Boulder, CO

New Committee Members

Policy Committee:

- Rob Fovell, UCLA
- Michael Piasecki , CCONY
- Lynn McMurdie, Univ. of Washington



Users Committee:

- Mike Baldwin, Purdue University
- Russ Schumacher, CSU
- Sam Ng, Metro State, Denver
- Kevin Tyle (**Incoming Chair, 2nd Term**)

Welcome and Thank you!

Policy Committee:

- David Tarboton
- Jim Steenburgh
- Gary Lackmann

Users Committee:

- Tom Whittaker
- Patrick Market

I wish to thank all of them for their generous participation, active engagement, and for providing thoughtful guidance.

- The FL4 remodel work was completed in early July.
- The UCP programs that were temporarily located in the Anthes Building moved back on 9 July 2012.
- FL4 will be another “green” building using energy from solar arrays and a geothermal system. UCAR is applying for LEAD certification.



- We are still in the process of making adjustments to the cooling system.

Senior Advisor Appointment

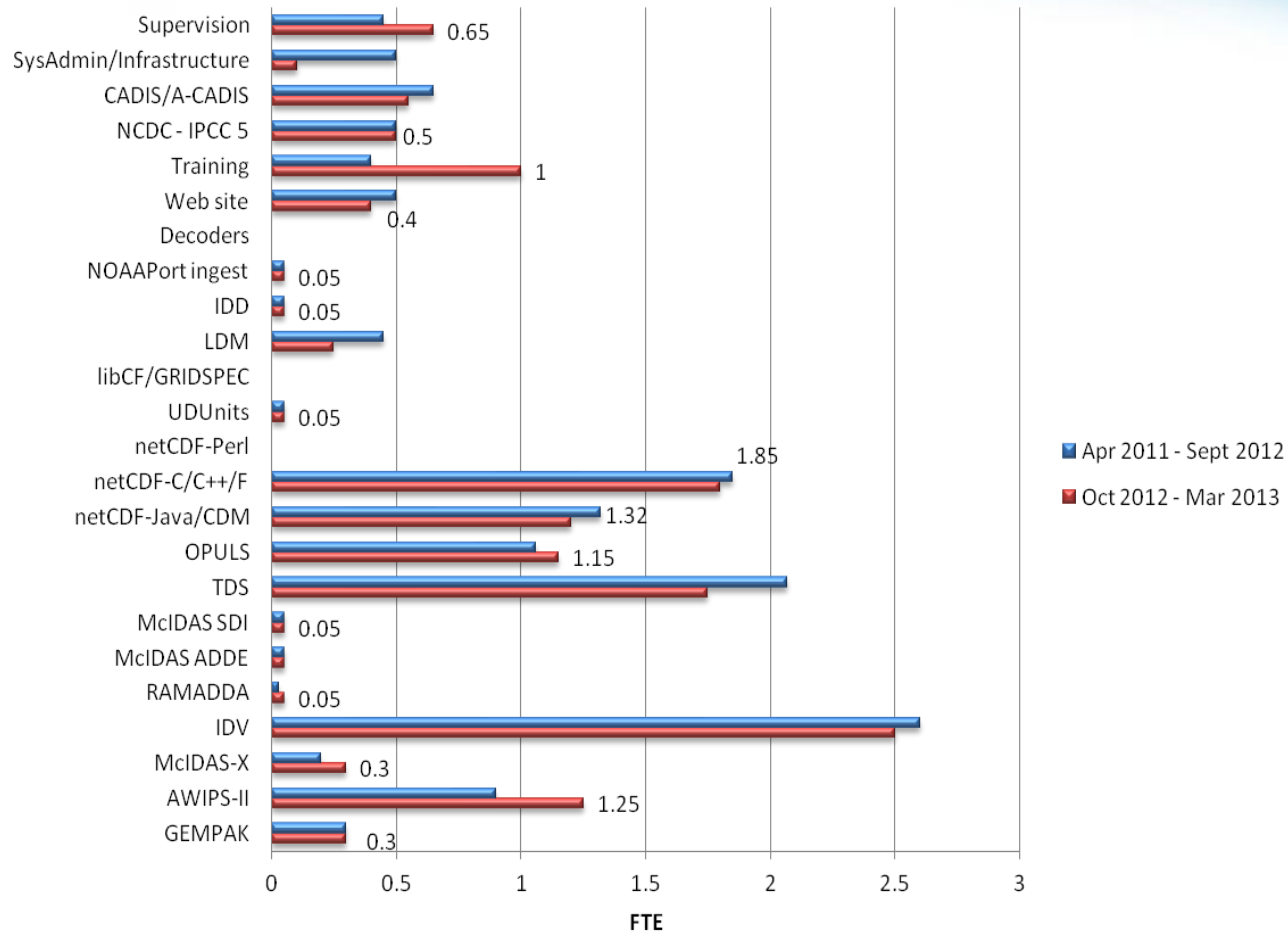
- Tom Bogdan has appointed Scott Rayder as senior advisor for development and partnerships at UCAR.
- Rayder comes to UCAR from ITT Exelis, where he was director of business development for civil sector programs.
- Rayder was NOAA's chief of staff from 2001 to 2008, and has extensive background in working for government, non-profit organizations, and the private sector.



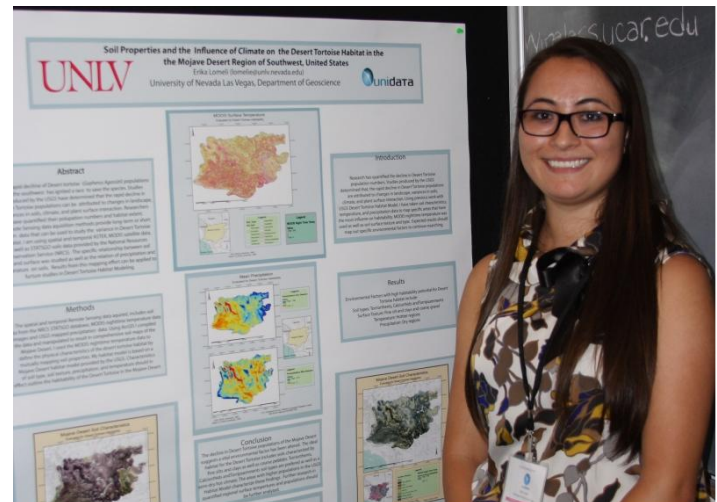
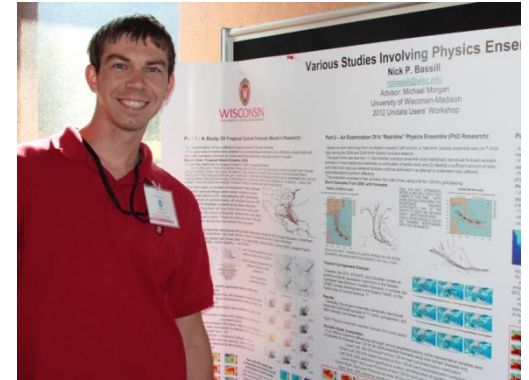
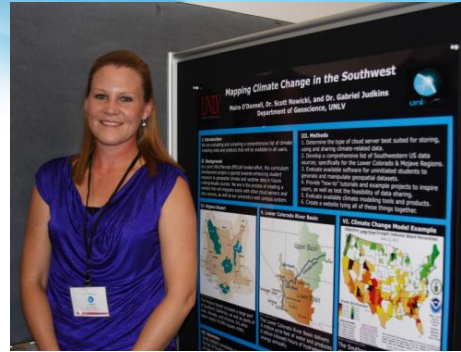
Staffing

- Hired four new staff this year. Three of them are software engineers and one is a system administrator.
- With the recent hirings, now there are 25 staff members working at the UPC.
- Some of the new hires have two-year term appointments.
- Robb Kambic, one of the software engineers, has re-located to Florida, and will be leaving Unidata at the end of October. Have not decided if/when his position will be filled.

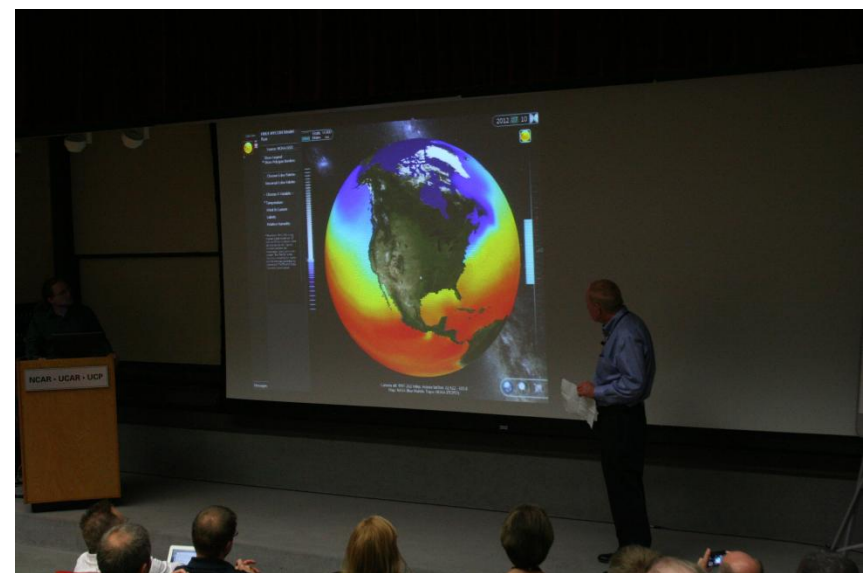
Software Engineer FTE per Unidata Product (current and anticipated for next 6 months)



- Theme: Navigating Earth System Science Data.
- It was held 9-13 July at the Mesa Lab.
- NSF/AGS provided special funding for the workshop.
- The workshop was a huge success. Kudos to the Users Committee and the UPC staff!
- There were 103 participants, the largest of any Unidata Triennial workshop, including 10 students.
- An article for publication in *BAMS* is currently in the works.



2012 Users Workshop



OGC Standardization

Hot off the press!

OGC Standardization

- “As of today, the NetCDF Enhanced Data Model Extension Encoding Standard [11-038r1] has been approved a new OGC standard. Congratulations to the CF-NetCDF SWG! “
- This is the second Unidata product to be approved as an OGC Standard.
- Each one is a big step toward increased interoperability and adoption of Unidata software.
- Kudos to Ben and his team for getting this through the arduous OGC process.

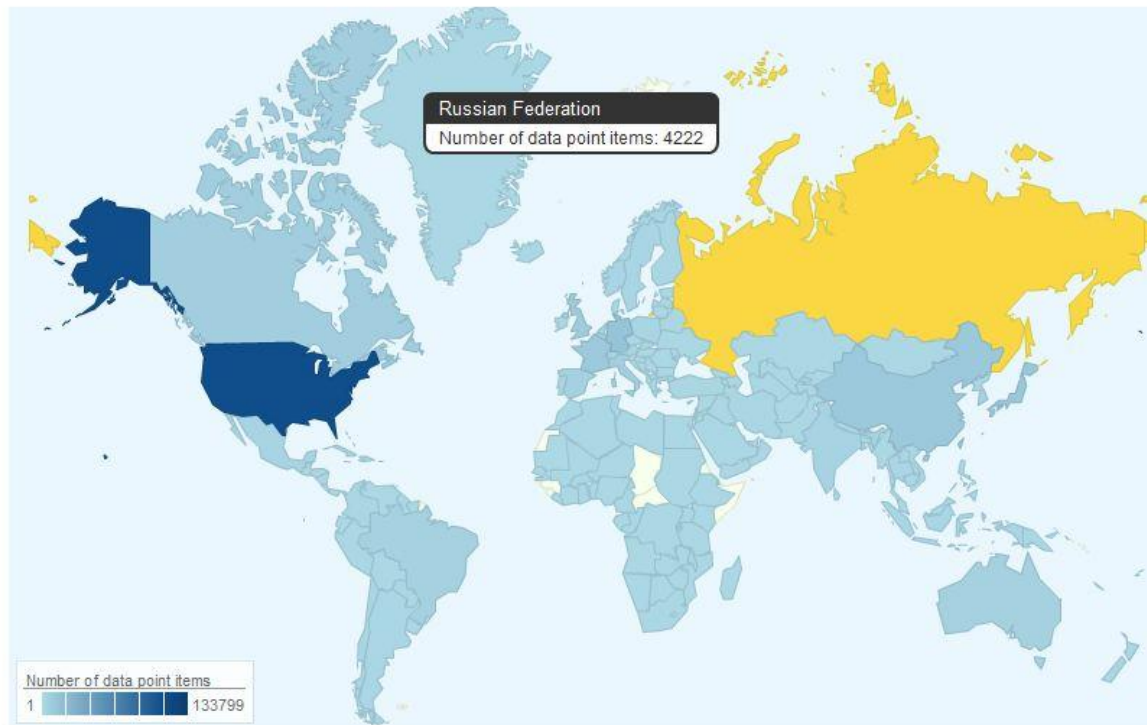
Composite Map of Unidata Users

According to a recent estimate, the Unidata community now includes over 40,000 users in 2400 academic institutions in 210 countries.

Unidata's Outreach

Data gathered from mailing list rosters, package downloads, workshop attendance, website registration, support requests and TDS access. These data are considered data point items. 310407 items of data points used (resolved hosts). 33682 points of data unused (unresolved hosts, .COM, etc.)

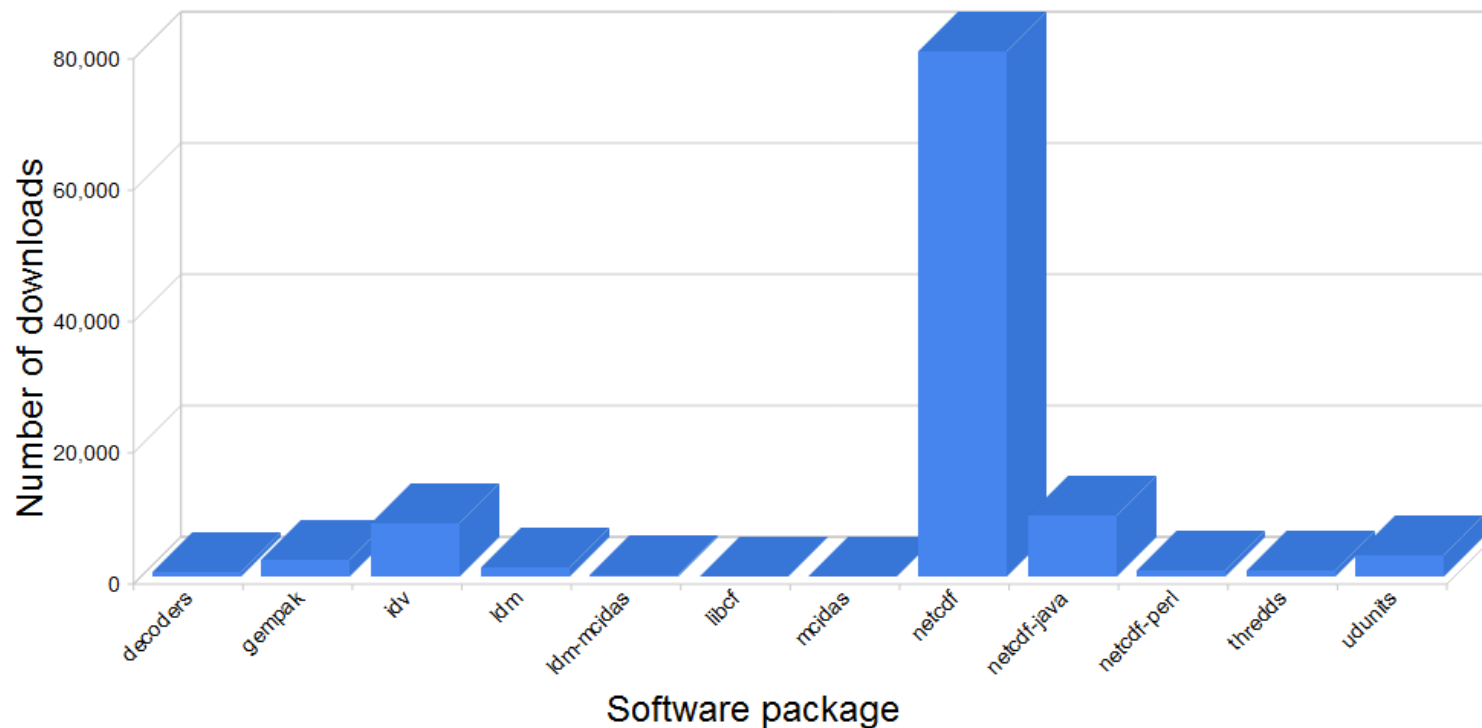
Total: 210 countries



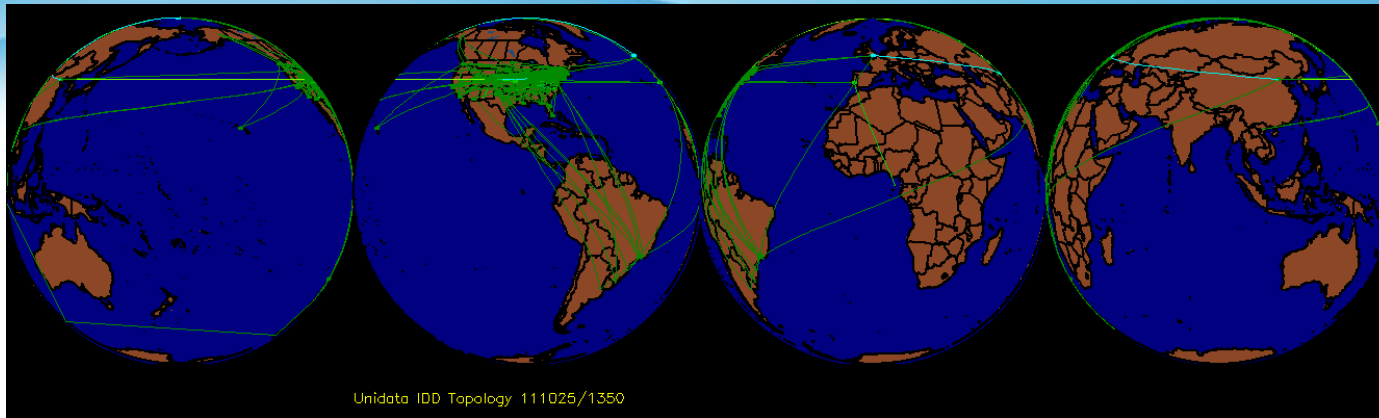
Note: The map above is interactive - move your mouse over a country to see the data.

Software Download Metrics

Yearly total represented for all packages download data: Aug 31 2011 to Sep 01 2012
 Filter by Session (1 session = 30 minutes) *



*netCDF numbers are shown for downloads from only the UPC and do not include downloads from two other locations in other countries.



- ❖ About 510 machines at ~230 sites are running LDM-6 and reporting real time statistics. These numbers have not changed much in the past 4-5 years, but the volume data ingested keeps growing. Many organizations are using the LDM but not reporting stats.
- ❖ UPC's IDD Cluster relays data to about 650 downstream connections. **Average data output: 13.3 TB/day or 1.23 Gbps! Peak rate exceeds 2.27 Gbps!**
- ❖ Data input to the cluster has increased to ~12.5 GB/hr because of WSR 88-D Dual-polarization upgrades and the addition of more model output to CONDUIT.
- ❖ **WSR 88-D Level II and CONDUIT remain the top two data streams based on volume.**

Data Access/Distribution Volumes

Data Access Protocol	Data Volume (Yearly)
OPeNDAP	8.24 Tbytes
Web Coverage Service (WCS)	0.16 Tbytes
Web Map Service (WMS)	30.5 Gbytes
FTP	3.99 Tbytes
NetCDF Subset Service	0.72 Tbytes
ADDE on Motherlode	14.4 Tbytes (estimate)
ADDE GOES-East	12.0 Tbytes
ADDE GOES-West	9.60 Tbytes
ADDE GOES-South	6.24 Tbytes (820 users)
TOTAL	~55.4 Tbytes
Data ingested into IDD	78.8 Tbytes (estimate)
Data relayed to 650 downstream sites	Approx. 3.4 Petabytes!

- Code quality improvement through static analysis; COVERTY SCAN use has lowered the measured defects/1K lines of code from 1.989 to 1.625.
- NSF is funding a study that
 - ... seeks to create a software taxonomy framework that will provide data-driven insight on NSF's software environment investments. In addition, the project will develop a set of recommendations, based upon case study observations and software inventory data, for NSF consideration on future studies of software sustainability factors. NetCDF was chosen by the project's advisory group as a case study candidate.

- Number of Google hits for "netcdf": **1,310,000**
- Number of Google hits for "netcdf-3": **686,000**
- Number of Google hits for "netcdf-4": **612,000**
- Number of Bing hits for "netcdf": **386,000**
- Number of Google images for "netcdf": **42,200**
- Number of forum discussions mentioning netCDF: **32,100**
- Number of blog mentions of netCDF: **24,400**
- Number of videos tagged as netCDF-relevant: **15,700**
- Number of Google scholar entries for "netcdf": **8,320**
- Number of books containing the term "netcdf": **5,250**
- **Number of free software packages that can access netCDF data: 106**
- **Number of commercial software packages that can access netCDF data: 21**
- **Number of U.S. patents mentioning netCDF: 37**



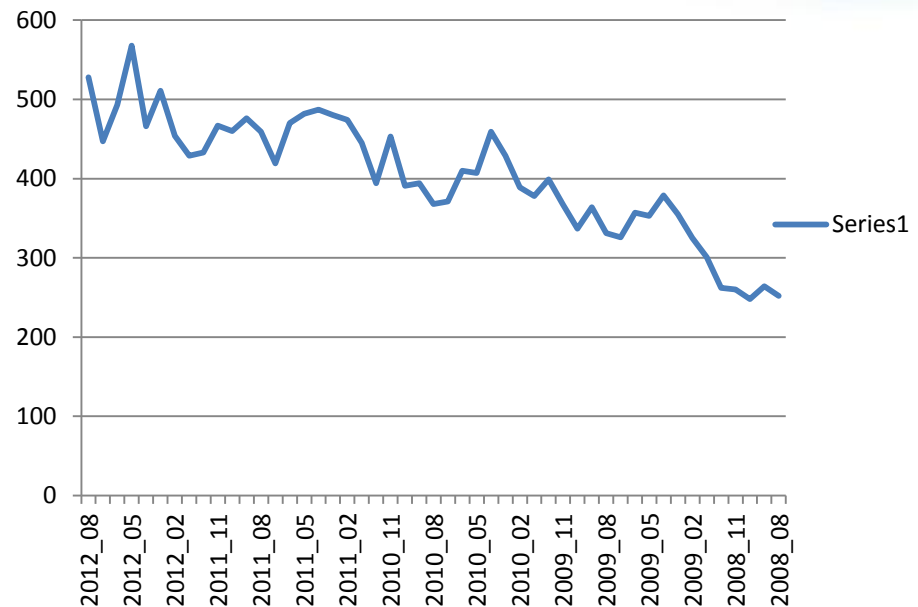
- The Common Data Model (CDM) 4.3 is in beta release. THREDDS Data Server (TDS) 4.3 is in alpha release. [The CDM is a middleware that underpins the TDS, but is also integrated into other applications within and outside Unidata).
- There are a number of advances to both software, including Complete a complete rewrite of GRIB-1 and GRIB-2 IOSPs, updated BUFR and GRIB2 tables from WMO and NCEP, and addition of Coordinate System Builder for Arakawa E grid in WRF NMM core output files
- Work continues on OPULS (OPeNDAP-Unidata Linked Servers) project to finalize DAP4 specification, implement DAP4 clients and servers, develop DAP4 conformance testing capabilities.
- OPULS received 2nd year funding from NOAA -- approximately one third of originally budgeted amount;
- The THREDDS project also received another year of funding from NOAA's National Climate Model Portal (NCDC/NOMADS)

Integrated Data Viewer

❖ **IDV use continues to grow.**

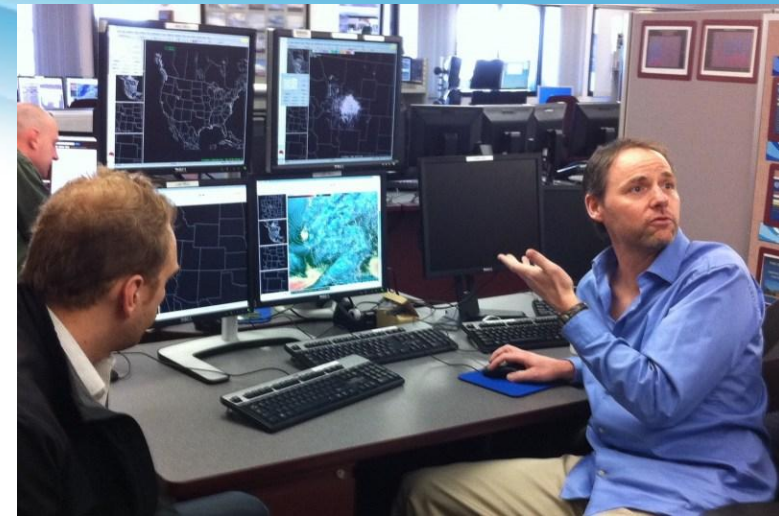
❖ IDV version 3.1 was released this month.

- Enhanced support for ensemble output and statistical analysis
- New time-matching capabilities added
- New multi-view image and movie capture features as well as axis labeling advancements are now available



GEMPAK

- NCEP is continuing to make new releases with bug fixes and other minor changes.
- There have been two new releases since the Spring meeting.
- GEMPAK 6.6.0 was released in June and 6.7.0 was released in September 2012.
- **It looks like GEMPAK, sans its GUI software like NMAP, may have a longer life at the National Centers than originally envisioned.**
- The UPC is planning to move GEMPAK to GitHub in preparation for NAWIPS to AWIPS II migration.
- Eventually, NAWIPS/GEMPAK will become a community-supported software on GitHub.
- GEMPAK Training Workshop will be offered in November, with introduction to AWIPS II.



- **AWIPS II beta-users community is slowly growing. In addition to Texas A&M, University of Albany, Penn State, and Iowa State have received the software.**

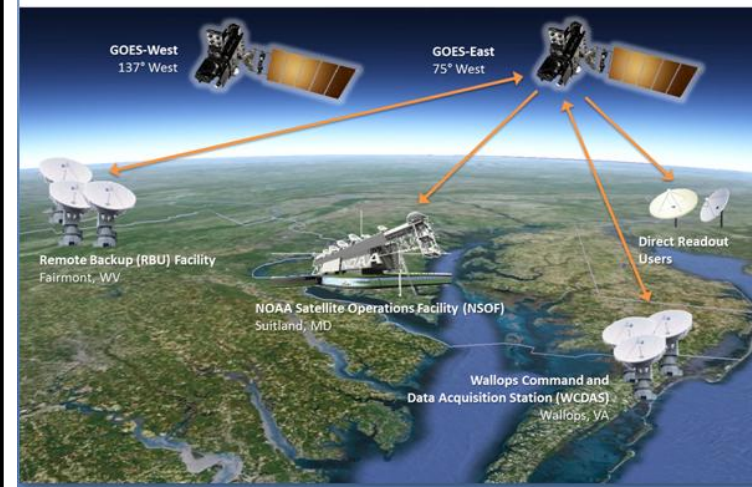
- Unidata is continuing to receive major releases of AWIPS II, including source code and Eclipse development environment, from NWS and NCEP.
- The UPC is attempting to demonstrate that AWIPS II is capable of running on a single server for non-operational use, as opposed to a multiple servers and clusters such as at National Centers and NWS forecast offices.
- The UPC has made great strides in reducing the resource footprint of the AWIPS II system by eliminating a number of operation-specific components and adjusting the configuration of the AWIPS II LDM.
- Testing CAVE functionality in a virtual machine.
- **The 64-bit EDEX server will be available in Winter 2012-13.**

We are continually look for ways to improve our software engineering processes through:

- Using agile software development
- Leveraging open source software repositories such as Github and Maven
- Doing automated Code testing and using static analysis tools
- Using Project and issue tracking software like Jira and Redmine
- Generating documentation with software like Doxygen
- Increasing communication overall. E.g., monthly technical staff meetings and other focused meetings as needed; Some groups like THREDDS are holding daily stand-up meetings.
- Hiring smart programmers

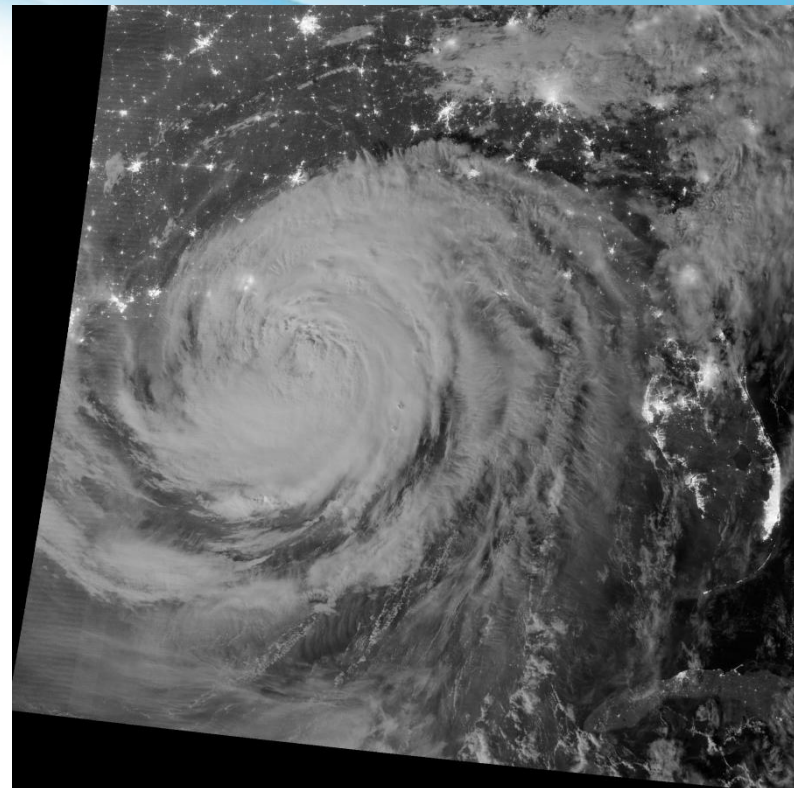
- **Greg Mandt (NOAA) gave an invited talk on the GOES-R project at the 2012 Users Workshop. Greg is the Project Director GOES-R.**
- **As a follow-on, Steve Goodman, Chief Scientist, visited Unidata in August.**
- **There is a great deal of interest in collaborating with Unidata on data and software.**
- **Unidata may receive funding to deploy a ground station at UCAR. We have been asked to submit a mini-proposal that includes the scope of work and a budget.**
- **Unidata will partner with NCAR/EOL, NCAR/RAL, and NOAA on this effort.**

GOES-R Ground Segment Architecture



POES Data

- Soumi-NPP is NASA's newest Earth observing research satellite.
- Its five key instruments five key instruments, the Advanced Technology Microwave Sounder, the Cross-track Infrared Sounder, the Ozone Mapping and Profiler Suite, the Visible Infrared Imaging Radiometer Suite, and Clouds and the Earth's Radiant Energy System, are providing unprecedented view of Earth's weather and climate.
- Unidata has never distributed POES data in real-time to its community. Should the UPC consider distributing POES data?





EarthCube

[main](#) [my page](#) [members](#) [groups](#) [blogs](#) [background reading](#) [charrette](#)

- Unidata is continued to be involved in EarthCube.
- We are contributing to four of the early EAGER-funded projects.
- Ben and I participated in the Second Charrette that was held in June in Arlington, VA.
- NSF/AGS has asked me to help in organizing a workshop of the mesoscale modeling, data assimilation, and ensemble prediction community to help shape EarthCube's plans. A proposal is being submitted to fund this workshop.

- Advanced Arctic Data And information System (ACADIS); It expands on CADIS, which was funded from 2007 to 2011.
- A collaborative effort between NSIDC, NCAR/EOL, NCAR/CISL and Unidata.
- Supported by the NSF Office of Polar Programs, Division of Arctic Sciences
- Designed to manage the diverse data needs of the Arctic research community: Ingest, Provide Access, and Preserve data.

Content and use summary

56 Projects (Most are AON)
80 Lead Principle Investigators

480 Archived data collections
30,000 files
125 GB Archived files
3100 Unique Annual Visitors

Data Management Support for NSF Arctic Investigators

Template for meeting Data Management Plan requirements in all NSF Proposals for Submitting Data Sets to the Advanced Cooperative Arctic Data and Information Service (ACADIS)

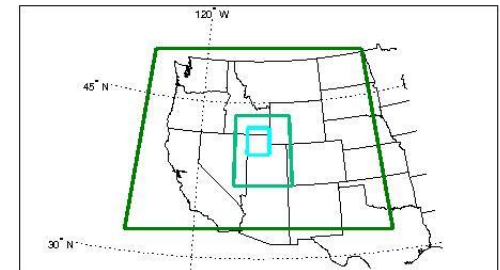
***Unidata* is developing a data translation tool that will take output from data loggers (and other sources), translate them into structured ASCII and netCDF formats, and visualize them in the IDV.**

WRF Collaborations

➤ Per our previous discussions, Unidata staff met with the WRF team in MMM to discuss opportunities for closer collaboration. In addition, I met with the DTC leadership (Bill Kuo and Louisa Nance).

➤ As an outcome of our meeting with the WRF team, we are now working with NCAR/MMM WRF group

- To improve CF compliance of WRF netCDF output
- On tools to allow WRF to read input from netCDF files (unnetcdf)
- On TDS file download subset service to return WRF required fields on requested space/time subset.
- To improve support for staggered grids and time dependent coordinates
- The IDV group made presentations at the June WRF Workshop in Boulder.



Community Equipment Awards

- Over the past ten years, Unidata has made 64 equipment awards and given about \$1M to various universities.
- This year special consideration was given to proposals that:
 - Plan to share their data by installing THREDDS and RAMADDA servers.
 - Install, test , and provide feedback on *prototype* AWIPS II/EDEX servers.
- **We received five proposals this year. The review panel met after the Users Committee meeting and recommended funding of three proposals:**
 - Iowa State University
 - University of Wisconsin-Milwaukee
 - Valparaiso University
- **The next round of solicitations will be issued in December. We would like your ideas for increasing the number of proposals that are submitted.**

NWA & AMS Annual Meetings



- For the first time, Unidata will have a booth at the NWA meeting in Madison, WI in October.
- Given the high-level of interest AWIPS II and IDV, we will be participating in the 2013 AMS Annual Meeting in Austin, Texas.

2012 Unidata Training Workshop

October 22 - November 7, 2012

Workshop Dates

Workshop Dates			
October 22-24	THREDDS Data Server (TDS)	THREDDS homepage	Class Description
October 25-26	netCDF	netCDF homepage	Class Description
October 29- November 1	IDV with RAMADDA	IDV homepage	Class Description
November 1-2	LDM	LDM homepage	Class Description
November 5-7	GEMPAK with an Introduction to AWIPS-II	GEMPAK homepage	Class Description



THREDDS Data Server - 18
 netCDF for New Users - 22
 netCDF Annual Update - 13
 IDV (Intro and Adv.) - 8
 LDM - 9
 GEMPAK with Intro AWIPSII - 5

**Spread the
 word
 among your
 colleagues.**

State of the Program: A Snapshot

- Community relations : Green
- Data flows : Green
- Software development : Yellow
- Support : Green
- Collaborations : Green
- Staffing : Green
- Finances : Green

Questions?