Director’s Report

Unidata Policy Committee

23 May 2011
North Carolina State University
Raleigh, NC

Mohan Ramamurthy
Unidata Program Center
UCAR Community Programs
Boulder, CO
Polcomm Welcome

Dr. Kevin Kloesel, University of Oklahoma
  • Director, Oklahoma Climate Survey
  • Associate Dean, College of Atmospheric and Geographic Science
  • Professor, School of Meteorology

Welcome!
Change in Users Committee Membership

• Francina Dominguez, University of Arizona

• Brian Etherton – He has started a new position with NOAA/ESRL/GSD in March 2011.

We thank both of them for their service.

We will especially miss Brian for his insights and thoughtful comments, and active engagement over the past three years.

Please be thinking of new members to fill these and two additional vacancies we will have as Brendon Hoch and Larry Oolman rotate-off from the Users committee.
In December 2010, Ethan Davis was appointed as Technical Project Manager. He is supervising all of the software engineering staff within the UPC and facilitating coordination between projects. The TPM position is a 0.5 FTE appointment. Ethan continues to spend the remaining time in the THREDDS project.
Staffing Changes

• Brian Kelly left Unidata in April 2011. His departure has been in the works for nearly a year.
  – A search is underway for a replacement.

• The UPC has hired two new software engineers.
  – Sean Arms, University of Oklahoma (SE II); He brings domain expertise and begins work today. He will be defending his dissertation soon.
  – Aaron Rogan, SE III, has a Ph. D. in Computer Science. He will start on 13 June.

• They will be assigned initially to work on the IDV, TDS, and general support.
Current Allocation of Effort by Technical Staff

Software Engineer FTE per Unidata Product

- Supervision: 0.5
- SysAdmin/Infrastructure: 0.5
- IDD: 0.5
- Training: 0.5
- Web site: 1.0
- Decoders: 0.1
- NOAAPort ingest: 0.1
- LDMng: 0.3
- LDM: 0.5
- libCF/GRIDSPEC: 0
- UDUnits: 0.15
- netCDF-Perl: 0.05
- netCDF-C/C++/F: 2.0
- netCDF-Java/CDM: 1.0
- TDS: 1.0
- McIDAS SDI: 0
- McIDAS ADDE: 0
- RAMADDA: 0.1
- IDV: 1.8
- McIDAS-X: 0.5
- AWIPS-II: 0.5
- GEMPAK: 0.5
Anticipated Allocation of Effort

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

- Supervision: 0.5
- SysAdmin/Infrastructure: 0.5
- IDD: 0.5
- Training: 1
- Web site: 1
- Decoders: 0.1
- NOAAPort ingest: 0.1
- LDMng: 0.1
- LDM: 0.1
- libCF/GRIDSPEC: 0.5
- UDUnits: 0.15
- netCDF-Perl: 0.05
- netCDF-C/C++/F: 2
- netCDF-Java/CDM: 1.5
- TDS: 1.5
- McIDAS SDI: 0
- McIDAS ADDE: 0
- RAMADDA: 0.1
- IDV: 2.5
- McIDAS-X: 0.5
- AWIPS-II: 1.5
- GEMPAK: 0.5

Legend:
- 6 months
- Current
CONGRATULATIONS TO ALL! And a special thank you to Brian for leading the effort!!
About 500 machines at 250+ sites are running LDM-6 and reporting real time statistics. These numbers have not changed much in the past 2+ years, but the data volume has grown significantly. Many more organizations are using the LDM but not reporting real-time stats to Unidata.

UPC’s IDD Cluster relays data to more than 650 downstream connections. Average data output/day: 5.7 TB or 525 Mbps! Peak rate exceeds 1.1 Gbps.

Data input to the cluster remains at ~7 GB/hour.

CONDUIT and WSR 88-D Level II remain the top two data streams based on volume. NEXRAD volume will increase with the availability of Dual-pol radar data.
Global Lightning Data

- Now Available to the Unidata Community, courtesy of WSI Inc.

Sensors are located at more than 150 international sites, in addition to the detectors that make up the NAPLN.

Data are collected in a 1-minute bin, and contain cloud-to-ground stroke data and some cloud flash discharges.
Next Generation LDM

• The project has been put in the back burner for now, based on the recommendation by the Unidata Technical Review Panel.

• Going forward, Steve Emmerson, the primary developer for LDM, UDUNITS, & ngLDM, will devote some of his time to AWIPS II porting and testing when the UPC receives AWIPS II source code from NWS.
NetCDF version 4.1.2 of the C-based software was announced on March 29, 2011. Important changes in this release were:

- changes for building cleanly on Windows;
- building shared libraries by default, instead of static libraries;
- greatly speeding up opening of large or complex netCDF-4 files;
- adding security authorization to the C OPeNDAP client for Earth System Grid use and for standard HTTP authorization using passwords;
- adding compression and chunking capabilities to the nccopy utility
- Includes a number of bug fixes as well as improvements in portability, extensibility, maintainability, and other new features.
OGC Adoption of NetCDF as a standard

- OGC Technical Committee and Planning Committee have formally adopted netCDF as an international standard for data encoding. **Ben deserves much credit for shepherding this process!!!**
- This is a major milestone and an important step to facilitate data sharing and integration among geosciences disciplines and societal impacts and hazards communities.
- NetCDF joins other encoding standards such as ISO Geography Markup Language (GML) and Google's KML, but netCDF is the first adopted binary encoding format.
- Among many others, GIS leader ESRI has incorporated netCDF read/write access into their products.
• TDS is currently at version 4.2.5
  – Distribution now includes the ncISO metadata services
  – Added OPeNDAP handling of ESG access control (other access control improvements)
  – Subsetting services for Point Obs data extended to Station data

• Common Data Model software is at 4.2.23:
  – The Discrete Observations Convention is now complete, should be added to CF-1.6.
  – NEXRAD2: Dual-pol radar data
  – GrADS Binary Grid Service Provider (Don Murray)
  – NetCDF-Java can now be built with Maven. It will be added to the standard Maven repository.
• RAMADDA project has migrated to SourceForge.

• Involving broader participation by the open source developer community will ensure the continued success of RAMADDA.

• Jeff McWhirter, the primary developer of RAMADDA, is continuing to actively develop RAMADDA.

• Unidata will continue to participate in the RAMADDA project by supporting its user community and contributing to the open source development effort.

• Unidata demonstrated RAMADDA and the IDV plug-in to attendees who visited our booth at the AMS Annual Meeting.

• Tom Yoksas demonstrated RAMADDA and IDV during an interactive lab session that was held last week at the University of Vienna last week.
Unidata has also developed NOAAPort SBN ingest software. It is known to be used by at least 17 sites. Seven sites are serving as ingest point for NOAAPORT data.
Data Availability Tables

Satellite Data Available Through Unidata

Data Description

Data from the Geostationary Operational Environmental Satellites (GOES) available from Unidata include visible, infrared and water vapor images. Data from both GOES East and GOES West satellites are available.

More information on GOES data collection

Data Capabilities

<table>
<thead>
<tr>
<th>LDM Feedtype*</th>
<th>McIDAS ADDE</th>
<th>TDS</th>
<th>Short-Term Archive</th>
<th>Regional</th>
<th>National</th>
<th>Global</th>
<th>GEMPAK</th>
<th>IDV</th>
<th>McIDAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIWSC (FTS, MCIADAS)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>NIMAGE (FT21, IMAGE)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*See a complete list of LDM feed types

Lightning Data Available Through Unidata

Data Description

The two sources of lightning data available free-of-charge to Unidata education and research community members are: NLDN (National Lightning Detection Network), and USPLN/NAPLN (United States Precision Lightning Network/North American Precision Lightning Network).

More information on lightning data

Data Capabilities

<table>
<thead>
<tr>
<th>LDM Feedtype*</th>
<th>Remote Data Access</th>
<th>Data Coverage</th>
<th>Display &amp; Analysis Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIGHTNING (FT14, NLDN)</td>
<td>✓ R</td>
<td>✓ R</td>
<td>Regional</td>
</tr>
</tbody>
</table>

R = Restricted: Data cannot be served past one’s own institution. Please see the guidelines regarding the access and use of lightning data.
The TIGGE database now has \(~0.5\) Pb of data and it is growing at a rate of 500 Gb/day.

Users processed about 37 Tb and downloaded \(~2.8\) Tb of data in December 2010.

The 48-hour embargo continues.
Three updates to IDV version 2.9 have been since May 2010. Recent advances include:

- Support for CDM trajectory data
- Support for Dual-pol WSR-88D radar data
- Support for NLDN and USPLN lightning data
- Additional GEMPAK diagnostic functions (PVOR, RELH, ...)

Ongoing development:

- Support for GEMPAK surface and upper air data
- Support for GRADS data
- Hovmoller diagram
- Ensemble user interface and functions: average, max/min, mode, percentile, range, and standard deviation
- Contour labeling: font, size, and alignment
IDV: Ensemble Visualization

Hot off the press!

Ensemble user interface: selecting, subsetting, color by member

Ensemble functions: average, max/min, mode, percentile, range, and standard deviation
Lightning Data Visualization

McIDAS-X

IDV
Japan Earthquake Visualization using the IDV
There is continued growth in the number of IDV downloads and its daily usage.

It was used by ~490 sites per day in April 2011
GEMPAK

- GEMPAK use has remained steady since the last User Committee meeting in October 2010.
- GEMPAK 6.2.0 released November, 2010. Additions include
  - support for GEMPAK applications to access the AWIPS2 database,
  - improved support for NEXRAD high-resolution level 3 products,
  - improvements to nex2gini, additional GOES satellite product handling, updated external libraries (netCDF, HDF5, PNG, zlib, etc.) and various other bug fixes.
- Ongoing/Planned Activities
  - End of Unidata support for GARP and separation of GARP from default build / installation for GEMPAK 6.3.0
  - Future GEMPAK training sessions will also include AWIPS-II configuration and use.
AWIPS II Update

- Receiving regular releases from NCEP.

**Recent advances:**
  - Improved data ingest / decoding using the LDM: grid, mcidas satellite images, text (uair, lightning, watch/warn)
  - Simplified installation w/ RPM packages
  - Added NSHARP functionality

**Issues:**
  - Availability of 64-bit software
  - Lengthy start-up time and sluggish performance

AWIPS II release milestones of interest to the Unidata community

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>NCEP Field testing</td>
<td>Summer 2011</td>
</tr>
<tr>
<td>NCEP Deployment of AWIPS II systems to National Centers</td>
<td>Fall 2011</td>
</tr>
<tr>
<td>Release of AWIPS II package to Unidata community members</td>
<td>Winter 2011/2012</td>
</tr>
</tbody>
</table>

Unidata will provide active support and maintenance of GEMPAK for 18 months after the release of AWIPS II to the Unidata community. After the 18-month active support period ends, Unidata will continue to make the GEMPAK source code, help and training materials, and the GEMBUD mailing list available.
AWIP II Work at the UPC

- In addition to Michael James, three other staff members (Linda Miller, Tom Yoksas, and Steve Emmerson) are involved in the project and helping Michael.

- Continuing to work on porting issues with binary releases from NWS & NCEP.

- Working with NWS to obtain source code.
  - Have been advised to go through the FOIA process.
  - Seeking clarification on the process and implications.
Software Download Metrics

Yearly total represented for all packages download data: Apr 1 2010 to Mar 31 2011
Welcome to Unidata

Our mission is to provide data services, tools, and cyberinfrastructure leadership that advance earth-system science, enhance educational opportunities, and broaden participation.

More information

Program Highlights

- Strategic Plan
- Annual Report
- Unidata’s Leaflet

News from Unidata

2011 Software Training Workshops

April 7, 2011
2011 Software Training Workshops
07 April 2011

Unidata Software Training Workshops to be held in July 2011
Here are the dates for the Unidata software training workshops this year. More information will be available soon on the Training Workshops page.

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Dates (July 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEMPAK</td>
<td>Mon 11, Tues 12, and Wed 13</td>
</tr>
<tr>
<td>LDM</td>
<td>Thurs 14 and Fri 15</td>
</tr>
<tr>
<td>IDV</td>
<td>Mon 18, Tues 19, and Wed 20</td>
</tr>
<tr>
<td>THREDDS</td>
<td>Thurs 21 and Fri 22</td>
</tr>
<tr>
<td>netCDF Basic</td>
<td>Mon 25</td>
</tr>
<tr>
<td>netCDF Advanced</td>
<td>Tues 26</td>
</tr>
</tbody>
</table>
Community Equipment Awards

- Over the past nine years, Unidata has made 61 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 servers.
- We received nine proposals this year. Eight were funded.
  - New Mexico State University
  - Penn State University
  - Rutgers University
  - San Jose State University
  - Texas A&M
  - University of Colorado/CIRES
  - University of Salento, Italy
  - University of South Florida
Unidata staff took part in the Tenth Annual AMS Student Conference and Career Fair, "Communicating Weather and Climate - The Role of a Young Scientist," held in conjunction with the 2011 AMS Annual Meeting.

• Unidata Users Committee Student Representative Stefan Cecelski was on hand to discuss Unidata tools, technologies and data services with students at Unidata's table at the Career Fair, as were several UPC staff members.

• Student interest was strong, with attendees lining up to discuss Unidata's offerings and opportunities.

Thank you Stefan!
Proposal Activity

• Received word that the Integrated Arctic Data Services proposal, a follow-on to CADIS, will be funded by NSF-OPP for a 4-year period. Final negotiations are currently underway.

• Submitted another proposal, OPeNDAP-Unidata Linked Servers (OPULS), to NOAA. It will focus on:
  – Better data-model specifications
  – Rigorous conformance
  – Demonstrated extensibility
  – Common-framework design

• Two other proposals (one to NASA and another one to NOAA (solicited)) are in the works.
FL-4 Remodel

- Remodel Schedule
  - 10-15 August 2011 - Move to Anthes Building
  - 21 April 2012 Return to FL4

- Project Priorities
  1. Building Performance
     - Improved heating + AC
     - Sustainable energy strategies (LEED Gold Certification targeted)
     - Improved access to daylight
  2. Building Program / Shared Use
     - High end conference facility
     - Improved restrooms
  3. Department Program
     - Collaboration Spaces for users
<table>
<thead>
<tr>
<th>Category</th>
<th>Status</th>
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<td>Community relations</td>
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<tr>
<td>Data flows</td>
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<tr>
<td>Software development</td>
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<tr>
<td>Collaborations</td>
<td>Green</td>
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<tr>
<td>Staffing</td>
<td>Yellow (Soon Green?)</td>
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<td>Support</td>
<td>Green/Yellow</td>
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<tr>
<td>Finances</td>
<td>Green</td>
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Questions?