



# Director's Report

## Unidata Users Committee

11 April 2011

Boulder, CO

Mohan Ramamurthy  
Unidata Program Center  
UCAR Community Programs  
Boulder, CO



# 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 committee.



# The 2009 Unidata Triennial Users Workshop Publication

Will appear in the April issue of *BAMS*.

## MEETING SUMMARY

### Using Operational and Experimental Observations in Geoscience Education

Brian J. Etherton<sup>1</sup>

Sean C. Arms<sup>2</sup>

Larry D. Oolman<sup>3</sup>

Gary M. Lackmann<sup>4</sup>

Mohan K. Ramamurthy<sup>5</sup>

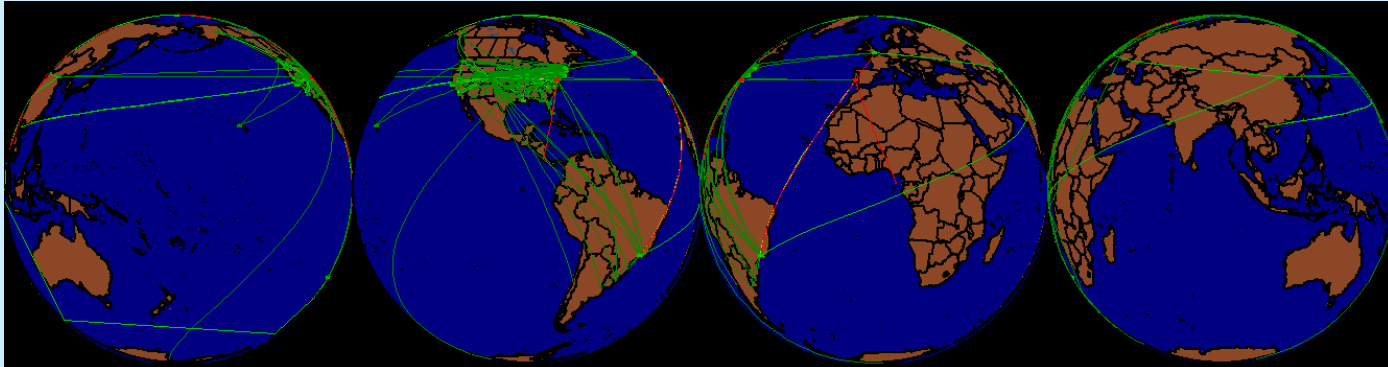
1 – University of North Carolina, Renaissance Computing Institute; Chapel Hill, North Carolina.



ACCEPTED VERSION

CONGRATULATIONS TO ALL! And a special thank you to Brian for leading the effort!!

# Real-time Data Flows

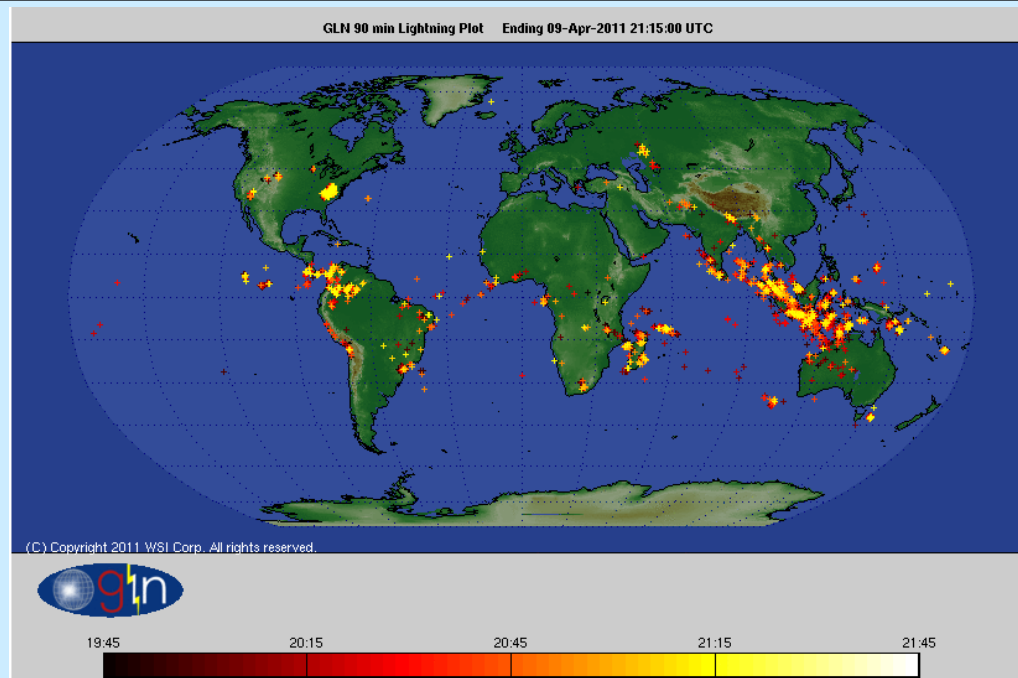


Unidata IDD Topology 110411/1350

- ❖ 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.

# NetCDF

- 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.

# THREDDDS

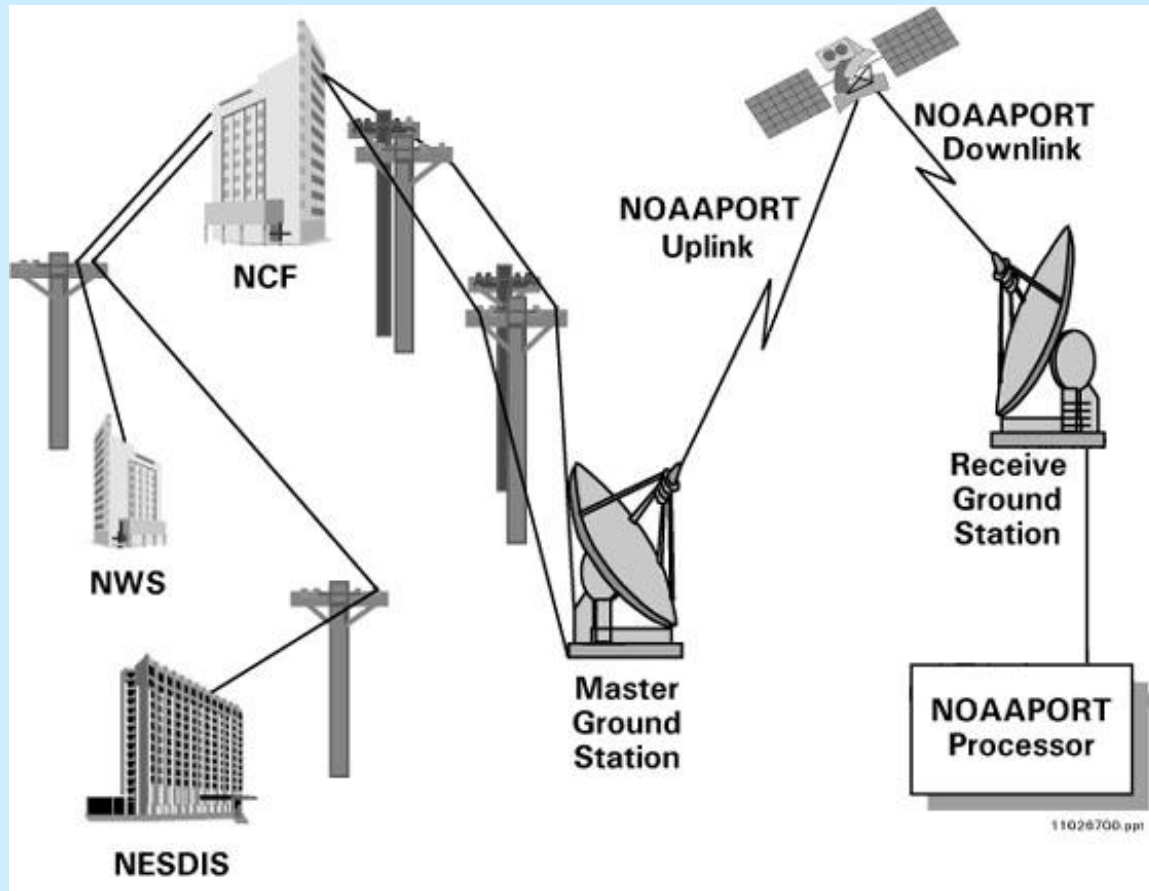
- TDS is currently at version 4.2.5
  - Distribution now includes the nclSO metadata services
  - Added OPeNDAP handling of ESG access control (other access control improvements)
  - Subsetting services for Point Obs data extended to Station data
- Common Data Model software is at 4.2.23:
  - The Discrete 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

- 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.

# NOAAPort Ingest Software



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.

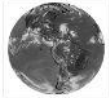
# Data Availability Tables

## Satellite Data Available Through Unidata

GOES East & West

COSMIC Limb Sounding

### 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

LDM Feedtype*	Remote Data Access			Data Coverage			Display & Analysis Options		
	McIDAS ADDE	TDS	Short-Term Archive	Regional	National	Global	GEMPAK	IDV	McIDAS
UNIWISC (FT5, MCIDAS)	✓	✓	✓	✓	✓	✓	✓	✓	✓
NIMAGE (FT21, IMAGE)	✓	✓	✓	✓	✓	✓	✓	✓	✓

\*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).

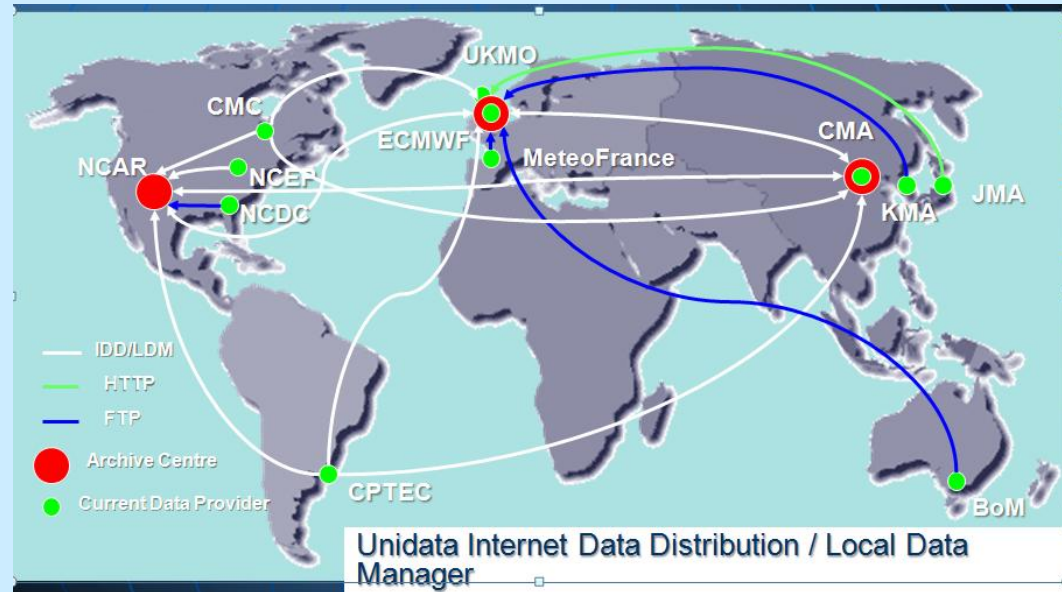
[More information on lightning data >](#)

### Data Capabilities

LDM Feedtype*	Remote Data Access			Data Coverage			Display & Analysis Options		
	McIDAS ADDE	TDS	Short-Term Archive	Regional	National	Global	GEMPAK	IDV	McIDAS
<a href="#">LIGHTNING (FT14,NLDN)</a>	✓ R	✓ R		✓	✓	✓	✓	✓	✓

**R = Restricted:** Data cannot be served past one's own institution. Please see the [guidelines](#) regarding the access and use of lightning data.

# THORPEX Interactive Grand Global Ensemble (TIGGE) Project



<i>Centre</i>	<i>Ensemble members</i>	<i>Forecast length</i>	<i>Forecasts per day</i>
Bureau of (BoM) *	33	10 day	2
Meteorological Administration (CMA)	15	10 day	2
Meteorological Service of (MSC)	21	16 day	2
Centra de Previsao de Tempo e Estudos Climatico, Brazil (CPTEC)	15	15 day	2
European Centre for Medium-Range Weather Forecasts (ECMWF)	51	15 day	2
Meteorological Agency (JMA)	51	9 day	1
Meteorological Administration (KMA) *	17	10 day	2
Météo-France	35	4.5 day	2
National Centers for Environmental Prediction, (NCEP)	21	16 day	4
Met (UKMO)	24	15 day	2

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.

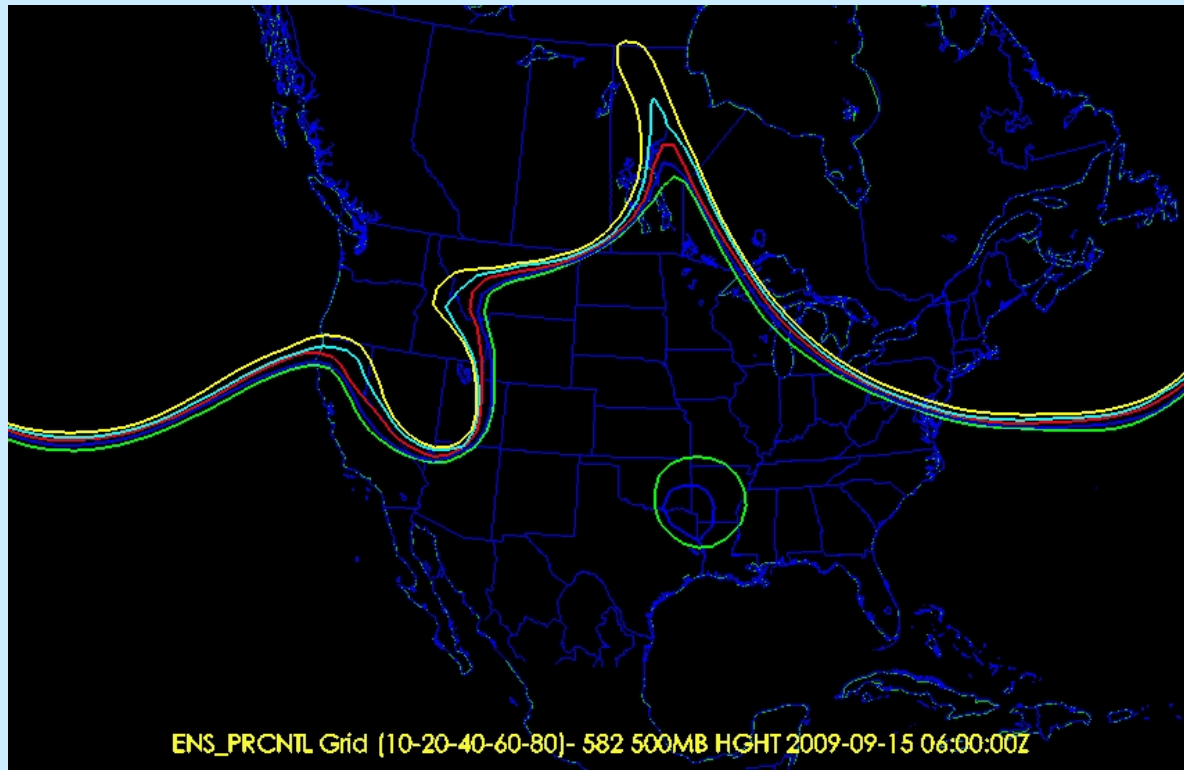


# Integrated Data Viewer

- ❖ 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
  - Ensemble user interface
  - Ensemble functions: average, max/min, mode, percentile, range, and standard deviation
  - Contour labeling: font, size, and alignment

# IDV: Ensemble Visualization

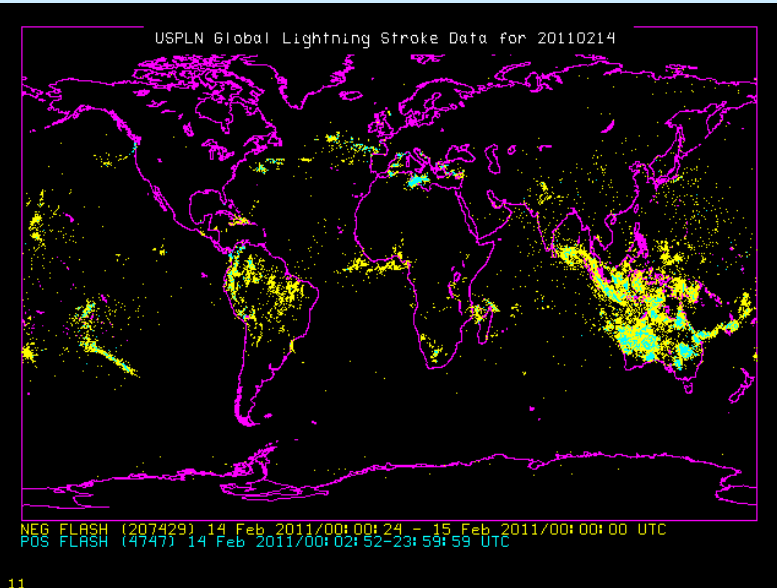
## Hot off the press!



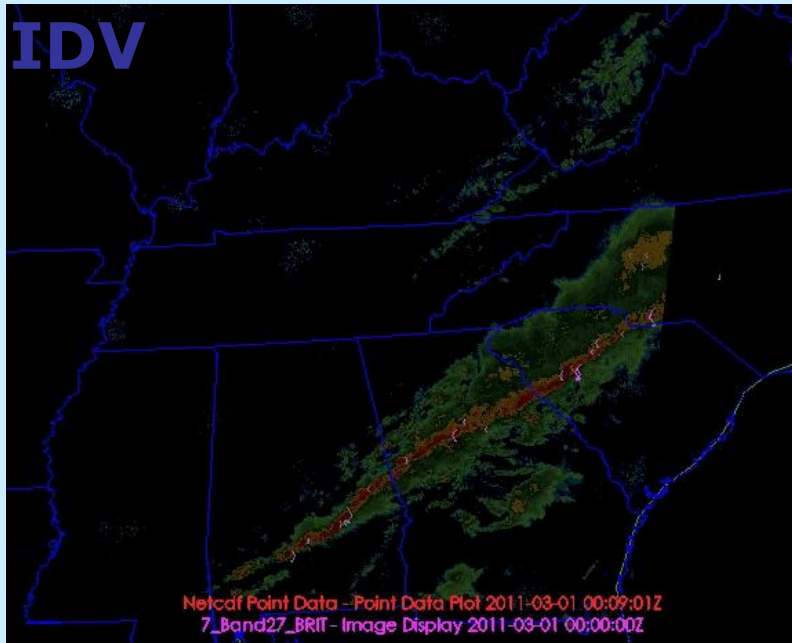
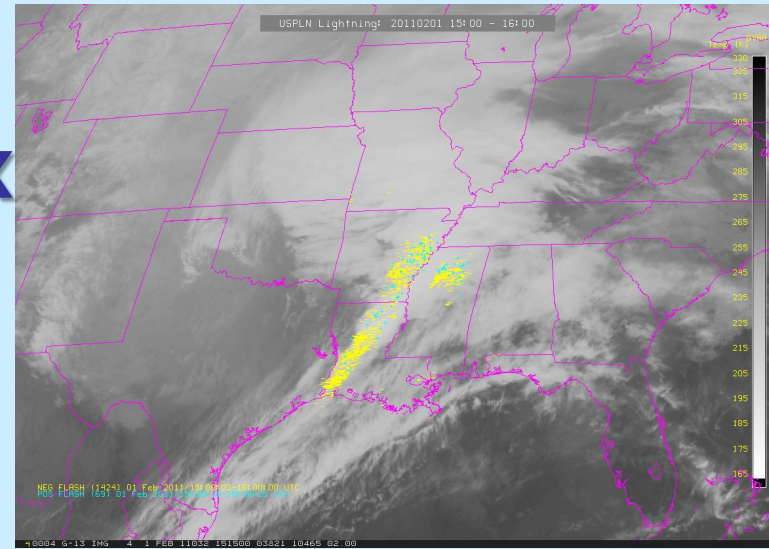
**Ensemble user interface: selecting, subsetting, color by member**

**Ensemble functions: average, max/min, mode, percentile, range, and standard deviation**

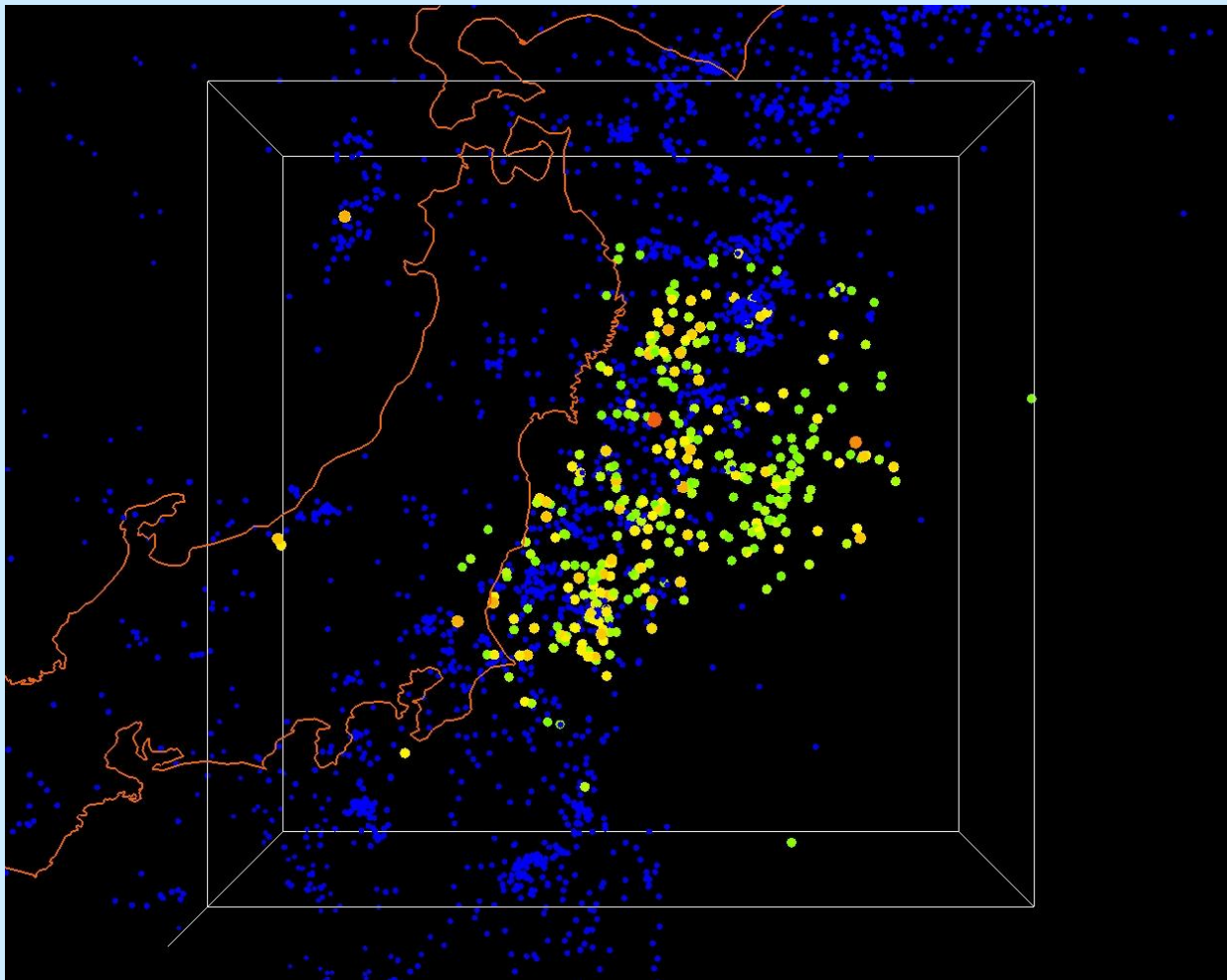
# Lightning Data Visualization



McIDAS-X



# Japan Earthquake Visualization using the IDV





# IDV Downloads and Usage

## Monthly summary

Month	Count	*5	10	20	30
2011_04	1779	82	31	8	4
2011_03	14828	480	249	127	86
2011_02	12272	474	245	101	63
2011_01	12247	445	208	105	68
2010_12	11018	394	198	102	58
2010_11	14639	453	240	128	83
2010_10	12531	391	224	121	79
2010_09	14035	394	208	109	69
2010_08	14415	368	189	94	65
2010_07	14172	371	206	103	59
2010_06	15207	410	212	103	54
2010_05	12023	407	204	89	54
2010_04	14746	459	241	118	80
2010_03	14880	429	227	120	80
2010_02	13641	389	191	106	61
2010_01	13897	378	202	99	74

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



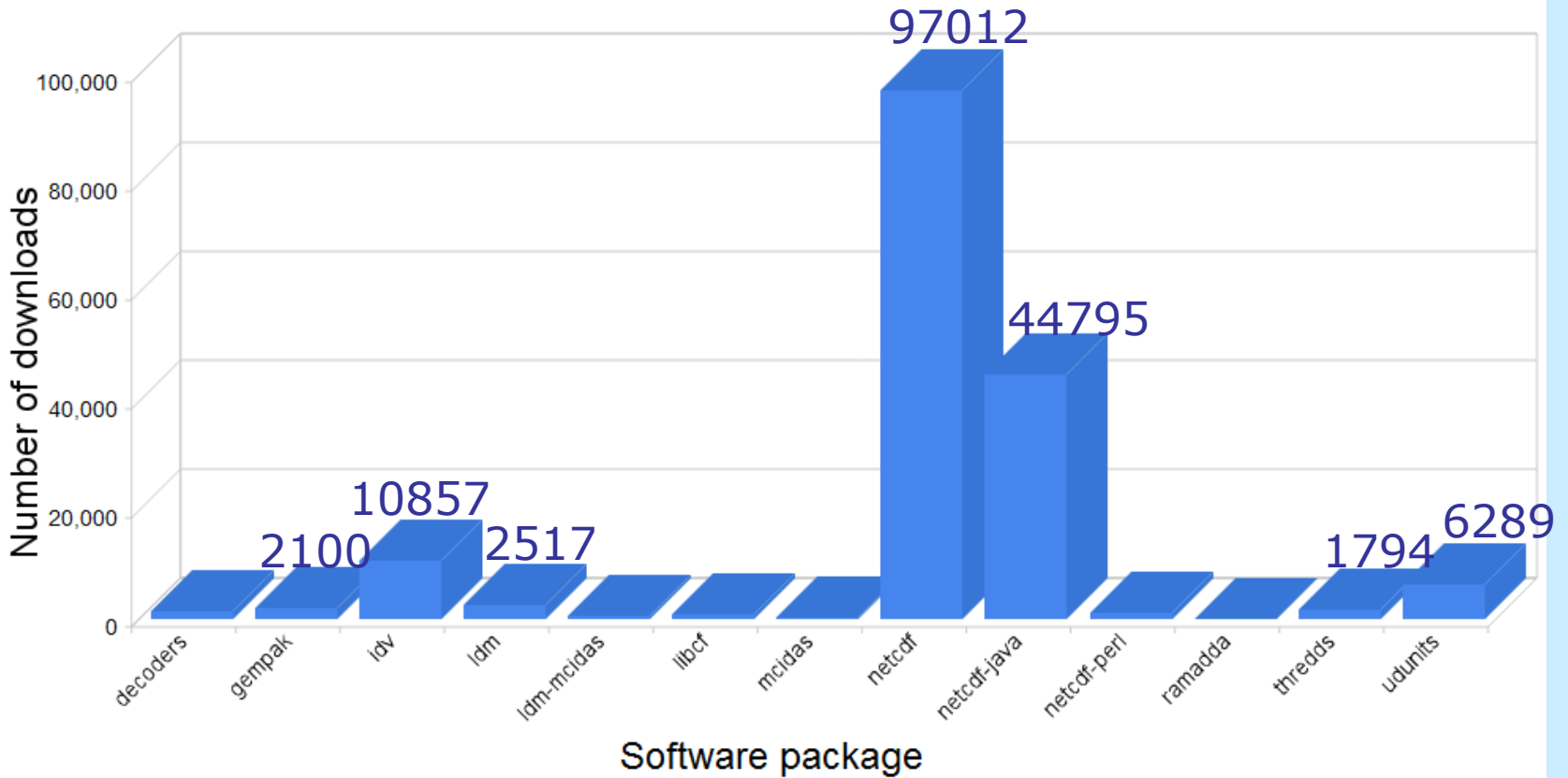
## AWIPS II release milestones of interest to the Unidata community

Milestone	Date
Prototype of Unidata's AWIPS II package available at the AMS 2011 Annual Meeting	January 23-27 2011
NCEP Field testing	Summer 2011
NCEP Deployment of AWIPS II systems to National Centers	Fall 2011
Release of AWIPS II package to Unidata community members	Winter 2011/2012

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.

# Software Download Metrics

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



# Unidata's New Website

## 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](#) 



The 2011 Training Workshops for Unidata software are scheduled to take place in July 2011. The exact dates for each workshop are posted to the Unidata Calendar of Events.



## Software News

Updates and other news about Unidata software packages



**UDUNITS version 2.1.22**  
*April 5, 2011*



**NetCDF 4.1.2 Release**  
*March 29, 2011*




**McIDAS-X Addendum v2009g / v2010.2**  
*March 14, 2011*



**NetCDF-Java version 4.2.20**  
*February 16, 2011*

## Unidata Quick Links

 [The Unidata Community](#)

 [Display & Analysis](#)

## News from Unidata



### 2011 Software Training Workshops

*April 7, 2011*

# 2011 Training Workshops



The 2011 Training Workshops for Unidata software are scheduled to take place in July 2011. The exact dates for each workshop are posted to the Unidata Calendar of Events.

## 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.

Workshop	Dates (July 2011)
GEMPAK	Mon 11, Tues 12, and Wed 13
LDM	Thurs 14 and Fri 15
IDV	Mon 18, Tues 19, and Wed 20
THREDDS	Thurs 21 and Fri 22
netCDF Basic	Mon 25
netCDF Advanced	Tues 26



# Community Equipment Awards

- Over the past nine years, Unidata has made 53 equipment awards and given \$900K to universities to upgrade their classrooms and weather labs.
- Past recipients have used the funding to procure equipment for data sharing, to create interactive data visualization labs, and to encourage the use of Unidata software packages in research and education.
- The program has set aside \$100K for this year's awards.
- This year special consideration is 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.**
- **The panel will be meeting after this meeting to review the proposals and make selections.**

# AMS Annual Meeting

- 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!



# Technical Project Manager

- 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.





# New Hires (Soon)

- We have been conducting coordinated searches for two software engineers (SE II & SE III).
- Both search processes have been nearly completed.
- Hopefully, we will be making some announcements soon.
- The details of their assignments have yet to be worked out, but THREDDS and IDV projects will be principal beneficiaries.

# 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



# State of the Program: A Snapshot

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

Questions?