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# Director's Report

## Unidata Users Committee Meeting

17 May 2007

Boulder, CO

Mohan Ramamurthy  
Unidata Program Center  
UCAR Office of Programs  
Boulder, CO



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# Policy Committee News

- ❖ Melanie Wetzel has stepped down as chair of the Policy Committee after the March meeting.
- ❖ I want to extend a big thank you to Melanie for her distinguished service as Polcomm Chair and member!
- ❖ Steven Businger is the incoming chair of the Policy Committee. He will serve a three year term.
- ❖ Steven is well known to all of us – has had a nearly 20-year association with Unidata.





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# New Users Committee Student Member

- ❖ Sean Arms, Graduate Student
  - School of Meteorology
  - University of Oklahoma
- ❖ Sean's two-year appointment as the student representative to the Users Committee is a historic moment in Unidata's nearly 25-year history.
- ❖ Sean's selection came after a competitive process that saw the nomination of eight highly-qualified students.
- ❖ Sean uses several Unidata software packages in his daily life as a grad student that include GEMPAK, IDV, and netCDF.





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# Staffing Changes

## Departures:

- Emily Doremire, Administrator
  - Took a position as the Administrator for the CCSM Project in the Climate and Global Dynamics division in NCAR/ESSL.
- Sandra Petrie, Administrative Assistant left Unidata at the end of March to start her own business



## New Arrivals:

- Ginger Emery, Administrative Assistant and Travel Coordinator for the UPC
- Tina Campbell, Administrative Assistant, Workshop Coordinator and Fiscal Assistant







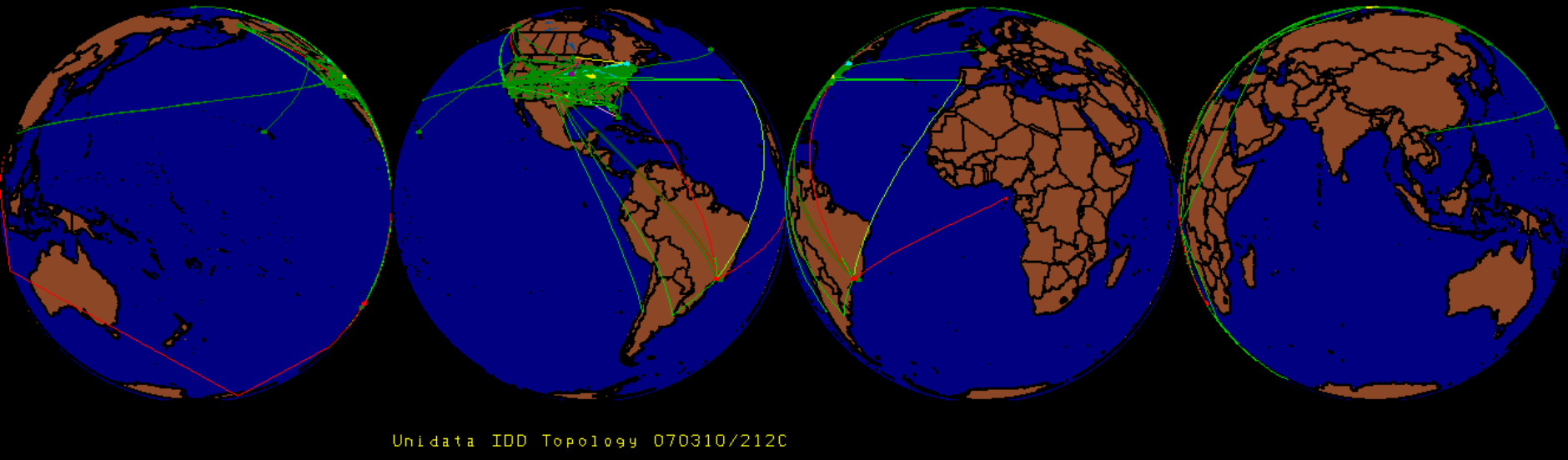
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# DeSouza Award

- ❖ This award honors individuals whose energy, expertise, and active involvement enable the Unidata Program to better serve the geosciences.
- ❖ Professor James Moore, St. Louis University (posthumous), received the 2007 DeSouza Award at the recent AMS Annual Meeting in San Antonio.
- ❖ Jim was recognized for efforts and contributions through the years that truly reflect the goals and ideals of the Unidata program.
- ❖ Scott Rochette (SUNY-Brockport), Users Committee member, received the award on behalf of Kathy Moore, Jim's wife.



# Data Flows



- ❖ The number of sites participating in the IDD continues its steady growth. As of 16 May, 395 hosts in 210 unique network domains are running LDM-6 and reporting real time statistics.
- ❖ The average volume of data flowing through the IDD has remained steady over the last several months, except for TIGGE.
- ❖ TIGGE data volume is about 8-10 GB/hour, but in bursts. Data now flowing to CMA, Beijing.
- ❖ A new datastream is being created that includes metadata descriptions for Level II radar data, as part of Unidata's work in a collaborative ITR project. Researchers at the University of Iowa have developed algorithms to generate value-added metadata in real-time and these metadata will be distributed to interested users.



# Integrated Data Viewer

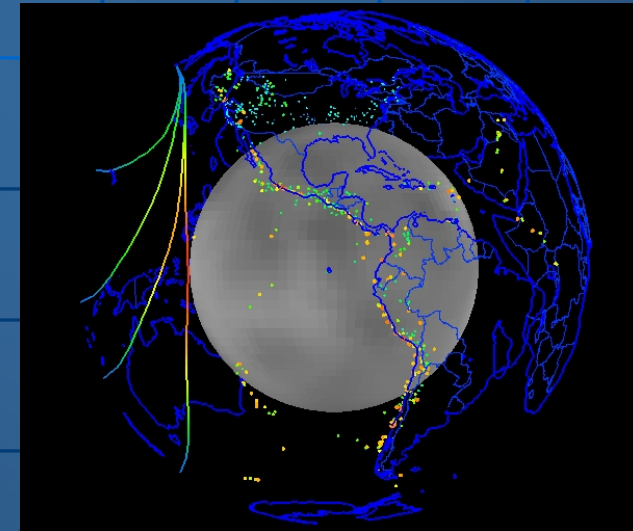
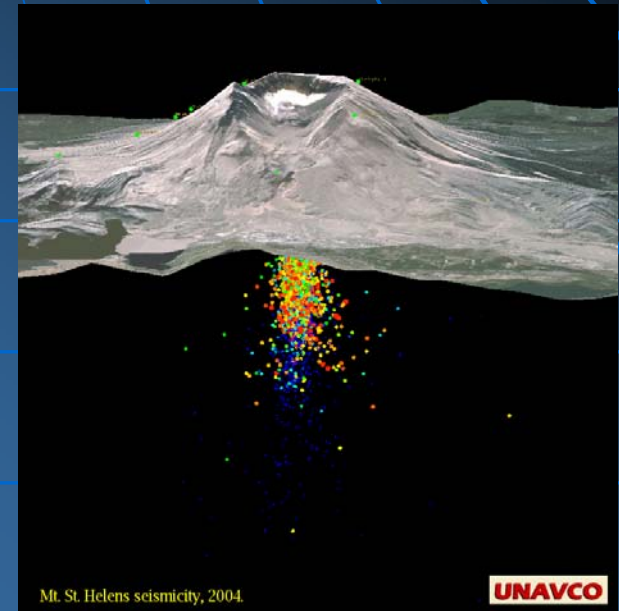
- ❖ IDV use continues to increase
- ❖ During February 2007, IDV was used over 300 times per week day, with 75 sites running the IDV 20 or more times. The numbers do not include the use of the IDV in batch/scripting mode
- ❖ Top known sites are University of Wisconsin, University of Illinois, University of Utah, Millersville University, Purdue University, and NC State University
- ❖ New capabilities:
  - Support for import/export of Google Earth KML/KMZ
  - New data types - fronts
  - New drawing capabilities - fronts, text using HTML
  - New charting displays - probe, time series, vertical profiles
- ⌘ **Coming Soon: Interactive Meteograms, Postscript output, ability to save data with bundles**



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# GEON-IDV

- ❖ GEON, a large NSF ITR project, is leveraging the IDV (and THREDDS) in a major way
- ❖ GEON-IDV, their visualization tool, is an extension of the IDV for their community.
- ❖ The Unavco staff have worked closely with the IDV team to make this happen (one of their team members is a former UPC employee)
- ❖ This is a great example of the broader impact of Unidata on geosciences



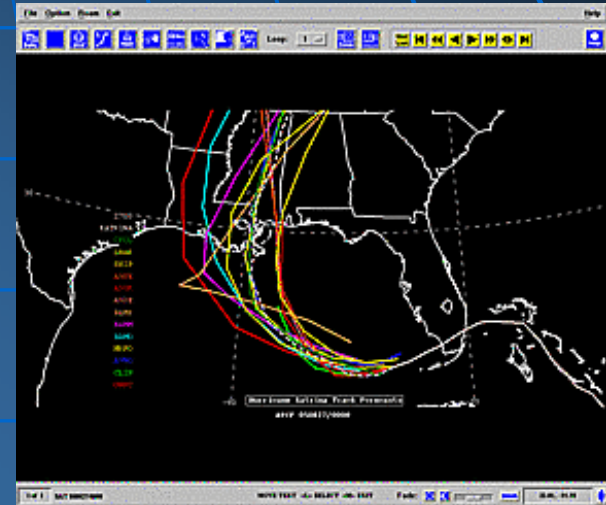




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# GEMPAK & McIDAS Use

- ❖ Despite the increasing adoption of the IDV, GEMPAK continues to be our most popular analysis and visualization tool
- ❖ Between October 2005 and February 2007, 1479 unique users downloaded GEMPAK from the UPC
- ❖ GEMPAK advancements at the UPC and NCEP, and its unique functionalities keep it at the forefront (e.g., support for ensemble model output)
- ❖ Meanwhile, McIDAS use is decreasing:
  - As of March 2, 2007 **45** sites have downloaded Unidata McIDAS 2006.
  - For a historical comparison, **102** sites downloaded version 2004 and approx. 60 downloaded v2005.
  - The majority of new interest in Unidata McIDAS is coming from sites outside of the US.





# NetCDF Impact – A High-profile Example

The screenshot shows the top of the IPCC website. On the left is the WMO logo. In the center is the text "INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE". On the right is the UNEP logo. Below the logos is a navigation menu with "IPCC web sites" and links for "About IPCC", "Activities", and "Calendar of Events". The main content area features a banner for "Climate Change 2007" with the text "The IPCC 4th Assessment Report is coming out" and "Click to activate and use this control". To the right of the banner is a blue-tinted image of a coastline with the text "The Physical Science Basis of Climate Change the first volume of the new IPCC assessment report, has been released in Paris, 2 February 2007".

## Requirements for IPCC Standard Output Contributed to the PCMDI Archive

Data format, data structure, and file composition requirements:

- Data must be written through the [netCDF](#) <sup>[4]</sup> API (application program interface) and conform to the [CF metadata standards](#) <sup>[5]</sup>.

Ray Pierrehumbert, noted climate scientist from the University of Chicago: "I think one mustn't discount a breakthrough of a technological sort in AR4 though: The number of model runs exploring more of scenario and parameter space is vastly increased, and more importantly, it is available in a coherent archive to the full research community for the first time. The amount of good science that will be done with this archive in the next several years is likely to have a significant impact on our understanding of climate. --raypierre



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# Metrics and Assessment Study

- ❖ The Metrics and Assessment study has been completed and a report was issued;
- ❖ I am very pleased with the report and believe it will inform our future plans, proposals and activities in important ways.
  - ❖ It was quite a bit of work, but well worth it.
  - ❖ I want to thank everyone who helped with the study, including the working group that played a key role.
- ❖ The preliminary reaction from people has been very positive
  - Rick Anthes: "It is truly impressive; ...a very interesting and useful report, one that will require careful study... the idea of looking at climate model data through the "weather prism" [] is really interesting..."



# 2006/2007 Training Workshops

- ❖ The 2006 Training workshops were very successful
- ❖ 72 participants total, 52 from traditional community, four from the private sector, and 16 other countries attended.
- ❖ International participants came from Burkina Faso, Mali, France, Spain, South Korea, Canada, and Latin America.
- ❖ For the first time, training on netCDF and THREDDS was offered (and those sessions were oversubscribed)
- ❖ 2007 Training workshops upcoming in July-August.







# Community Activities

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- ❖ UPC staff continue to be actively involved in the organization of special sessions on geoscience informatics at AGU, AMS and EGU meetings.
  - UPC staff heavily involved in the AGU Fall Meeting in San Francisco and the AMS Annual Meeting in San Antonio.
  - Many papers were presented by staff and our collaborators at both meetings
  - UPC exhibited a booth at the AMS meeting; planning to skip next year
  - Unidata organized a session on web services and interoperability at the EGU meeting in Vienna; A proposal is being prepared for submission to EGU to start an ESSI division.
  - We are organizing sessions at the AGU Joint Assembly in Acapulco, Mexico
  - University of Oklahoma will be hosting a Regional Workshop for the community in September.





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# 2007 Community Equipment Awards

- ❖ A solicitation was issued to the community in January and advertised at the AMS Annual Meeting
- ❖ Thirteen proposals were submitted
- ❖ A total of \$100K is available for 2007 awards; Total requested funding was \$276K
- ❖ **This year's themes:**
  - **Furthering the use of the IDV in education settings**
  - **Increasing the use of Unidata systems and tools in other geoscience disciplines like hydrology and oceanography**
- The review panel met yesterday to rank and recommend awards;
- Award notifications will be made soon.



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# CADIS: Cooperative Arctic Data and Information Service

- ❖ An IPY effort to support Arctic science studies, funded by NSF/OPP; Award notification received earlier this month
- ❖ A highly collaborative project involving Unidata, NCAR/EOL, NCAR/CISL and NSIDC as partners
  - ❖ Jim Moore, NCAR/EOL, is the PI
- ❖ CADIS will provide data services for some of the Arctic Observatories and other IPY-related data
- ❖ CADIS team will work closely with Arctic Observing Network PIs
  - Currently, conducting a survey of their data service needs
  - CADIS PIs will attend a AON PI meeting later this month
- ❖ Several Unidata technologies will be applied, including the LDM, THREDDS Data Server, and the IDV







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# GOES-10 (South) Project

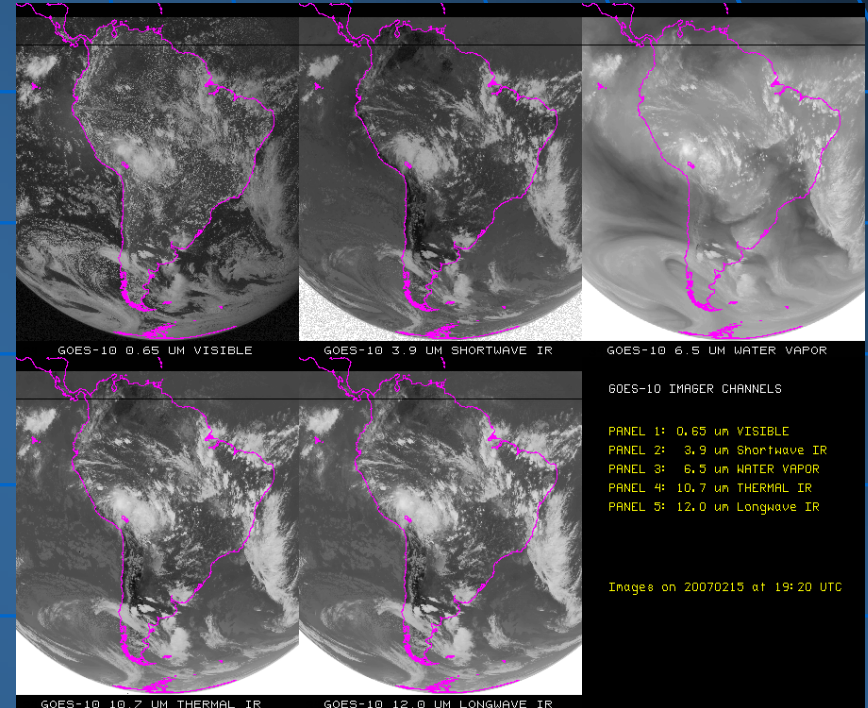
- Unidata submitted a proposal to UOP to seek \$30K in funding for purchasing a satellite data receiving equipment to augment a readout site at Mesa Lab. This new equipment would enable Unidata to ingest GOES-10 satellite imagery and add capability to distribute data from all three GOES satellites to the wide university community.
  - Joint effort between Unidata, NCAR/EOL and NCAR/RAL
- Rick Anthes and Jack Fellows approached NESDIS management about their interest in funding the project
- NESDIS Evaluation: This proposal is well thought out and is an example of how a small investment can be leveraged into a system that would serve the many potential uses of GOES-10 data, especially now that it will be operating to cover Central and South America and the Caribbean. In addition, it would allow thousands of graduate students in the Western hemisphere to benefit from real time access to data from all three GOES satellites. The proposal fits well with NOAA's outreach activities and is a highly visible demonstration of benefits that NOAA provides to taxpayers. Benefits serve a wide range of users of the overall NOAA Observing Systems Architecture.
- President's Corner article to be published in UCAR Quarterly





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# GOES-10 Project (continued)



GOES-10 imagery now integrated into University of Wisconsin datastream



# Next Generation Case Studies

- Another project funded by the UOP Director's Office
- Vision: To leverage and bring together the strengths of Unidata and COMET programs to develop a new generation of case studies that are dynamic, integrated, and interactive.
  - These case studies will include not only datasets of weather events, but they will, where appropriate, integrate relevant educational modules.
  - These new case studies will be "living" or dynamic, allowing for the community to augment and add value to existing case studies by contributing related observations, analyses, educational, curricular and multimedia materials, and other views on the case.
- An important element of that vision is to build an easy to use framework in which community members can develop and build on future case studies.
- Collaborative project between Unidata, COMET and University of North Carolina, Charlotte
  - Unidata funds a graduate student (Ms. Shelley Holmberg) at UNC and summer salary for a faculty member (Dr. Brian Etherton) for one year
  - Leverages many Unidata technologies (IDV, THREDDS Data Server, ADDE, THREDDS Data Repository), Learning modules and objects from COMET's extensive library, Data from a number of sources including Unidata and NCDC





# 2005 Atlantic Tropical Cyclone Season Module

Grab File Edit Capture Window Help Unidata IDV - Dashboard Thu 2:23 PM

File Edit Displays Data Tools Help

Quick Links Data Chooser Field Selector Display Controls

Data Sources

Formulas

- .../reanalyses/reanalysis-1/month/p
- .../prs.grib.mean.clim.y1971-2000

Fields

- 3D grid
  - \*\* covar. v and u [m<sup>2</sup>/s]
  - \*\* covar. spec. hum and c
  - \*\* covar. v and t [k\*m/s]
  - \*\* covar. t and omega [k\*
  - \*\* covar. u and t [k\*m/s]
  - \*\* covar. u and specific h
  - \*\* covar. u and omega [m
  - \*\* covar. v and specific h
  - \*\* covar. v and omega [m
  - \*\* geopotential height [gp
  - \*\* relative divergence [/s]
  - \*\* relative vorticity [/s]
  - \*\* humidity [%]
  - \*\* specific humidity [kg/k
  - \*\* stream function [m<sup>2</sup>/
  - \*\* temp. [k]
  - \*\* u wind [m/s]
  - \*\* v wind [m/s]
  - \*\* velocity potential [m<sup>2</sup>
  - \*\* virtual temp. [k]

Displays

- Plan Views
  - Contour Plan View
  - Color-Filled Contour Plan View**
  - Color-Shaded Plan View
- Cross sections
- 3D Surface
- Probes
- Volume Rendering

Times Spatial Subset

Times  Use Default

- 2005-03-01 00:00:00Z
- 2005-04-01 00:00:00Z
- 2005-05-01 00:00:00Z
- 2005-06-01 00:00:00Z
- 2005-07-01 00:00:00Z
- 2005-08-01 00:00:00Z
- 2005-09-01 00:00:00Z
- 2005-10-01 00:00:00Z
- 2005-11-01 00:00:00Z
- 2005-12-01 00:00:00Z

Create Display

Text Note

View Help

Amount of vorticity in the lower levels of the atmosphere (850 hPa) air is a critical component in the genesis of tropical cyclones. Vorticity is a measure of the amount of 'spin' in the atmosphere. In the presence of certain amount of thermodynamic forcing (such as convection), vorticity indicates favorable conditions for the dynamics of the atmosphere for tropical cyclone development. Where there is high vorticity, convection can more easily become organized.

Where vorticity values are higher are more favorable for tropical cyclone development. Areas where vorticity values are low (see <http://www.aoml.noaa.gov/hrd/tcfaq/A15.html>), where the low-level vorticity is high, there is more spin in the air, and thus a greater likelihood of organization to convection.

View Projections 1971-06-01 00:00:00Z

Memory: 152/210/1598 MB

Memory: 152/210/1598 MB Latitude: -1.4 Longitude: -2.4 Altitude: 5574.7 m





# LEAD Deployment: Weather Challenge and NOAA Hazardous Weather Test Bed

- Students at 13 universities participating in the National Collegiate Forecast Contest (now called the Weather Challenge) used LEAD this Spring.
- No detailed study of the “value-added information” has been performed yet.
- These days, LEAD is being used by SPC/NOAA to create...
  - 10-member ensemble CONUS forecast at 4 km grid spacing



To Prof. Todd Sakora, Millersville University from Eric Meyers, an undergraduate student:

“Attached is a display of 2-m T and wind depicting the WRF's interpretation of the coastal front on 14 February 2007. It's interesting that I found an example using IDV that parallels our discussion of mesoscale boundaries in class. It illustrates very nicely the transition to a coastal low and the strong baroclinic zone with a location very similar to Markowski's depiction. **I created this image in IDV after running a 5-km WRF run (initialized with NAM output) via the LEAD Portal.** This simple 1-level plot is just a precursor of the many capabilities IDV will eventually offer to visualize high-res WRF output. Enjoy!”





# LEAD Beyond Year-5

- The PIs are discussing the future of LEAD after the ITR funding ends in September '08.
- Under one scenario, Unidata/UCAR will be a "home" for the collaborative project
- The Policy Committee deliberated it at its March meeting and passed the following resolution:
  - The Policy Committee recognizes the strategic long term value of the LEAD project for the Unidata community and encourages the UPC to take a key role in coordinating the development of proposal(s) for evolution of LEAD, to an extent that will not compromise the core activities and resources.
- The PIs are preparing a plan and will undertake a visit to NSF for further discussions.