



Director's Report

Unidata Policy Committee Meeting

12 March 2007

Boulder, CO

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UCAR Office of Programs
Boulder, CO



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Unidata's & Weather Modification



Your National Weather Service forecast

Boulder, CO

NWS Denver-Boulder, CO
Point Forecast: Boulder, CO
 40.05N -105.22W (Elev. 5225 ft)

Last Update: 5:00 am MDT Mar 12, 2007
 Forecast Valid: 7am MDT Mar 12, 2007-6pm MDT Mar 18, 2007

Forecast at a Glance

Today	Tonight	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday
								
Mostly Sunny Hi 71°F	Mostly Clear Lo 37°F	Mostly Sunny Hi 72°F	Breezy Lo 39°F	Breezy Hi 66°F	Partly Cloudy Lo 32°F	Slight Chc Showers Hi 53°F	Slight Chc Showers Lo 31°F	Mostly Sunny Hi 59°F

Policy Committee News

- ❖ Melanie Wetzel will be stepping down as chair of the Policy Committee after this meeting
- ❖ Over the years, Melanie has served both on the Users and Policy Committee, and, among other things, led the organization of our Triennial Users Workshop.
- ❖ As Polcomm chair, Melanie has provided excellent stewardship of the committee and has provided valuable guidance to me personally to better lead the program.
- ❖ I want to extend a big Thank You for your distinguished service from all of us!



Policy Committee News (2)

- ❖ Steven Businger will chair the Policy Committee when Melanie steps down
- ❖ Steven is well known to all of us – has had a nearly 20-year association with the program and numerous interactions with Unidata in many capacities
- ❖ Steven will be an outstanding leader of this committee, and I look forward to working with him closely over the next three years.





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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 six 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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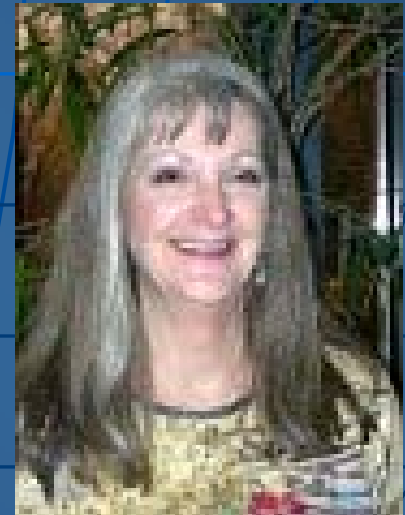
Staffing Changes

Departures:

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

New Arrival:

- Ginger Emery, a new Administrative Assistant and Travel Coordinator for the UPC





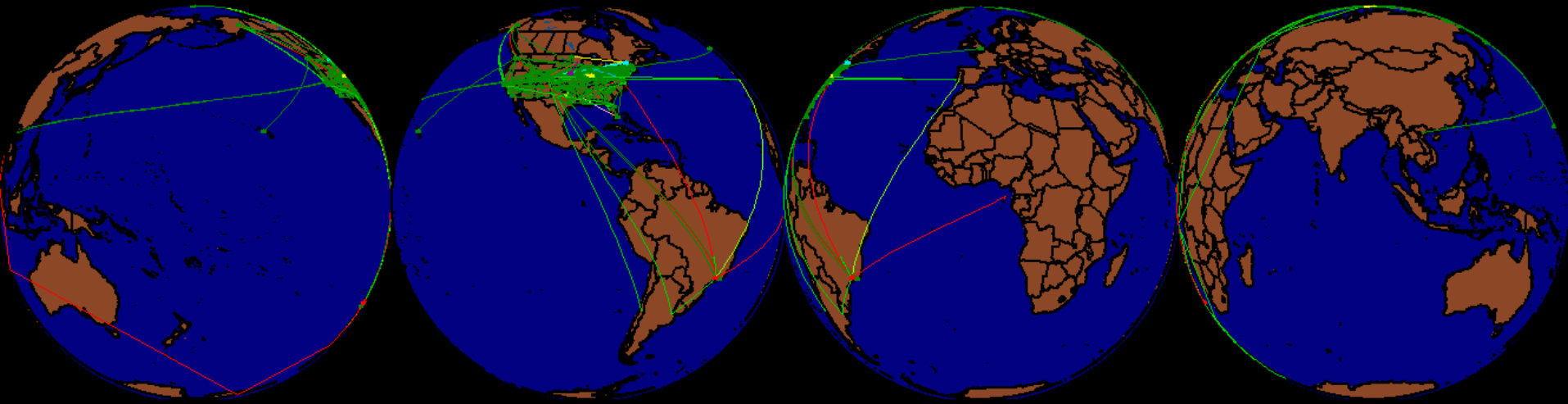
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DeSouza Award

- ❖ 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



Unidata IDD Topology 070310/212C

- ❖ The number of sites participating in the IDD continues its steady growth. As of 10 March, 409 hosts in 217 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.
- ❖ 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.



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Project *Hermes*

- ❖ Codename for the project to develop the next generation LDM
- ❖ Project so secret that even the Director has not been briefed yet
- ❖ Project still in the design stage. Features will include:
 - Support for multiple operating-systems via Java
 - Reduced bandwidth usage by allowing every site to receive only desired data
 - Support for dynamic and redundant connection topology
 - Download initiation via web browsers
 - Support for both static and dynamic datasets (e.g., case-studies, streaming data)
 - Infinitely-extensible product-namespace
 - Built-in (but optional) security via secure-socket-layer connections and cryptographic validation of data requests
 - Graphical user interface
 - Scalable to the world





Integrated Data Viewer

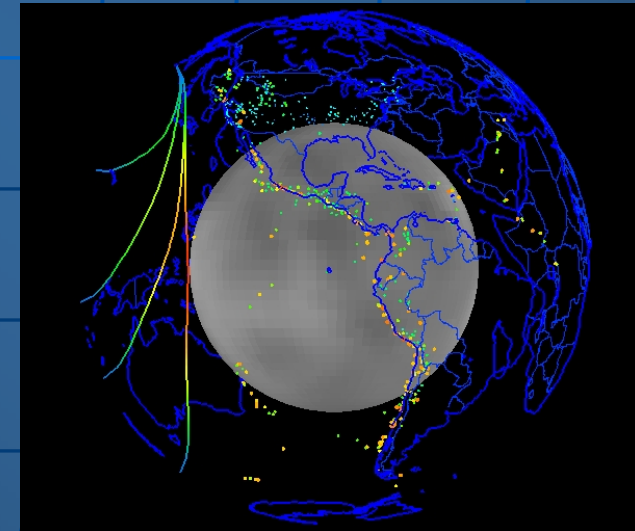
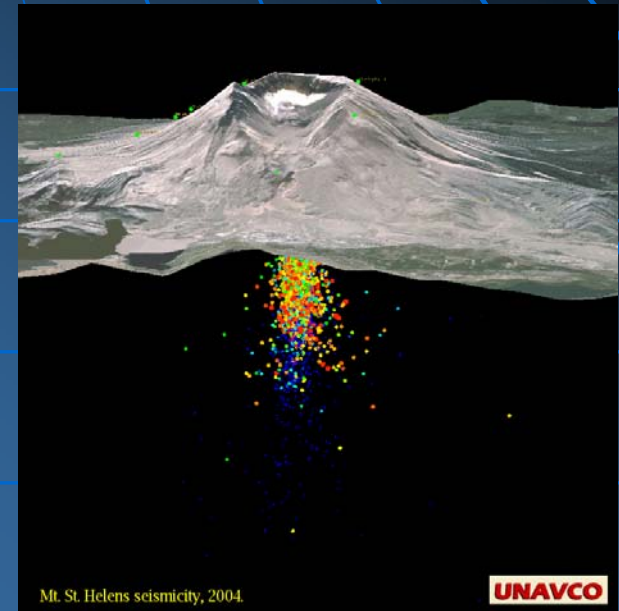
- ❖ IDV use continues to increase
- ❖ During February 2007, IDV was used over 300 times per week day, with 75 sites running the IDV 20 or more times. The numbers do not include the use of the IDV in batch/scripting mode
- ❖ Top known sites are University of Wisconsin, University of Illinois, University 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

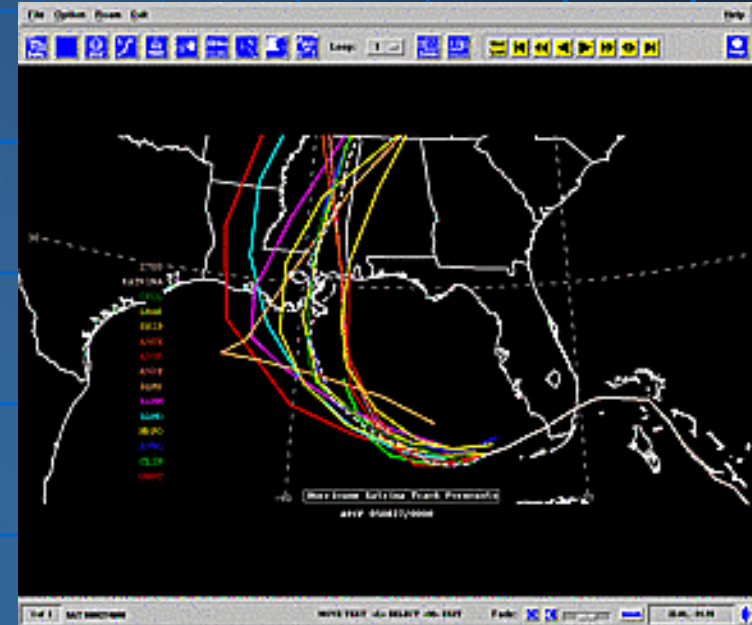
- ❖ GEON, a large NSF ITR project, is leveraging the IDV (and THREDDS) in a major way
- ❖ GEON-IDV, their visualization tool, is an extension of the IDV for their community.
- ❖ The Unavco staff have worked closely with the IDV team to make this happen (one of their team members is a former UPC employee)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





GEMPAK

- ❖ 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)





NetCDF Impact – A High-profile Example

The screenshot shows the top of the IPCC website. On the left is the WMO logo and on the right is the UNEP logo. The text "INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE" is centered. Below the logos is a navigation menu with "About IPCC", "Activities", and "Calendar of Events". The main content area features a banner for "Climate Change 2007" with a sub-header "The IPCC 4th Assessment Report is coming out" and a button "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](#) ^[4] API (application program interface) and conform to the [CF metadata standards](#) ^[5].

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..."
- ❖ More discussion on this subject this afternoon;



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2006 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)





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
 - We are organizing sessions at the AGU Joint Assembly in Acapulco, Mexico and EGU 2007 in Vienna, Austria.
 - University of Oklahoma will be hosting a Regional Workshop for the Unidata community this fall.





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2007 Community Equipment Awards

- ❖ A solicitation was issued to the community in January
- ❖ It was as advertised during the AMS Annual Meeting
- ❖ Proposals due: April 6, 2007
- ❖ We have set aside a total of \$100K for 2007 awards
- ❖ **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**



Recent Proposal Activity

1. UPC staff collaborated on two proposals submitted to NSF's Software Development for Cyberinfrastructure solicitation (Domenico and Rew, Co-PIs)
2. CADIS (IPY-related) Proposal Funded by NSF (Ramamurthy, Co-PI)
3. Submitted an unsolicited proposal to NSF on Collaborative Research: Oceanographic Atmospheric, Hydrologic Project (Domenico, Co-PI)
4. Virtual Operations Center proposal (resubmitted to NSF, Murray, Co-PI)
5. GOES-10 downlink facility proposal (funded by NESDIS, Yoksas and Schmidt)



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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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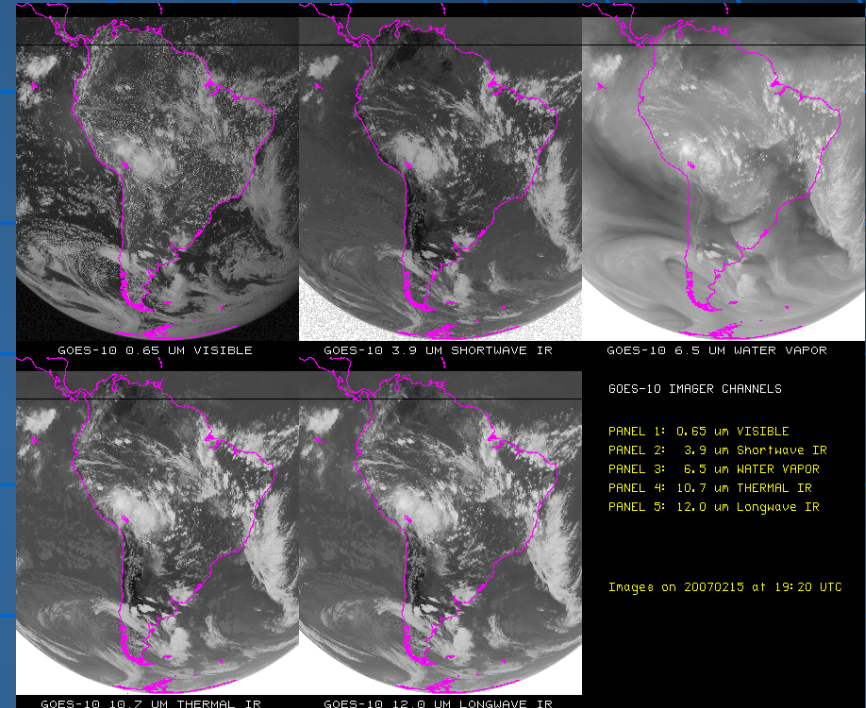
GOES-10 (South) Project

- 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

Unidata IDV - Dashboard

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 [m²/s]
 - covar. spec. hum and t [k*m/s]
 - covar. v and t [k*m/s]
 - covar. t and omega [k*
 - covar. u and t [k*m/s]
 - covar. u and omega [m
 - covar. v and specific h
 - covar. v 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 [m²/
 - temp. [k]
 - u wind [m/s]
 - v wind [m/s]
 - velocity potential [m²
 - 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

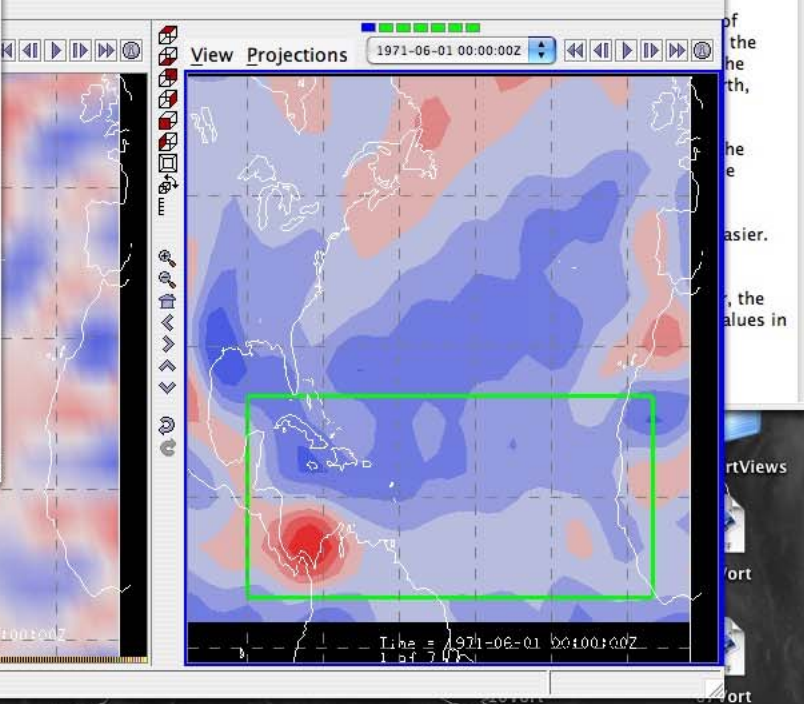
Memory: 152/210/1598 MB

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. A certain amount of thermodynamic forcing (such as convection), vorticity indicates favorable the dynamics of the atmosphere is for tropical cyclone development. Where there is convection can more easily become organized.

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





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State of the Program: A Snapshot

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

Questions?