



Director's Report

Unidata Users Committee Meeting

10 April 2006

Boulder, CO

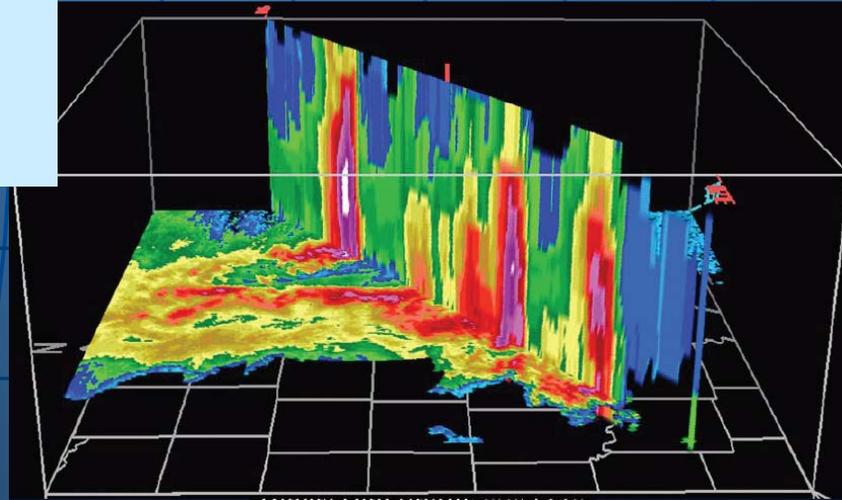
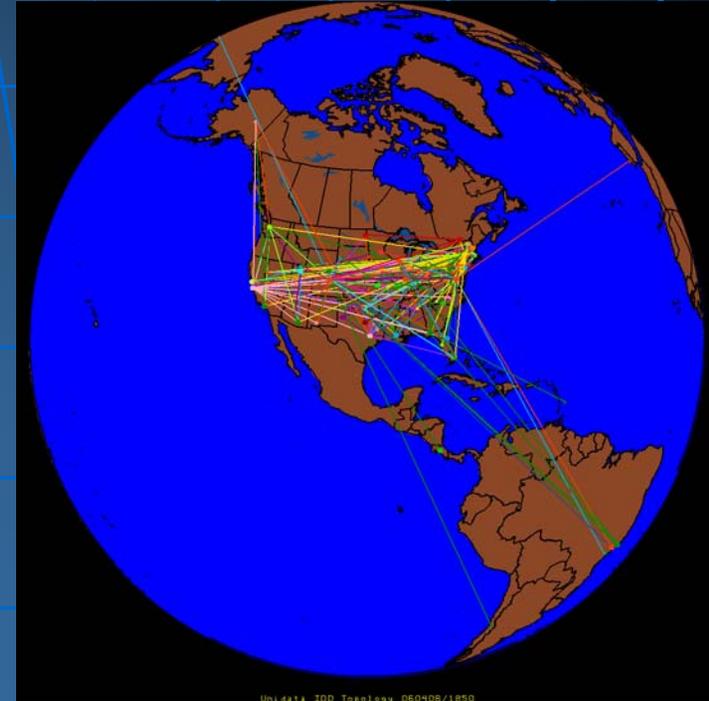
Mohan Ramamurthy
Unidata Program Center
UCAR Office of Programs
Boulder, CO



Data Flows

- About 350 hosts in 192 network domains are now running LDM-6 and reporting real time statistics in the IDD.
 - Tidbit: LDM is running on the HIAPER aircraft
- The average volume of data flowing through the IDD has increased to about 3.4 GB/hour, with a maximum rate of approximately 5.5 GB/hour.

Data from the National Radar Mosaic & QPE Project at NSSL is now flowing to the UPC in netCDF.



Terrain-Induced Rotor Experiment

(T-REX)

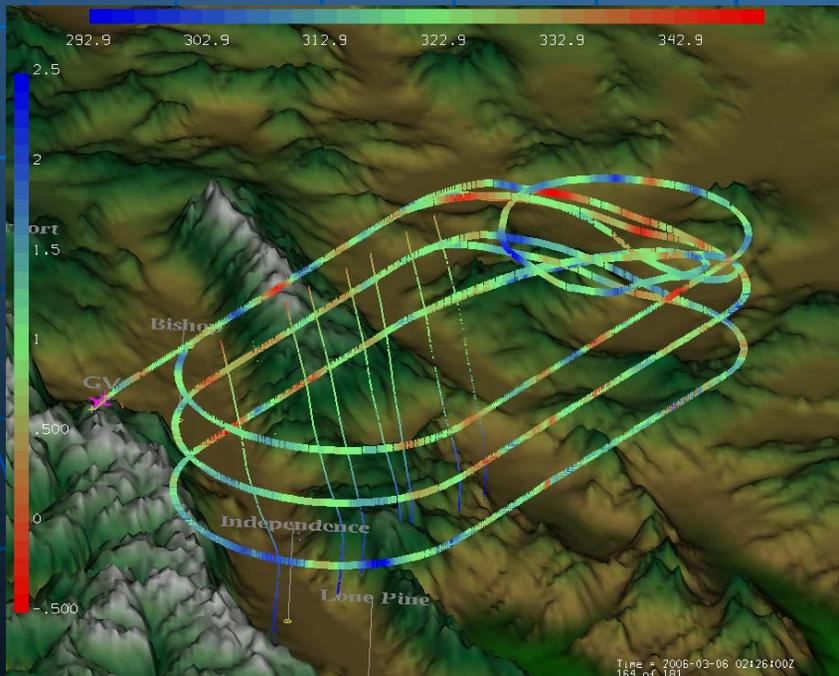
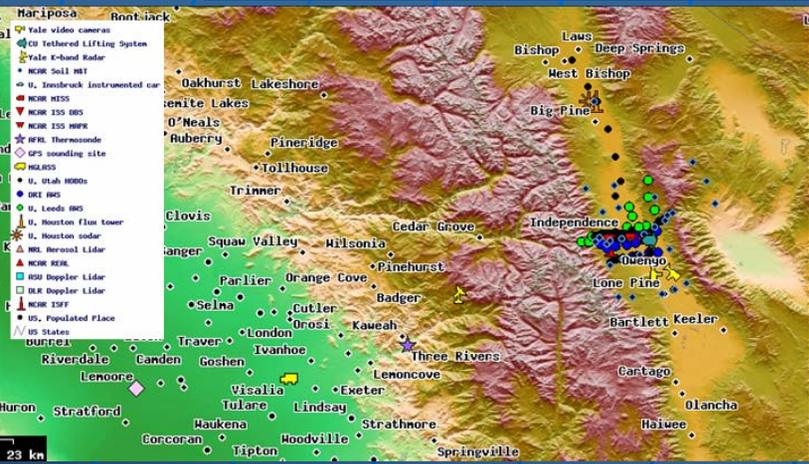
A study of the structure and evolution of atmospheric rotors and closely related phenomena in complex terrain.

The IDV was selected as the visualization tool for the Ops. Center in T-REX.

The IDV developers worked closely with NCAR/EOL to enhance access to and display of field project data.

New graphing capabilities were added for time series, histogram, scatter, and transect plots. Enhancements were also made on the data access side.

Don Murray and Jeff McWhirter traveled to Bishop in Owens Valley, CA, each for one week, and supported the PIs at the Ops. Center.





Future of Unidata Analysis and Visualization Applications

- The Policy Committee asked the UPC to report on its plans for analysis and visualization software, specifically providing a rationale for the current and future allocation of resources to the development and maintenance of its current mix of packages.
- A Task Force led by Russ Rew was appointed and a report was prepared and circulated to Usercomm. It will be presented to Polcomm next week.
- This topic is on the agenda this afternoon, so you will hear more later.

THREDDS Data Server



Primary Interfaces



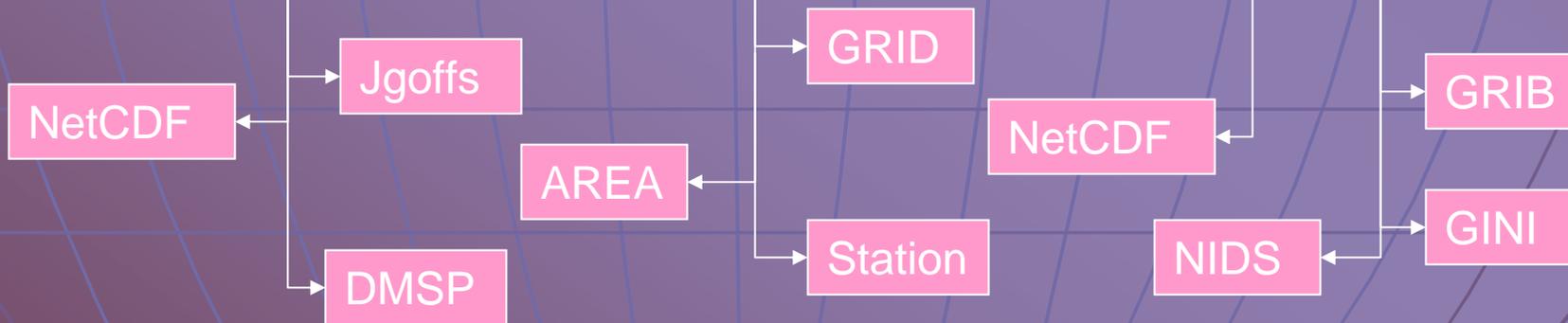
Underlying Interfaces



Local/Remote Services



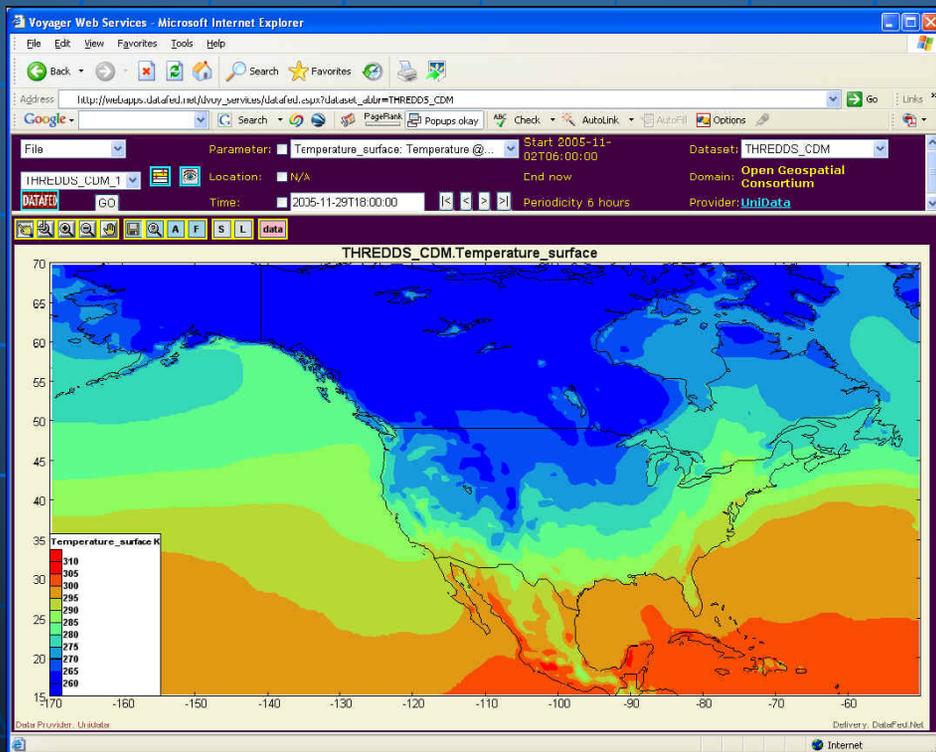
File Formats



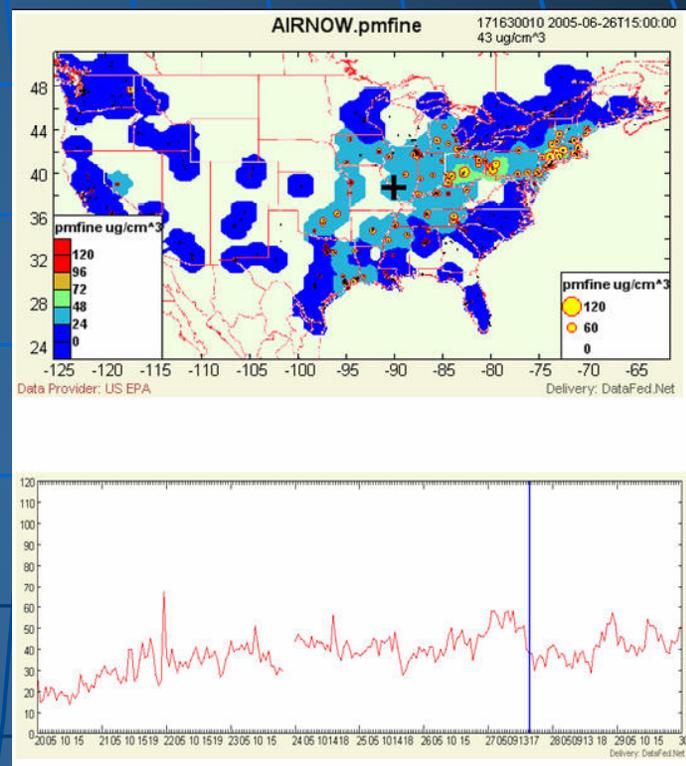


OGC GALEON-IE Examples using THREDDS/WCS Access

NAM Grids via TDS/WCS interface



EPA Air-quality data via WCS interface



Visualizations from DataFed, a client for Earth Science datasets, accessing data via Source: Husar et al., Washington U. the THREDDS/WCS protocol

2006 Users Workshop

- Received full funding for the Triennial 2006 Users Workshop;
- Theme: Expanding the Use of Models as Educational Tools in the Atmospheric & Related Sciences
- An excellent line up of speakers already in place
- There will lots of discussion today & tomorrow





THORPEX

A Global Atmospheric Research Programme

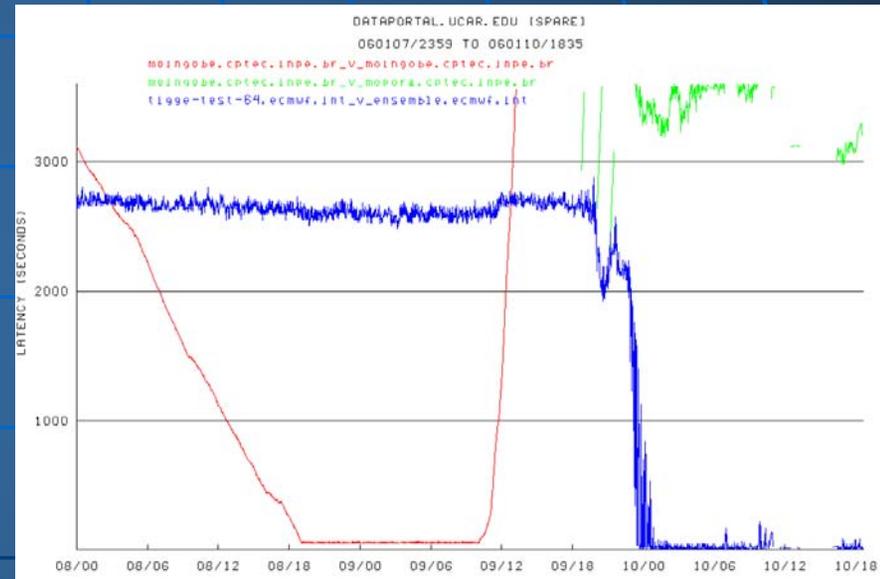
TIGGE

- LDM is being used in the THORPEX Interactive Grand Global Ensemble (TIGGE) project
 - There will be three TIGGE Archive Centers (NCAR, ECMWF, and CMA, Beijing)
 - Each center will host data from operational global models at NCEP, FNMOC, ECMWF, UKMO, BMRC, JMA, CMA, MS Canada, CPTec, Meteo-France, and KMA in GRIB2 Format on native grids.
 - Data from the NCAR archive will be available to community via OPeNDAP/TDS and possibly via the LDM
 - Initially, there will be a 48h embargo on data from certain centers.
- ❖ Enhanced international collaboration between operational centers and universities on the development of ensemble prediction
 - ❖ Development of new methods of combining ensembles of predictions from different sources
 - ❖ Increased understanding of the contribution of observation, initial and model uncertainties to forecast error
 - ❖ Development of a prototype future Global Interactive Forecasting System
 - ❖ ...



TIGGE & LDM

- LDM demonstrated that it was capable of meeting TIGGE demands by sending approximately 17 GB/hr from ECMWF to NCAR/SCD;
- TIGGE data relay tests revealed some LDM-6 deficiencies, which have been solved in the latest distributions, and through some needed TCP tuning;
- Topology for the flow of data yet to be determined;
- TIGGE is regarded as a WMO Information System pilot project;





STORM Funds Case Study Project

- To develop a prototype, framework, and a guide book for generating next generation case studies;
- Will leverage Unidata's THREDDS and IDV technologies, and combine them with related learning objects embedded in COMET's educational modules;
- Dr. Brian Etherton, UNC Charlotte, is the scientific lead and will work with the UPC staff;
- More details tomorrow a.m. from Joanne and Jeff;



Unidata Assessment

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- The Assessment study is progressing well
- UPC recruited a consultant to conduct the study in Nov. 2005
 - Nelson Consulting Inc.
 - Sarah Nelson, Ed.D.
 - Kate Cumbo, Ph.D.
 - Christopher Nelson, Ph.D. Candidate
- They will conduct a multi-part assessment study, including a community survey, evaluation of software development process, focus groups, retrospective analysis, and notable case-studies
- The community survey will primarily focus on Unidata's *transformative impact on the community*
- Survey is nicely aligned with NSF goals: People, Ideas, and Tools
- More this afternoon for Dr. Sarah Nelson



Community Services

- UPC staff was actively involved in the organization of special sessions at the AGU Fall 2005 Meeting in San Francisco, CA, and the AMS Annual Meeting in Atlanta, GA;
- The organization of these sessions to bring the community together to address cyberinfrastructure/informatics issues, especially in the data & tools area, is becoming an important role for Unidata.

Over 20 papers were presented or coauthored by the UPC staff at these meetings.



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AGU Special Session

- With funding for travel assistance from NSF (ATM and OISE) and in collaboration with Prof. Elen Cutrim, a special session will be organized at the AGU 2006 Joint Assembly to be held in Baltimore, MD on 23-26 May:
 - *Earth and Space Science Cyberinfrastructures: Data, Tools, Distribution and Forecast Systems for International Collaboration*
- **Goal:** to help build a stronger and broader space and Earth science cyberinfrastructure community through international collaboration.
- 22 abstracts received, including 4 invited talks, 11 contributed talks, and 7 posters. Abstracts received from Argentina, Brazil, Costa Rica, Jamaica, Venezuela, and the People's Republic of Boulder.
 - This session is the second most popular section of the *Earth and Space Science Informatics* program of the Joint Assembly.



2006 Equipment Awards

- Received eight proposals this year (last year we had received 24 proposals)
- Proposals to broaden participation from other disciplines were encouraged
- Total request: \$142K (or \$186K with UCAR overhead); available funds: \$100K
- Review panel will meet on 11-12 April



Staffing Changes

Departures :

- John Stokes, Student Assistant, System Administration Group
 - Graduated from CU;
 - Vacancy was anticipated and planned for;
- Doug Lindholm, LEAD Project
 - Two year term ended in February
 - Responsibilities transferred to Anne Wilson
- Ed Hartnett, netCDF-HDF Project
 - Has accepted a higher-level position at NCAR/SCD with the ESMF Project
 - Will continue working at the UPC at 25% level
 - We are likely to fill this position at some point



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State of the Program: A Snapshot

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



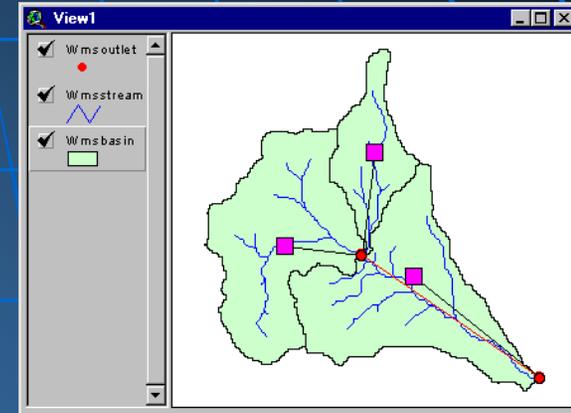
Vision: Unidata in 2013

“Unidata will be a premier developer and provider of cyberinfrastructure for the geosciences, including a rich collection of well-integrated end-to-end data services, related tools, and innovative capabilities, empowering faculty, students, researchers and professionals worldwide to advance research, education and outreach in new and creative ways.”



Community Broadening

- Expand to key GEO disciplines
 - Hydrology, Oceanography
- Reach institutions beyond the U. S.
 - S. America, Caribbean, Europe, and Asia
- Begin crafting a plan of expanding to non-traditional institutions
 - e.g., Community Colleges
- Leverage partnerships and technology
 - CUAHSI, Java, Web Services, and GIS



What is realistic? An evolutionary, organic growth of the community



Service Oriented Architecture

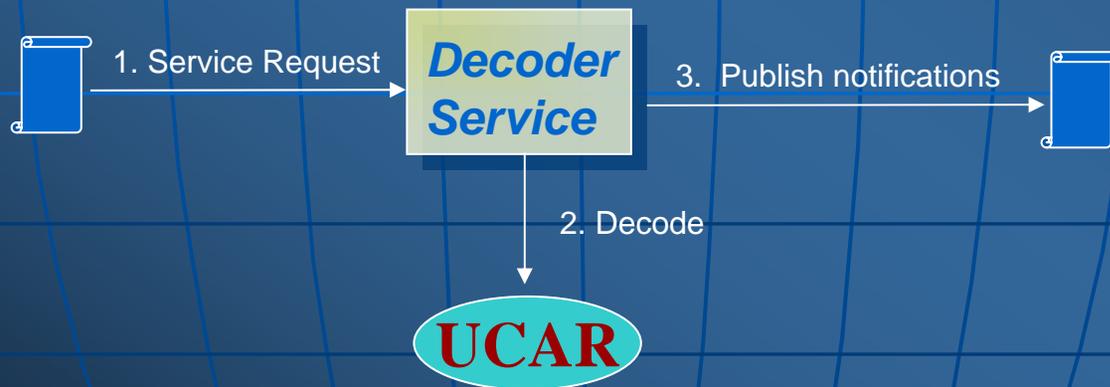
- We are committed to gradually and incrementally evolving our data systems and technologies to fit into a Service-oriented Architecture (SOA);
- The key benefit of Web services is that they allow previously incompatible applications to interoperate on regardless of language, platform, and operating systems.
- As a result, Web services dramatically facilitate the integration of disparate applications.
- Unidata is not alone in this trend; NOAA, LEAD, CUAHSI, IOOS, among others, are moving in that direction in a major way;
- In that vision, many of Unidata's data services in the future will interoperate with those from other projects and institutions.



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What's a Web service anyway?

- A “web server” that runs an application for you.
 - You send it requests (XML documents) and it processes the information and send replies (notifications) when it is done.



You can embed and chain such services in a workflow



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Decoder & Data Mover Service



- When it receives two messages (source and destination URL) it decodes the file and invokes GridFTP to move it.
- When the move is complete it send an "even notification" indicating that it is done and where to find the file.
- You can imagine adding a "cataloging service" to this chain, where a catalog generator is invoked after the decoded file is moved to publish, say, a THREDDS catalog, of the decoded dataset.
- And then you can create a jnlp handle that could be emailed or published on the web. You click on the URL, and voila, it launches the IDV and you visualize the data.
- If the planets align properly, you will see how this works during the summer workshop.



Google Maps & Google Earth

Personal Weather Stations Google Map

Display Type: Temperature / Wind Dew Point / Humidity Precipitation

Map Satellite Hybrid

Current Forecast

North Mission (Valencia & Market)

Temperature: 45.3 °F
 Dew Point: 35.4 °F
 Humidity: 68%
 Wind: Calm
 Pressure: 30.09in
 Precipitation: 0in/hr

[KCASANFR49](#)
 lat: 37.77
 lon: -122.42
 Elevation: 0 ft

Map showing weather stations in the San Francisco Bay Area with temperature and humidity callouts.

Select a Location

Search: Go

Place	Station	Dew Point
Marin County DPW Corporation Yard	KCANICAS2	35.5° F
Deer Park	KCAFAIRF7	36.4° F
Muir Beach	KCAMUIRB1	37.8° F
Red Hill	KCASANAN1	30.6° F
Near Library	KCAMILLV4	26.7° F
San Rafael	KCASANRA2	29.6° F
St. Marys	KCAMORAG2	36.3° F
Daly City	KCADALYC1	35.8° F
Vallemar District	KCAPACIF1	32.8° F
Stern Grove	KCASANFR44	38.8° F
Above Bridgeway	KCASAUAS3	36.3° F
Pacific Highlands		
Larkey Park		
Peacock Gap		
Tiburon		
Twin Peaks		
Westwood Park		
The Panhandle		
Noe Valley		

Member of the Weather Underground Data Exchange
26122 members

Google Earth

File Edit View Add Tools Help

Local Search Directions

Places

- NOAA TOPMADWATCH #836 Valid from 2:30 PM until 1:00 AM EDT for FLSD836A
- URGENT - IMMEDIATE BROADCAST REQUESTED
- WDSS-# Example: Hurricane Wilm
- Reflectivity Colorbar
- Merge/Reflectivity/GComposite_24851824-878912.tif
- Merge/Reflectivity/GComposite_24851824-888132.tif
- Merge/Reflectivity/GComposite_24851824-898148.tif

Layers

- National Geographic Magazine
- Google Earth Community
- Community Showcase
- Google Earth Community (thank)
- Dining
- Lodging
- Banks/ATMs
- Bars/Clubs
- Coffee Shops
- Shopping Malls
- Major Retail
- Movie/DVD Rentals
- Grocery Stores

Tomado Watch # 836 Valid from 2:30 PM until 1:00 AM EDT for FLSD836A

Image ©2005, Map Data ©2005 Tele Atlas

\$64K Question: How can Unidata data systems and tools work with these popular tools



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Availability: Usually ships within 24 hours. Ships from and sold by Amazon.com.

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Price: \$48.49
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Availability: Usually ships in 1-2 business days

TigerDirect
Price: \$49.99
Availability: Usually ships in 1-2 business days

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- [Logitech Quickcam Fusion \(961403-0403\)](#) Other products by [Logitech](#)
- [Logitech QuickCam Communicate STX](#) Other products by [Logitech](#)

We can learn a lot from the approaches used by Amazon, EBay, Yahoo, and so on



uni data

Seamless access to and sharing of data anywhere

- From device, desktop, local and
institutional libraries to archives anywhere
on the Internet



This approach empowers users to be publishers as well.

In my vision, community members are not only consumers but also providers of data from their research and other activities.