



# Unidata Policy Committee

May 16, 2005

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Office of Climate, Water, and Weather  
Services

NOAA's National Weather Service



# Outline

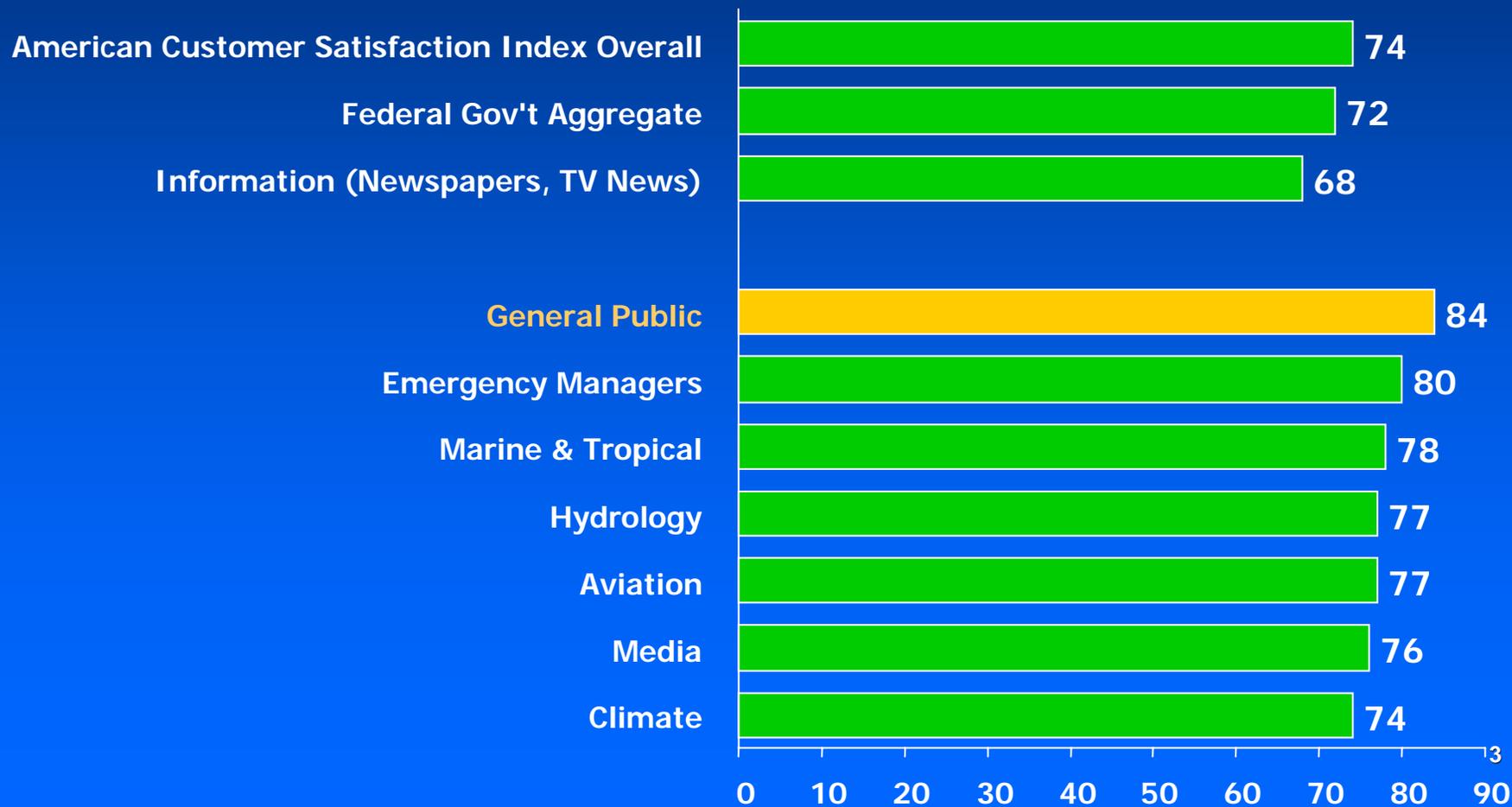
- More Data: Observations and Models
- Improving Data Distribution
- Digital Services
- Challenges



# Background

## Measuring Customer Satisfaction

NOAA's NWS "...does an outstanding job of providing weather information."





# More Observations

## Land, Air, and Sea

- *NOAA's Integrated Observing System (IOS)*
  - Integrated Surface Observing System (ISOS)
  - Integrated Upper-Air Observing System (IUOS)
  - Integrated Ocean Observing System (IOOS)





# More Observations

- Integrated Surface Observing System (ISOS)
  - ASOS
  - Cooperative Observers (COOP)
  - COOP-Modernization





# More Observations

## Integrated Upper-Air Observing System (IUOS)

- *NEXRAD*
- *Radiosondes*
- *NOAA Profiler Network*
- *Meteorological Data Collection and Reporting System (MDCRS)*





# More Observations

## Integrated Ocean Observing System (IOOS)

- *Buoys, C-MAN*
- *DART*
- *TAO*

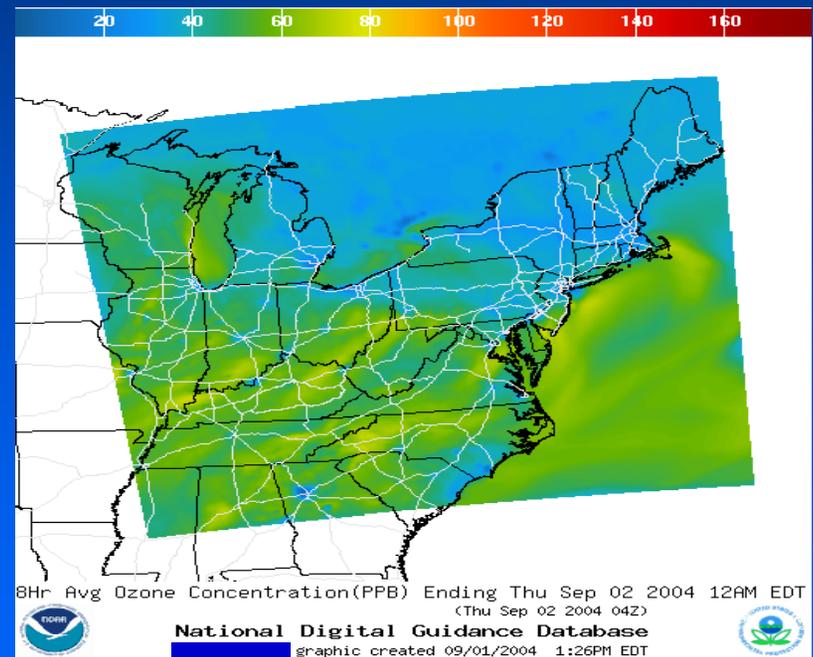




# More Model Output

Higher resolution, more applications, and confidence information

- Air Quality Forecast System
- Climate Forecast System
- North American Ensemble Forecast System
- Weather, Research, and Forecasting (WRF) Model





# Improving Data Distribution

- Communications and Facilities
- Product Formats
- Data Fusion and Portals

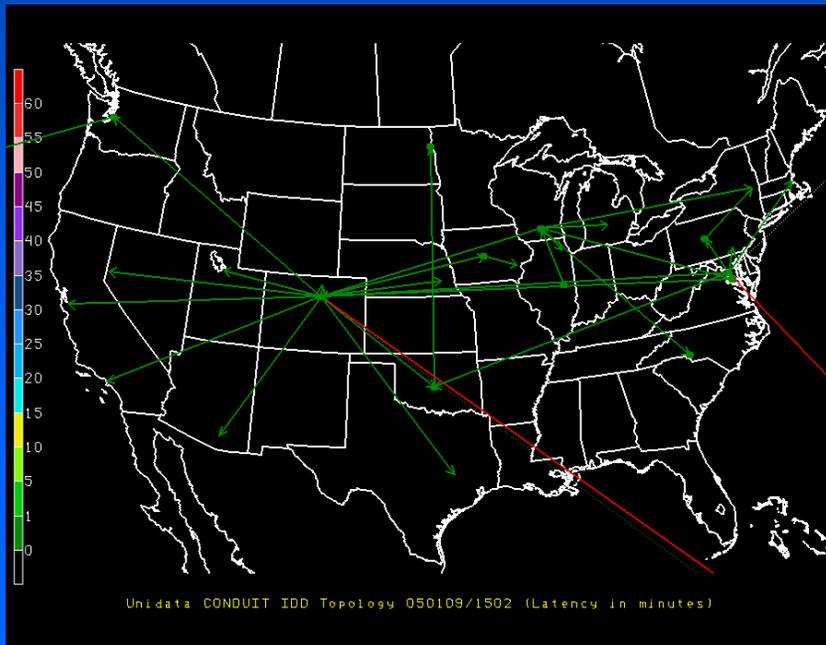




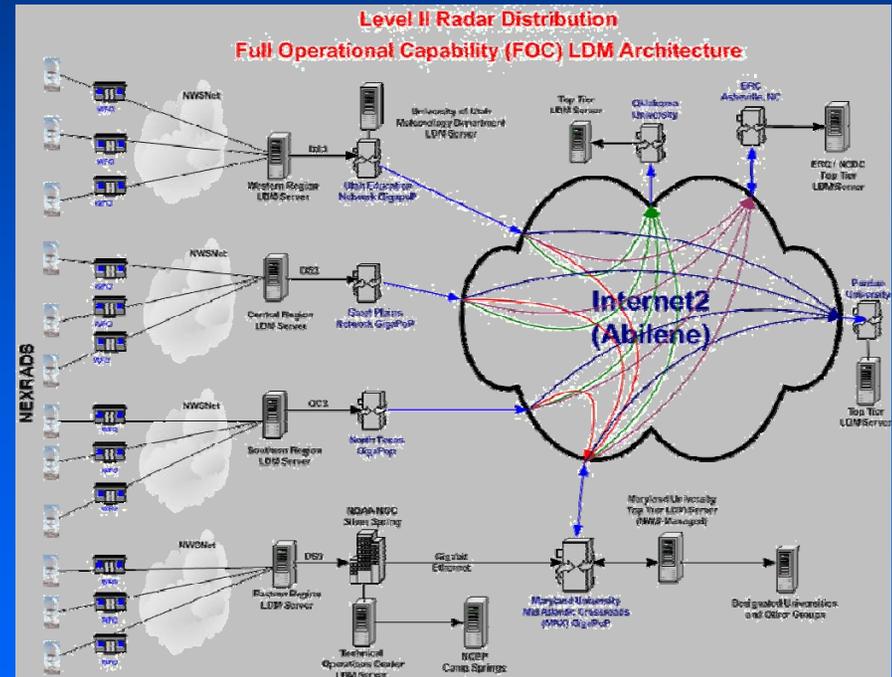
# Communications and Facilities

With Partners using Internet2 to improve data delivery

- Level II Radar Data
- Model data



**CRAFT**



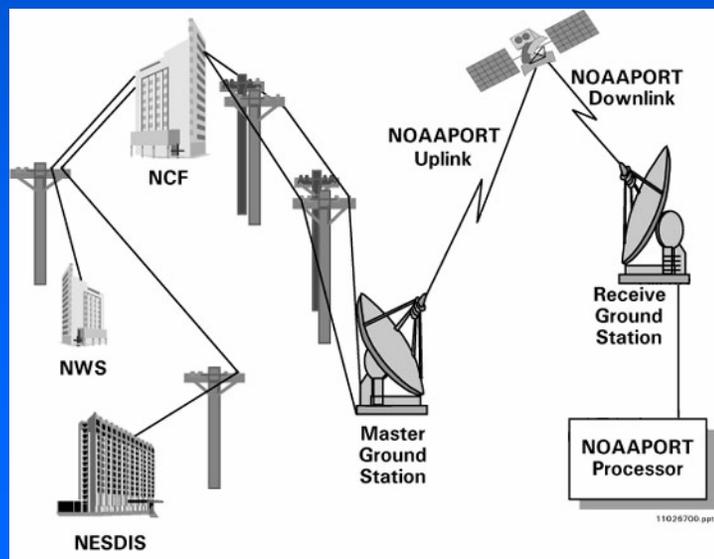
**CONDUIT**



# Communications and Facilities

Using COTS satellite technology to improve data access

- January 2005: Doubled NOAAPORT capacity to support WRF, SREF, and RUC13km distribution
- 2008+: Will double capacity of NOAAPORT in to accommodate NPOESS and model requirements.





# Communications and Facilities

## Improving Backups

- NCEP supercomputing system
- Telecommunications Gateway





# Product Formats

Expanding move from text to digital products

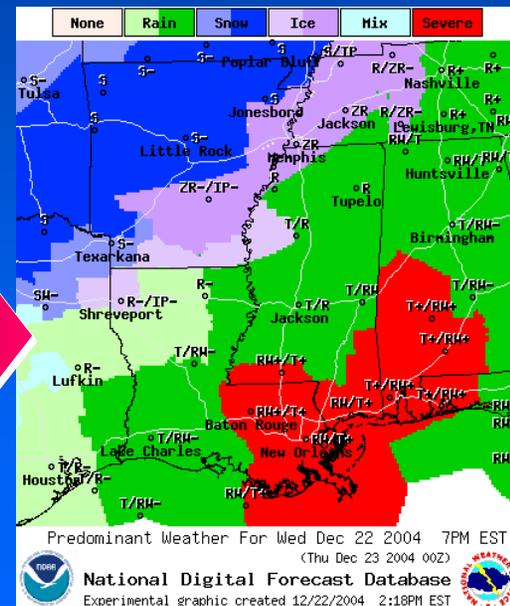
- Digital Services/ NDFD Official Elements

- Max/Min Temperature
- Probability of
- Precipitation (12 hour)
- Dew Point Temperature
- Present Weather

## Text

**.TONIGHT...FREEZING RAIN MIXED WITH SLEET NORTH...CHANGING TO SNOW OVERNIGHT. ICE ACCUMULATIONS IN EXCESS OF A QUARTER INCH...AND 1 TO 3 INCHES OF SNOW ARE POSSIBLE FAR NORTH. NUMEROUS SHOWERS AND THUNDERSTORMS ELSEWHERE...TAPERING FROM THE NORTHWEST AFTER MIDNIGHT. LOWS FROM THE LOWER 20S FAR NORTH TO THE MIDDLE 40S ALONG THE COAST**

## Digital





# Product Formats

- Future NDFD Elements:
  - *Sky Cover*
  - *Quantitative Precipitation Forecasts (QPF)*
  - *Wind Direction*
  - *Wind Speed*
  - *Snow Amount*
  - *Significant Wave Height*
  - *Uncertainty Information*
  - *4D Information*



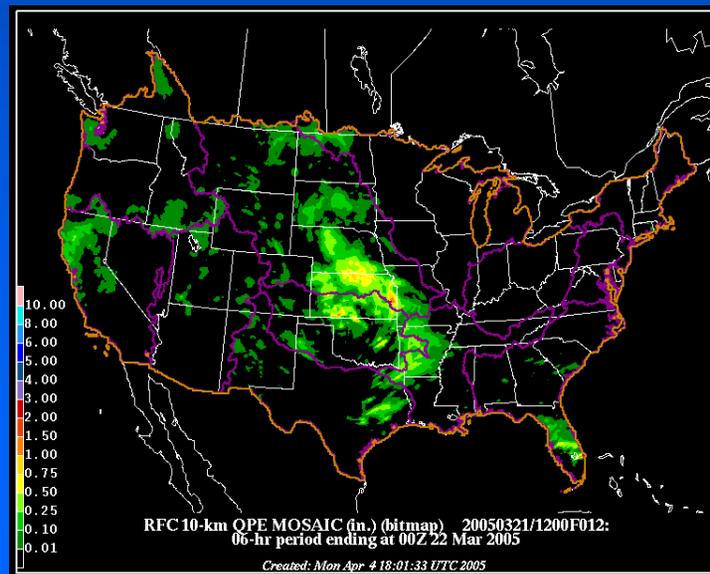
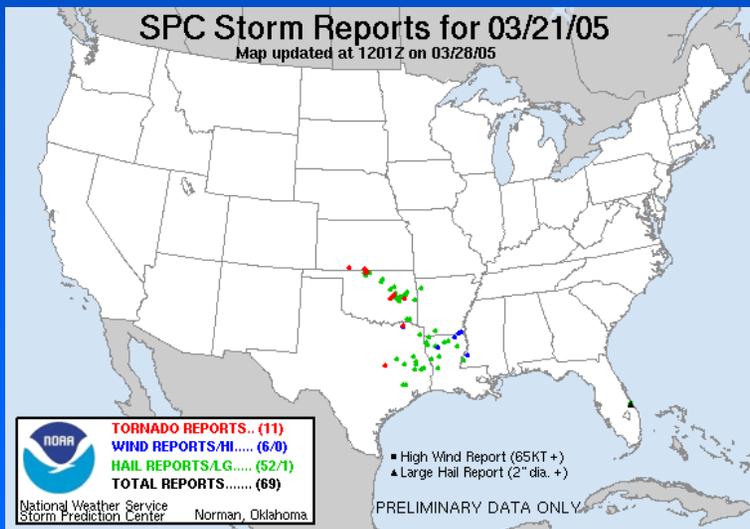
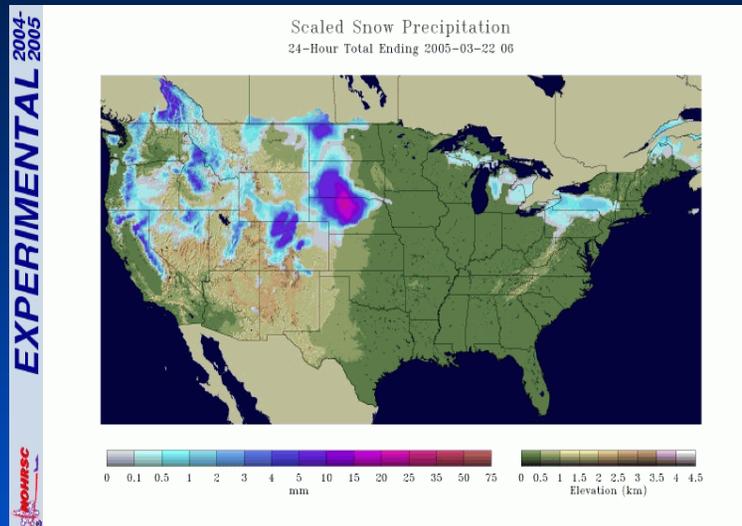
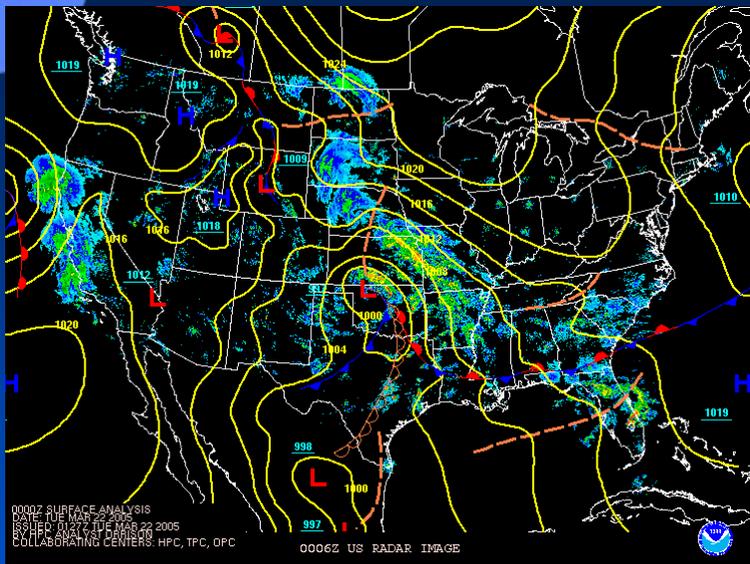


# NDFD Examples

- Forecast Evolution over 7 days
- Heavy QPF
- Colorado “Blizzard”

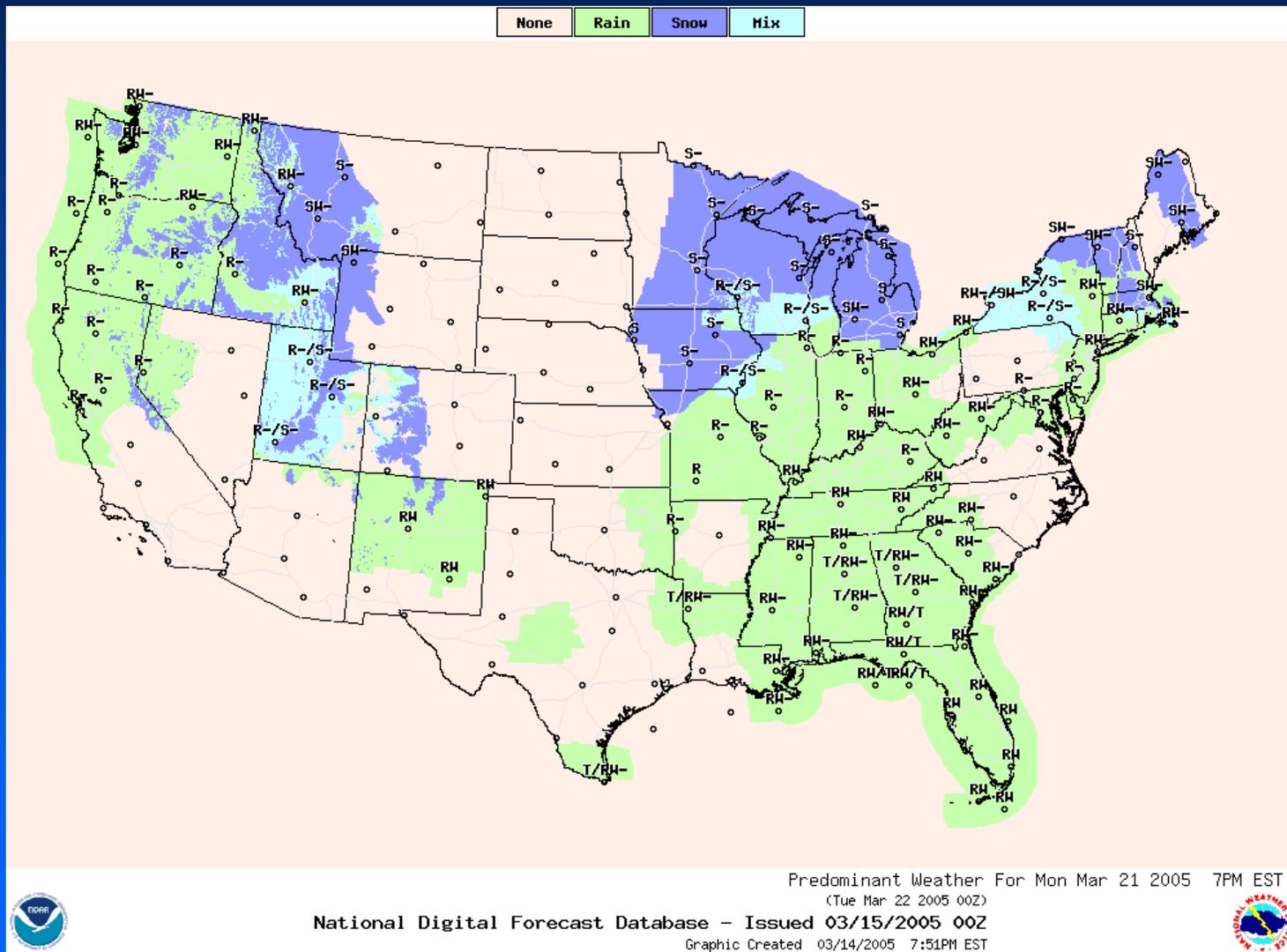


# Corresponding Observations





# Forecast Evolution Over 7 Days

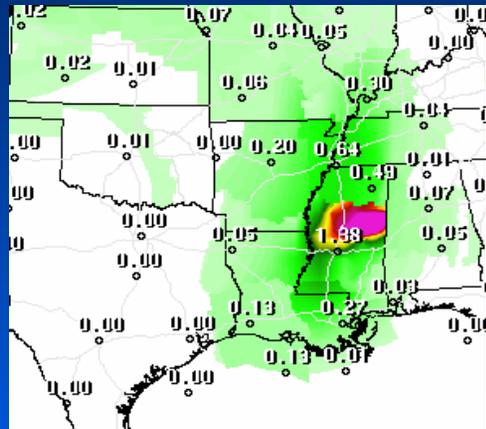




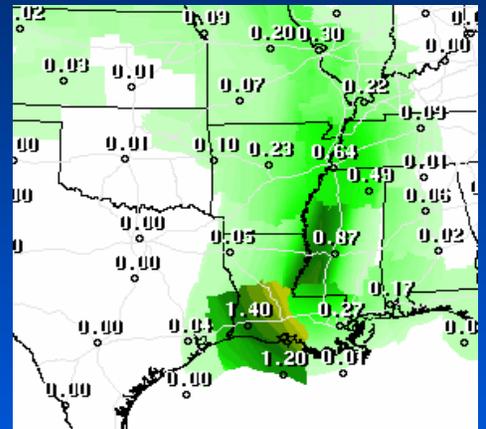
# Heavy QPF



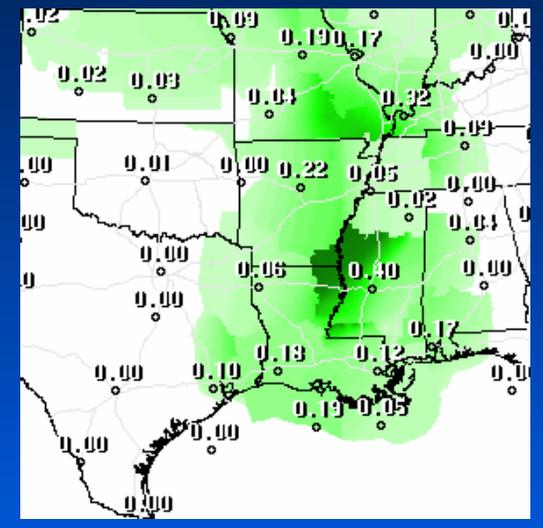
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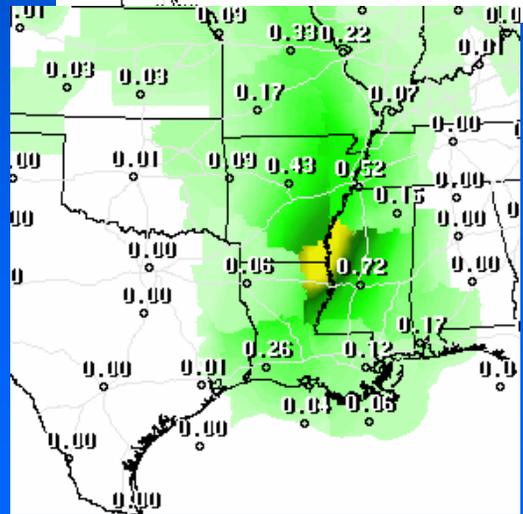
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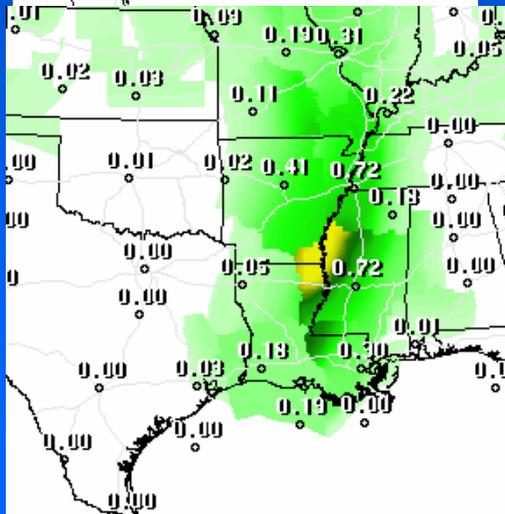
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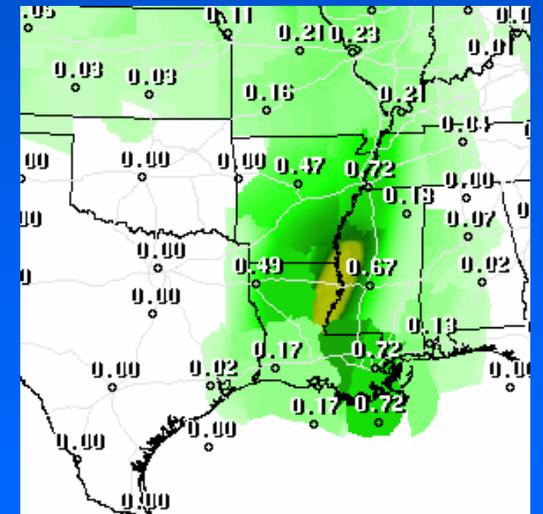
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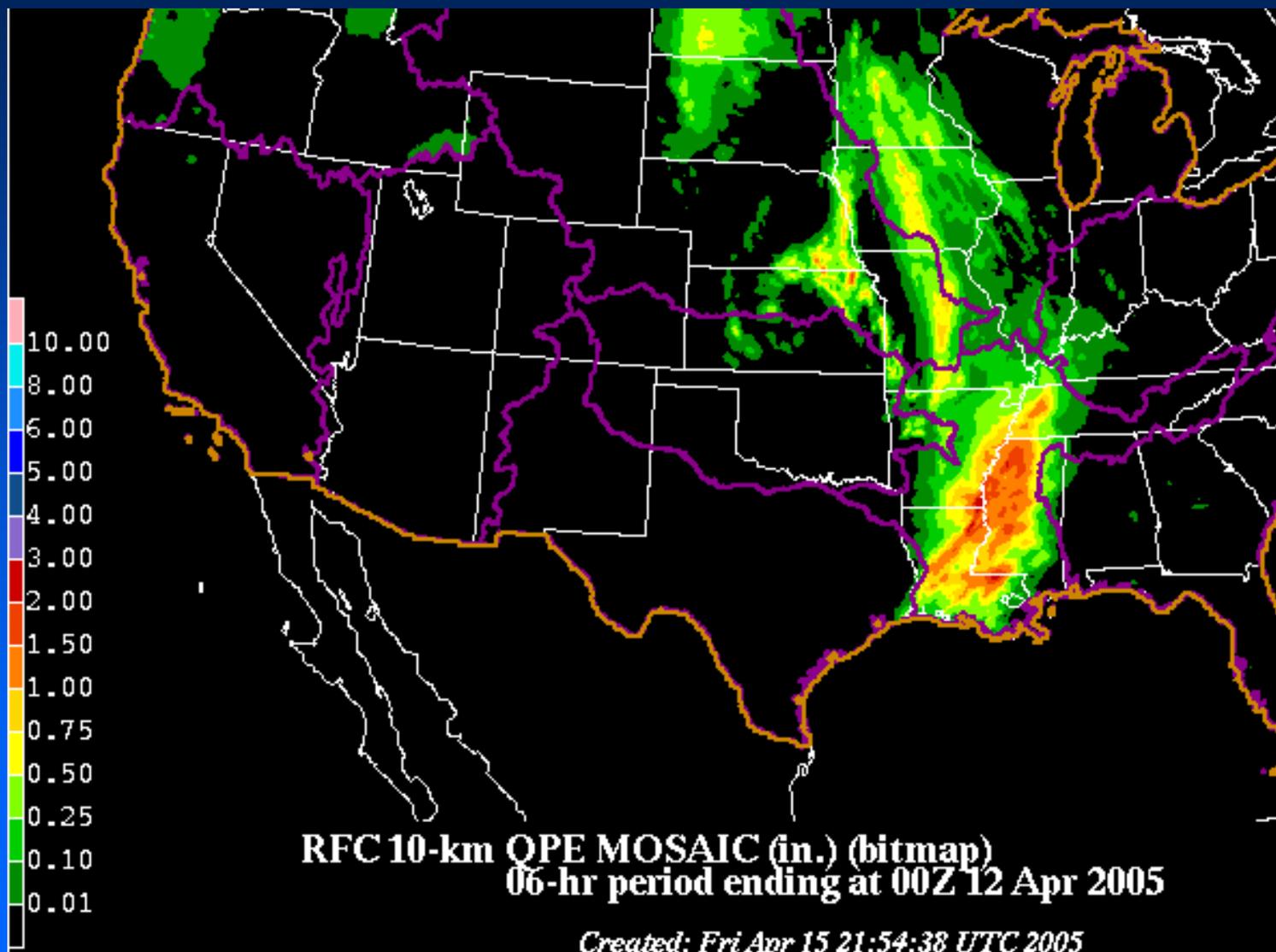


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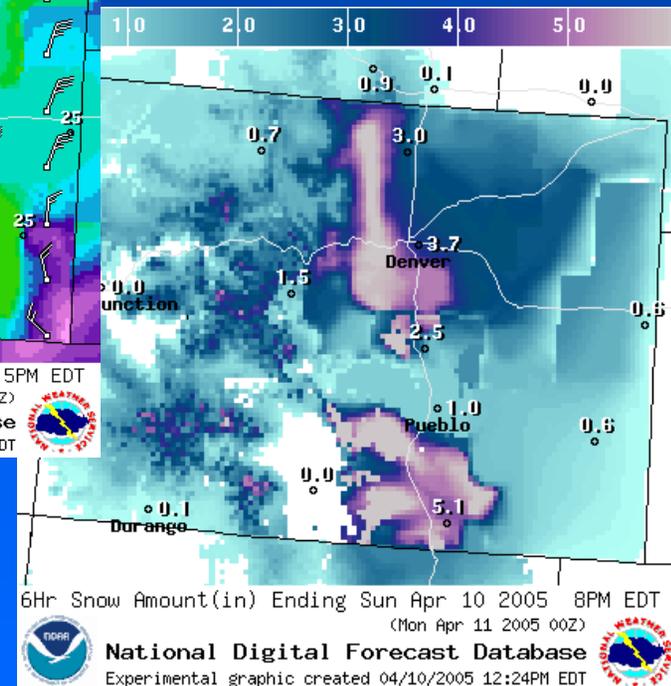
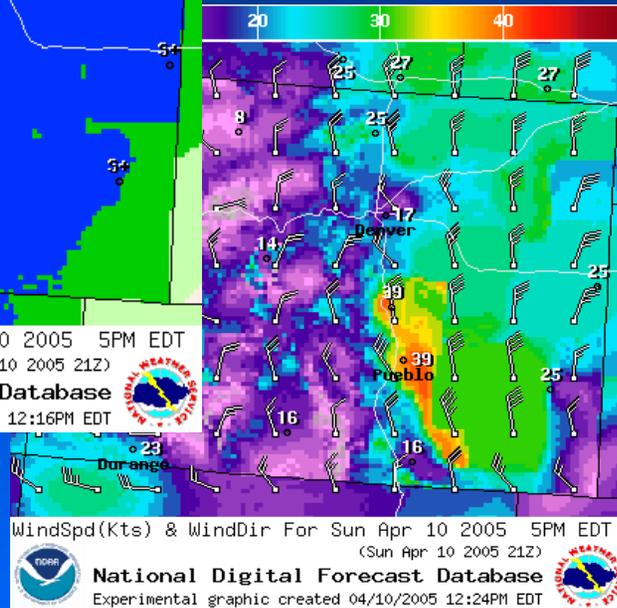
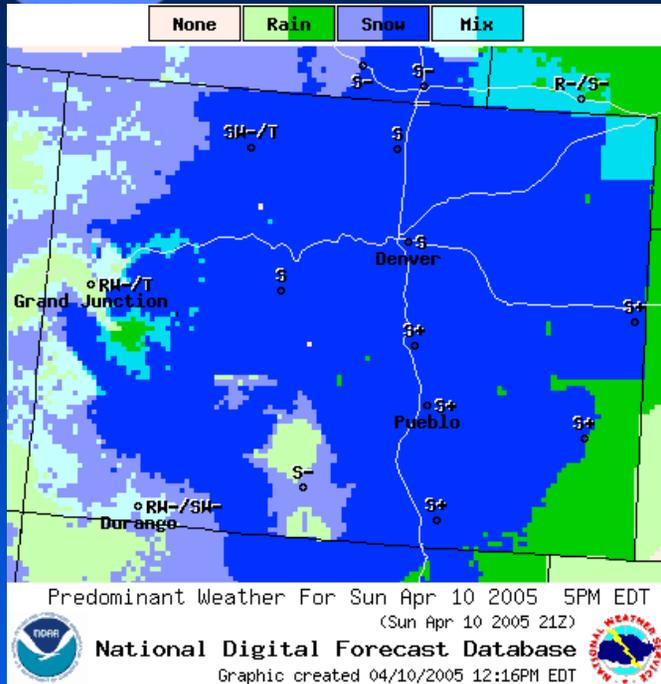
# Corresponding QPE





# Colorado "Blizzard"

I-70 West of Denver

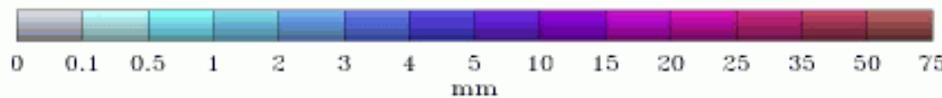
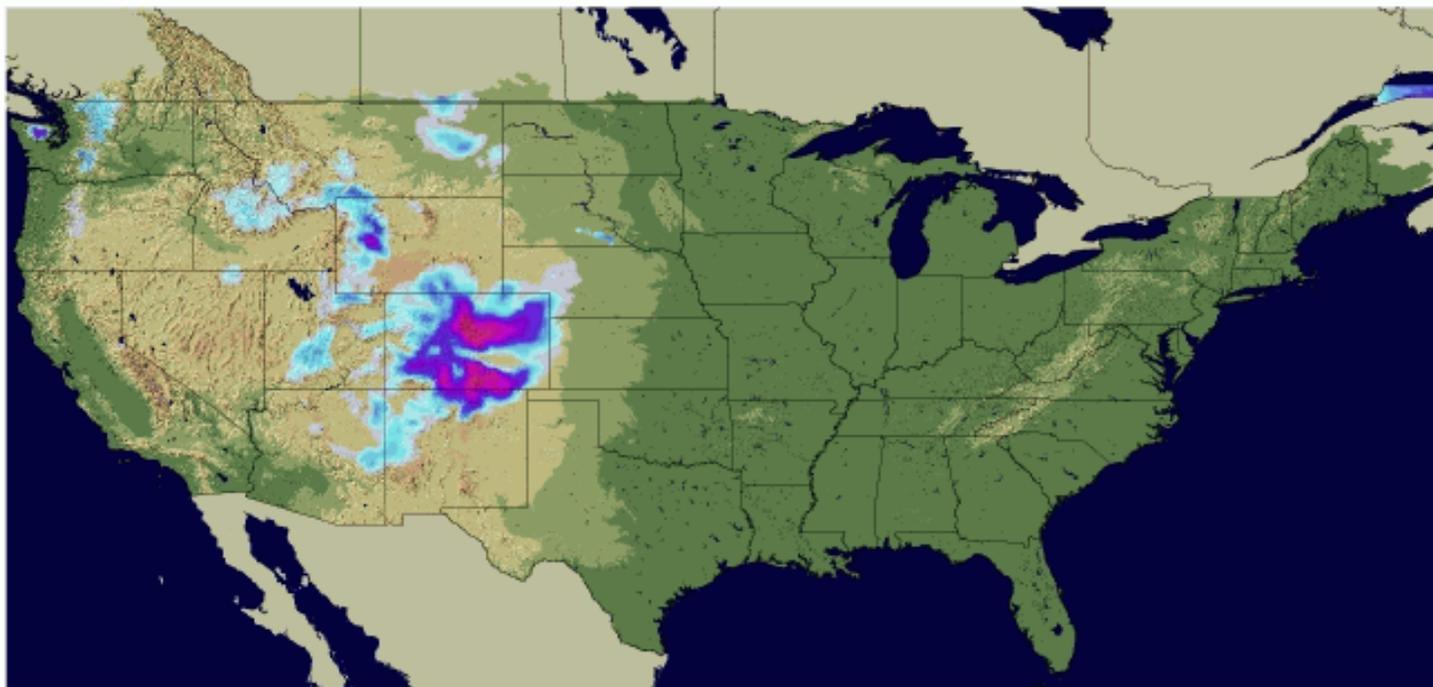




# Corresponding Snowfall

2004-2005  
EXPERIMENTAL

Scaled Snow Precipitation  
24-Hour Total Ending 2005-04-11 06

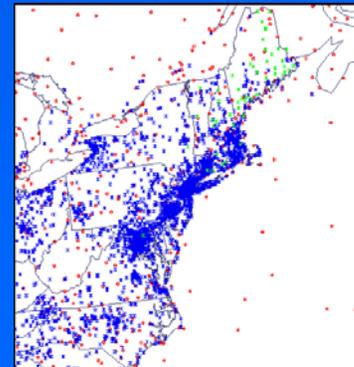




# Data Portals

Fusing disparate data sets in near-real time

- Hydrometeorological Automated Data System (HADS)
  - Acquires non-standard raw hydro data via GOES DCS
  - More than 1.7 million observational values processed each day
  - Raw data is translated and re-encoded into NWS Standard Hydrometeorological Exchange Format (SHEF) data products
  
- Meteorological Assimilation Data Ingest System (MADIS)
  - Acquires non-standard raw data relayed from mesonet providers
  - Current mesonets = 95,  
Current mesonet sites = 15,998
  - Output files in multiple formats





# Data Portals

## Facilitating Service-focused data Distribution

- *Aviation: Aviation Digital Data Service (ADDS)*
  - <http://adds.aviationweather.noaa.gov/>
- *Climate: Climate Outreach Toolkit*
  - <http://www.erh.noaa.gov/outreacht toolkit/index.shtml>
- *Hydrology: Advanced Hydrologic Prediction System*
  - <http://ahps.erh.noaa.gov/cgi-bin/ahps.cgi?lwx>
- *Space Weather:*
  - <http://www.sec.noaa.gov/index.html>
- *Emergency Management – Hurricanes*

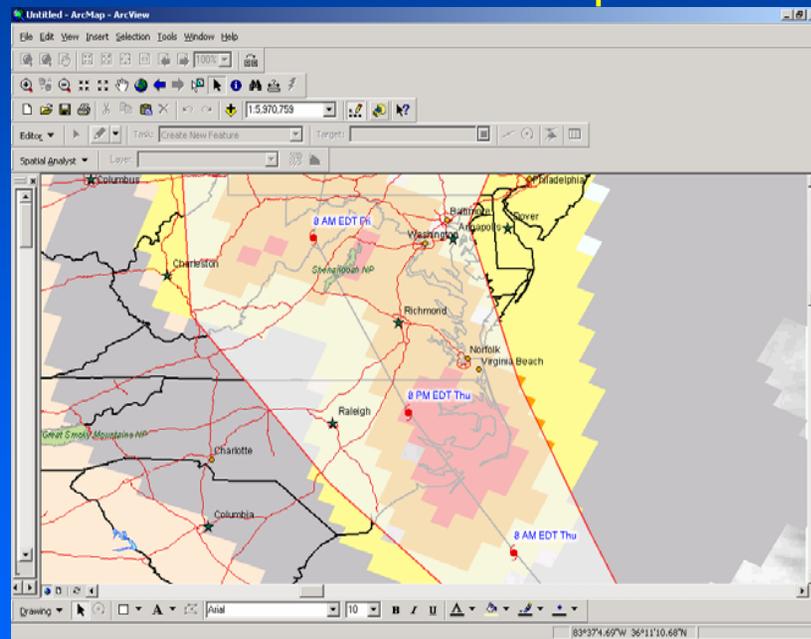


# Data Portals

*Emergency Management – Support to Emergency Managers  
for Hurricanes, “EMHURR” Portal*

- An ArcIMS website
- Allows assessment of near-real time data during tropical storm/hurricane strike.
- Provides ability to selectively access and interact with data
- Will allow ability to download source data

## Hurricane Track Precipitation

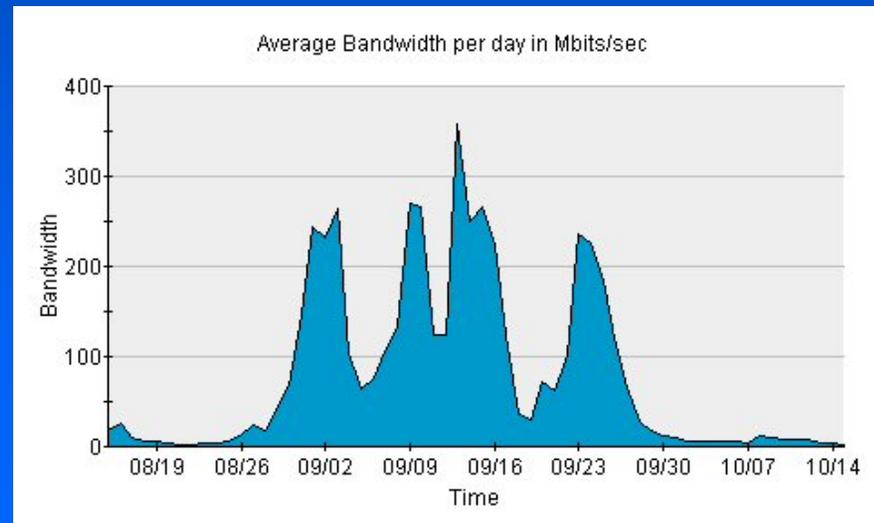
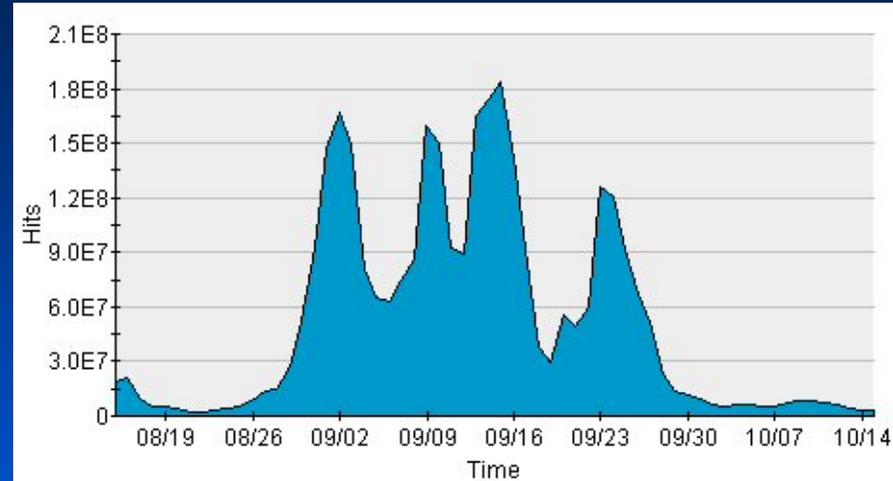




# Data Portals

## NWS Web Portal

- Six major Internet farms
- Average 5-6 million users per day;
- Active weather will spike to 15-20 million users per day
- Routinely ranked in top 5 US Govt websites by Neilson Ratings





# Challenges

- Meeting demands for improved data -- quality, quantity, reliability, timeliness
- Building effective enterprise partnerships
- Staying near cutting edge of IT
- Navigating tight budget environment



# Summary

- Quality, quantity, and data delivery of observations will continue to be expanded and improved
- NWS continues to push headfirst into the digital age
- Unidata will play an integral role in making this happen!