Serving NEXRAD imagery with Open-Source GIS

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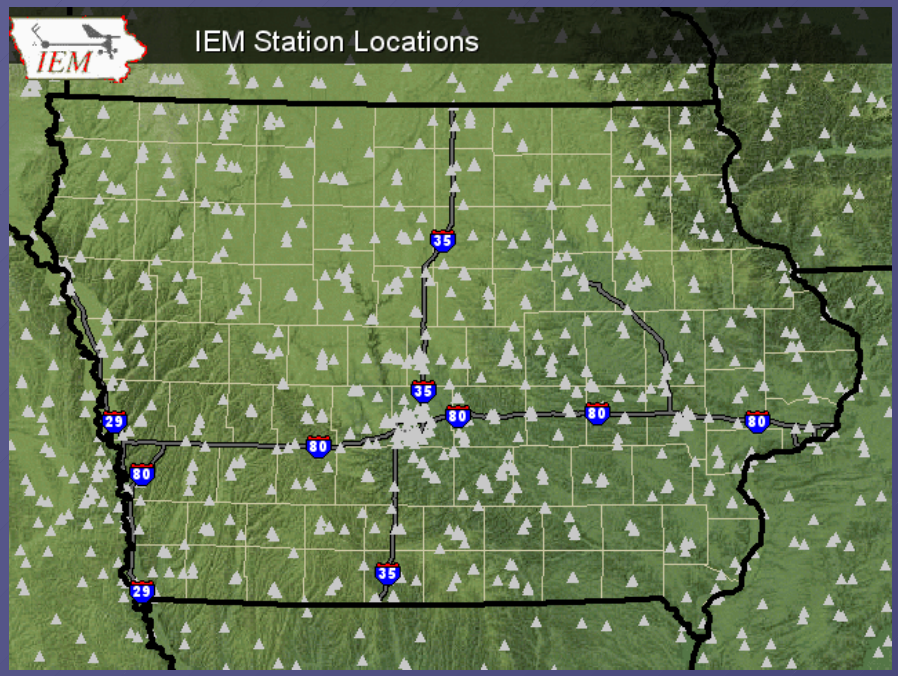


- We collect, analyze, display, disseminate, and archive environmental data.
- Archive holds over 350 million obs.
- Each day we process ~200,000 obs.
- Build partnerships between private, public, and academic sectors.

Open Source / Open GIS

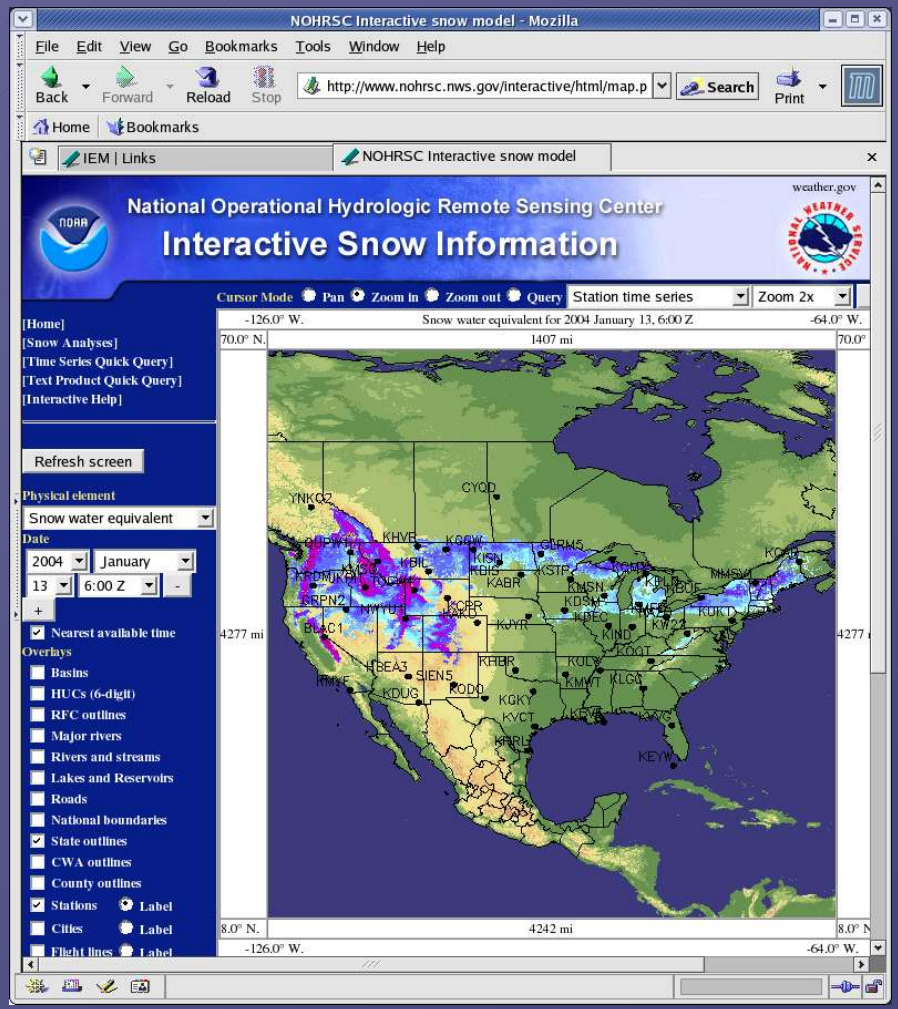
Penny Marshall discussing e-business strategy with Linux.
"It is all about timing, kid"
(IBM Commercial)

- Inter-operable
- Non-proprietary
- Cross-platform
- Community Energy
- Global collaboration

http://www.opengis.org
http://www.freegis.org

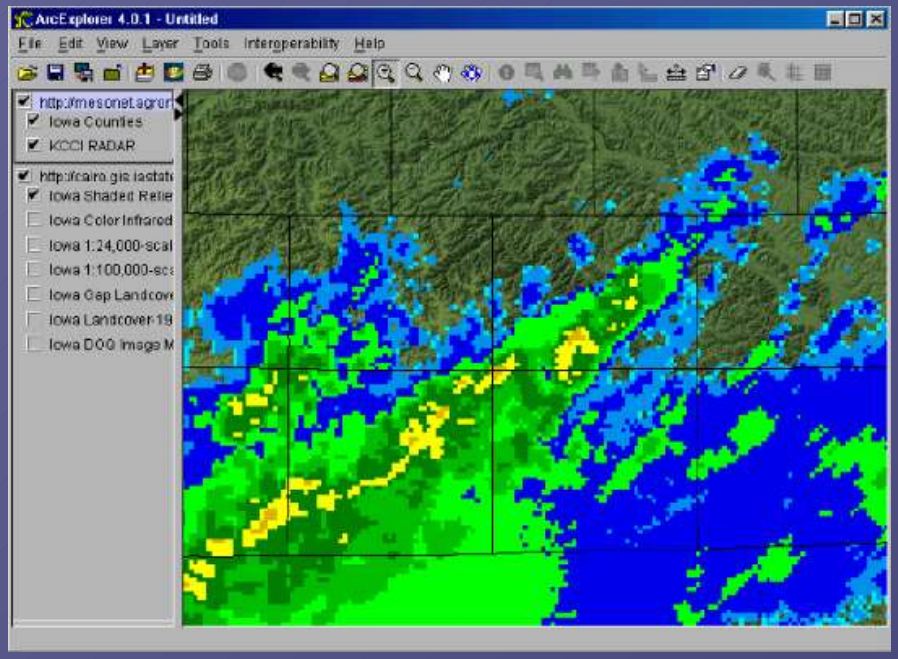
Mapserver

http://mapserver.gis.umn.edu



- Open Source
- GIS Web Mapping
- Supports WMS/WFS OGC standards
- Supports a vast number of GIS data sources
- Actively developed by a world-wide community

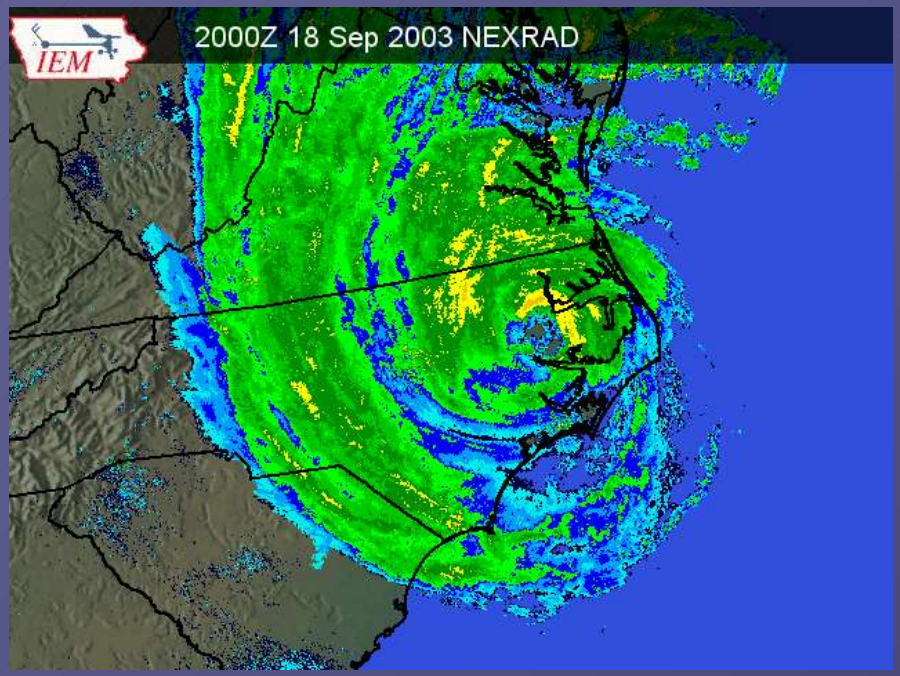
WMS: Web Map Service



ESRI ArcExplorer combining WMS layers from IEM Mapserver and Iowa State GIS Lab OrthoServer.

- Server listens for HTTP GET or POST (xml encoded) requests
- Server responds with an image, an exception, or XML encoded capabilities
- Issues of transparency, time, and meta-data

Available GIS Datasets

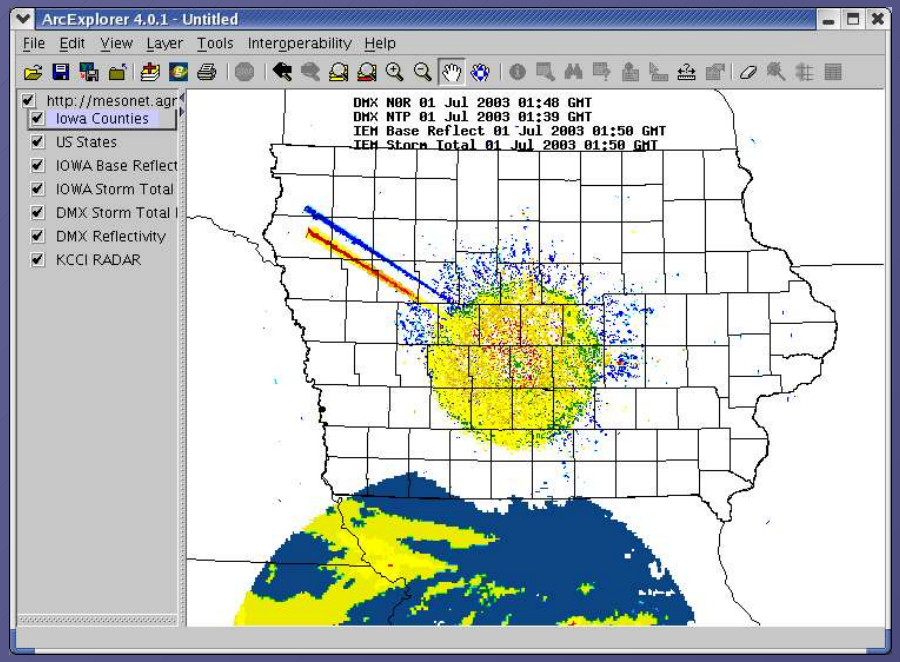


High res floater done for Hurricane Isabel. Archive is available for download.

- Publicly accessible Spatial Database of observations
- National 2km & Midwest 1km base reflectivity rasters generated and **archived** every 5 minutes
- Numerous download pages of historical data in a GIS Ready format.

NEXRAD Web Map Service

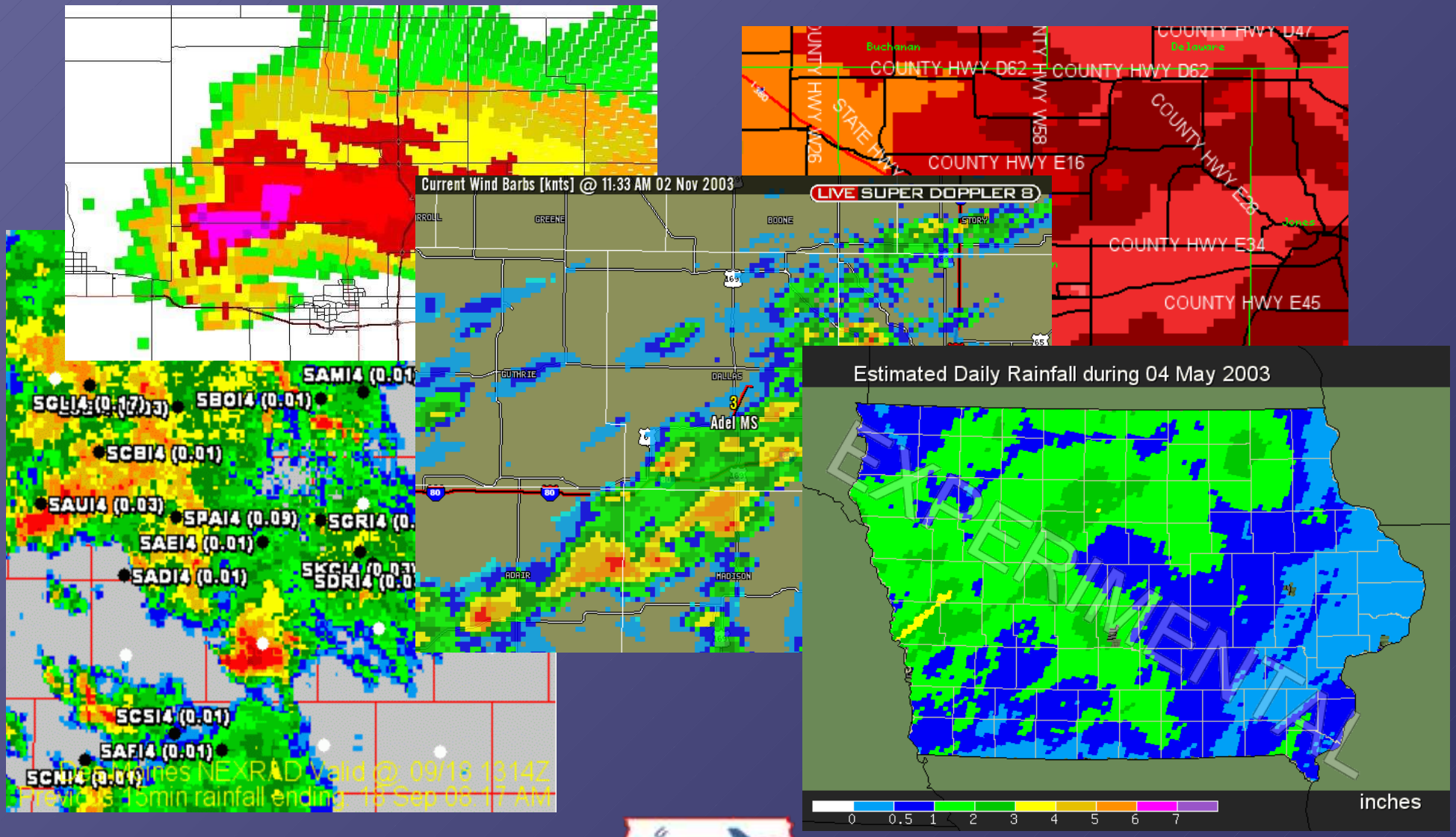
http://mesonet.agron.iastate.edu/wms/comprad.php?



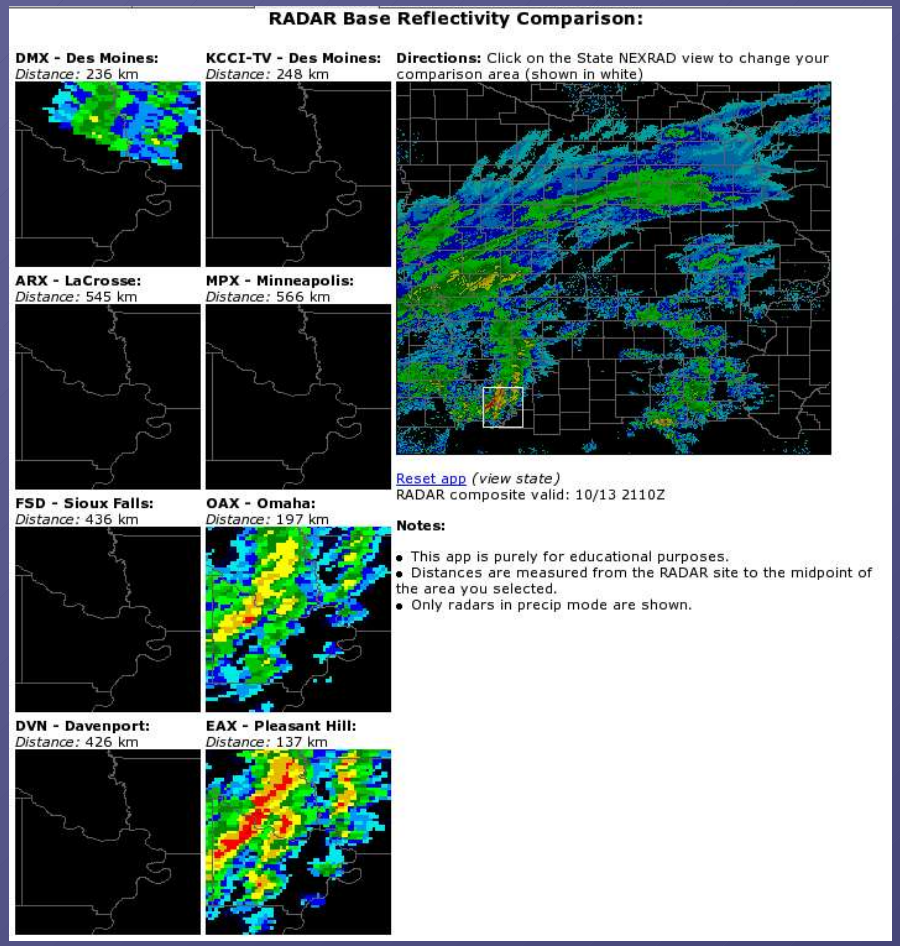
NEXRAD and TV radar both showing 'solar spikes' at sunset.

- Publicly Accessible WMS with composite base reflectivity
- Raw layers are available for HTTP download
- Will remain public until I get slashdotted

Mapping Applications

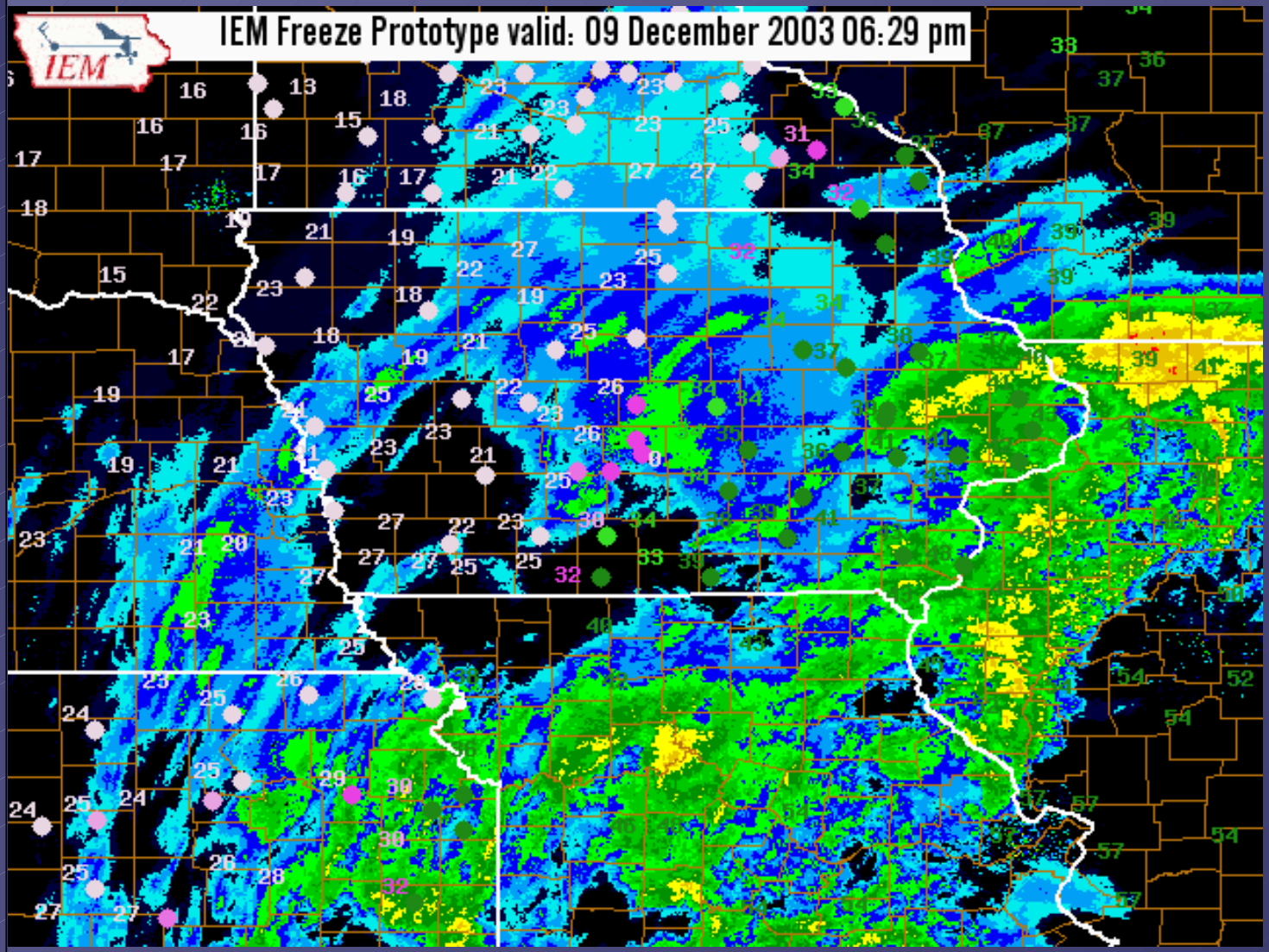


RADAR Comparisons



- Dynamically compare 7 NEXRADs, 1 TV C-band RADAR, and a composite
- Powered by PHP MapScript with ~50 lines of code
- Click on the composite to compare the 8 RADARs

IEM Freeze



GIS Layers

NEXRAD

Road Temps

Air Temps

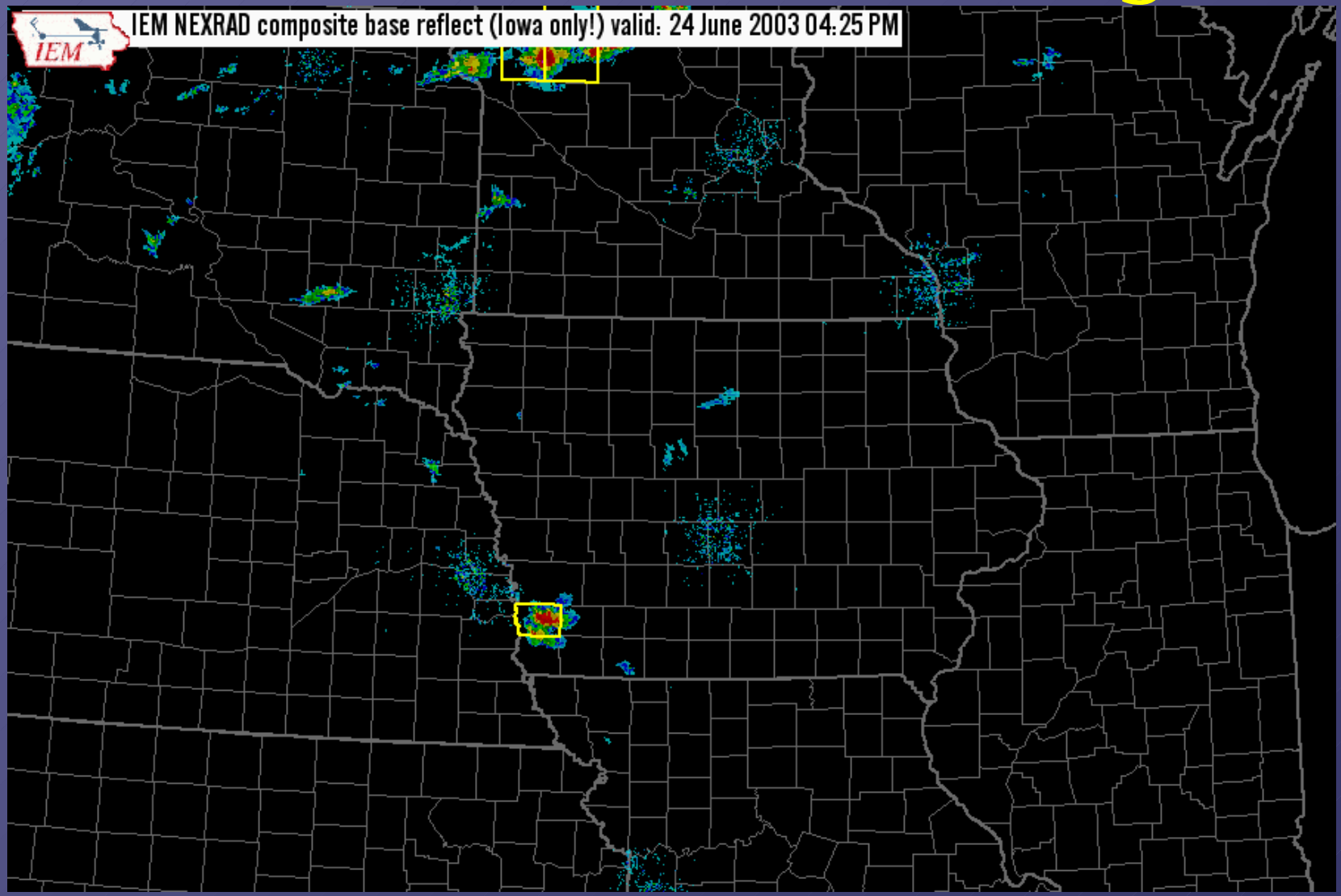
State Borders

County Borders

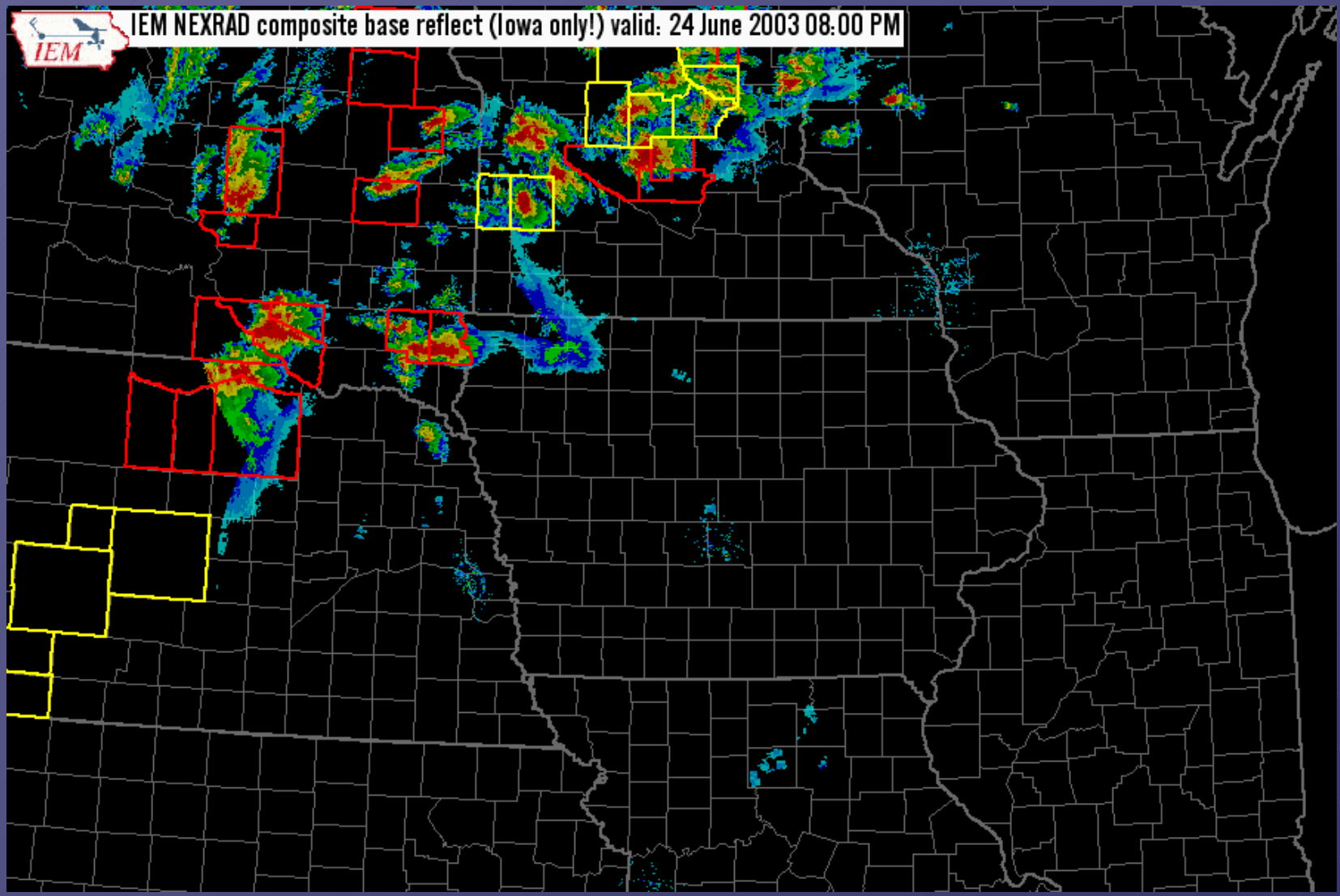
Label

Logo!

NEXRAD with warnings

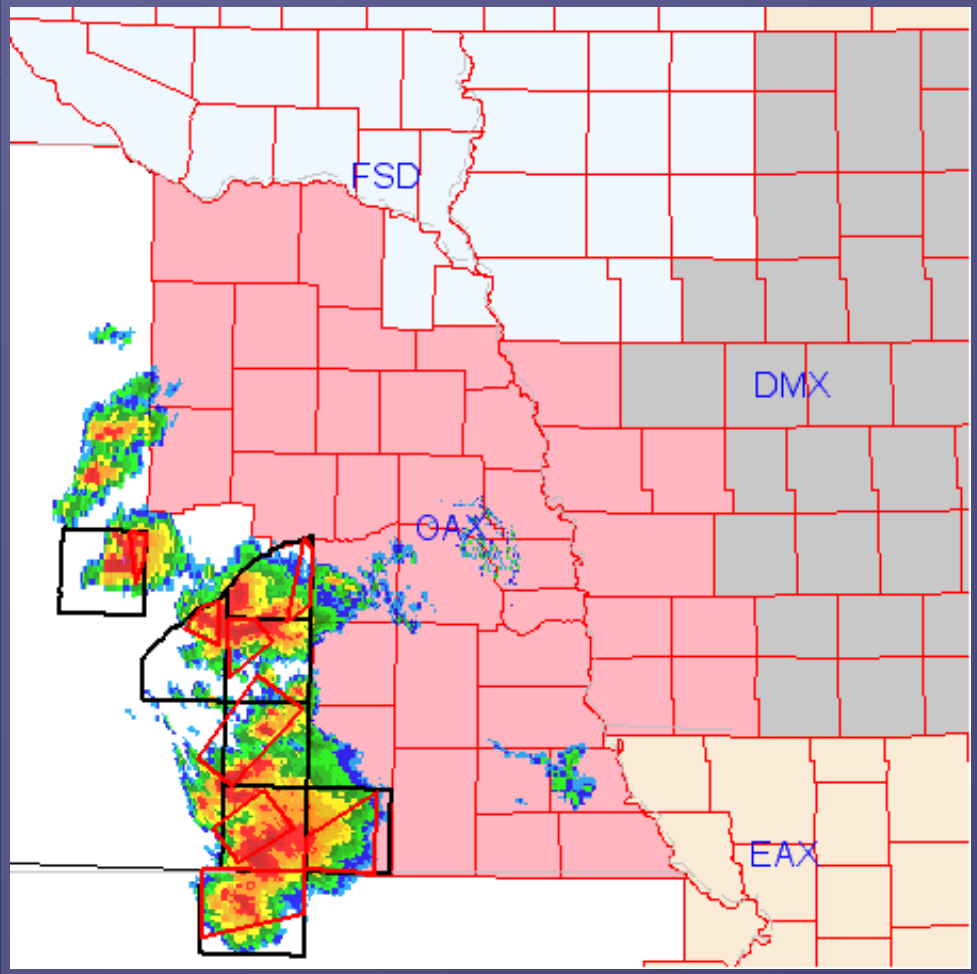


Terrible Tuesday



IEM

Using NWS Warning Polygons



- Warnings are mined into a spatial database in real time
- Mapserver can use this as a data layer
- Warnings are synced with the NEXRAD layer for display
- Provides valuable insight for the specific areas and tracks the forecasters are concentrating on
- Great data-source for verification studies

Summary

- Where is the IEM going with GIS?
  - I don't know.
- What will I show next year at AMS/IIPS/GIS?
  - Perhaps I won't be invited!
- Who can use our software and data?
  - Anybody who likes Open-Source and isn't afraid to have some fun in the process!
- Will OSS/Mapserver/Linux rule the world?
  - YES! WHA-HA-HA!!!

I'm done, questions?

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