What is METViewer?

METViewer is a data visualization (plotting) system.
Demand Arises...

- MET outputs statistics in data tables
- Users frequently request a system for visualizing MET output data
- Scientists want plots showing statistics for variables, cases and relationships
- Often, many plots are reviewed to find a small number of illustrative cases
For each verification project, scripts were written or adapted to read MET output files and generate plots
- Redundant one-off solutions proliferated
- Contributions were solicited from the MET user community

Design ideas coalesce…
Principles for a Solution

- **Relational database:** for searching, sorting and grouping MET output data
- **Plotting system:** for consistent and robust graphics
- **Web application:** for accessibility, portability and ease of use
- **Batch processing:** for generating many plots with only a few simple commands
- **Distributable**
METViewer Design

METViewer consists of three components which implement the solution ideas.
Implementation Details

- **Relational Database**: any that implement “standard” SQL; MySQL and PostgreSQL used in development
- **Plotting system**: R
- **Web application**: JSPs on tomcat web server utilizing struts and Ajax
- **Batch processing**: Java application which accepts an XML plot specification, eventually a web app interface?
Plot Specification

Using web site controls or XML, specify:
- Plot type
- Weather variable
- Independent variable
- Dependent variable(s)
- Case information
- Plot formatting
- Output image file name and folder
Plot Types

- Time series
- Threshold series
- Vertical levels (independent variable on vertical axis)
- Box plot
- Scatter plot (statistic 1 vs. statistic 2)
Independent Variable
Dependent Variable

![Graph Image](image-url)
Vertical Levels
Box Plot

Track Error

Along Track Error (nm)

Lead Time (h)

-400 -200 0 200 400 600

MMM1
MMM3
Mean
Other Configurable Features

- **Series information**: curves on the plot
- **Case information**: masking regions, forecast models, initialization hours, season
- **Aggregation information**: multiple lead times, valid times, masking regions
- **Confidence intervals**: normal, bootstrap, aggregate
- **Plot formatting**: axis labels, titles, series formats (dots, lines), grid lines, units
Did you say “distributable”?

METViewer instance set-up requires:

- **Database administration**: set up database
- **Software administration**: set up an instance of R and java compiler and on web server
- **Web server administration**: set up tomcat, configure METViewer web application
- **METViewer configuration**: establish connections to aforementioned components
Timeline

- Development ongoing
- Operational prototype by June 2010 (?)