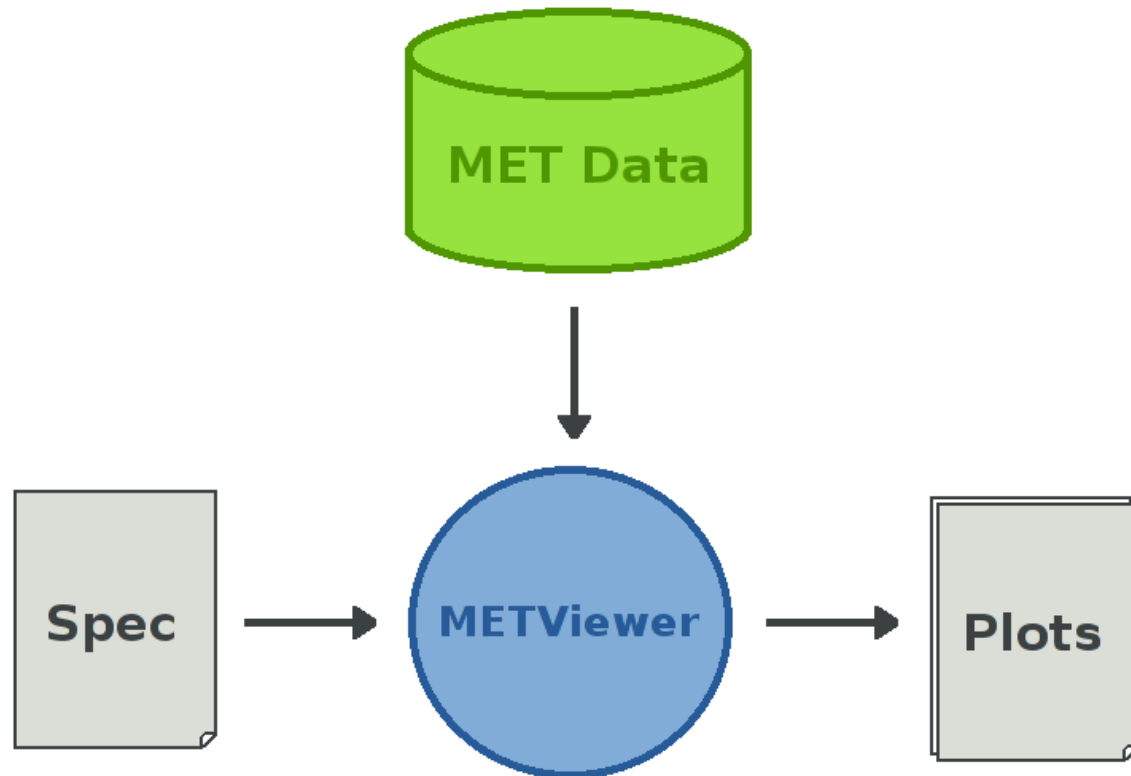


METViewer: MET Data Visualization

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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

Primordial Soup

- 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



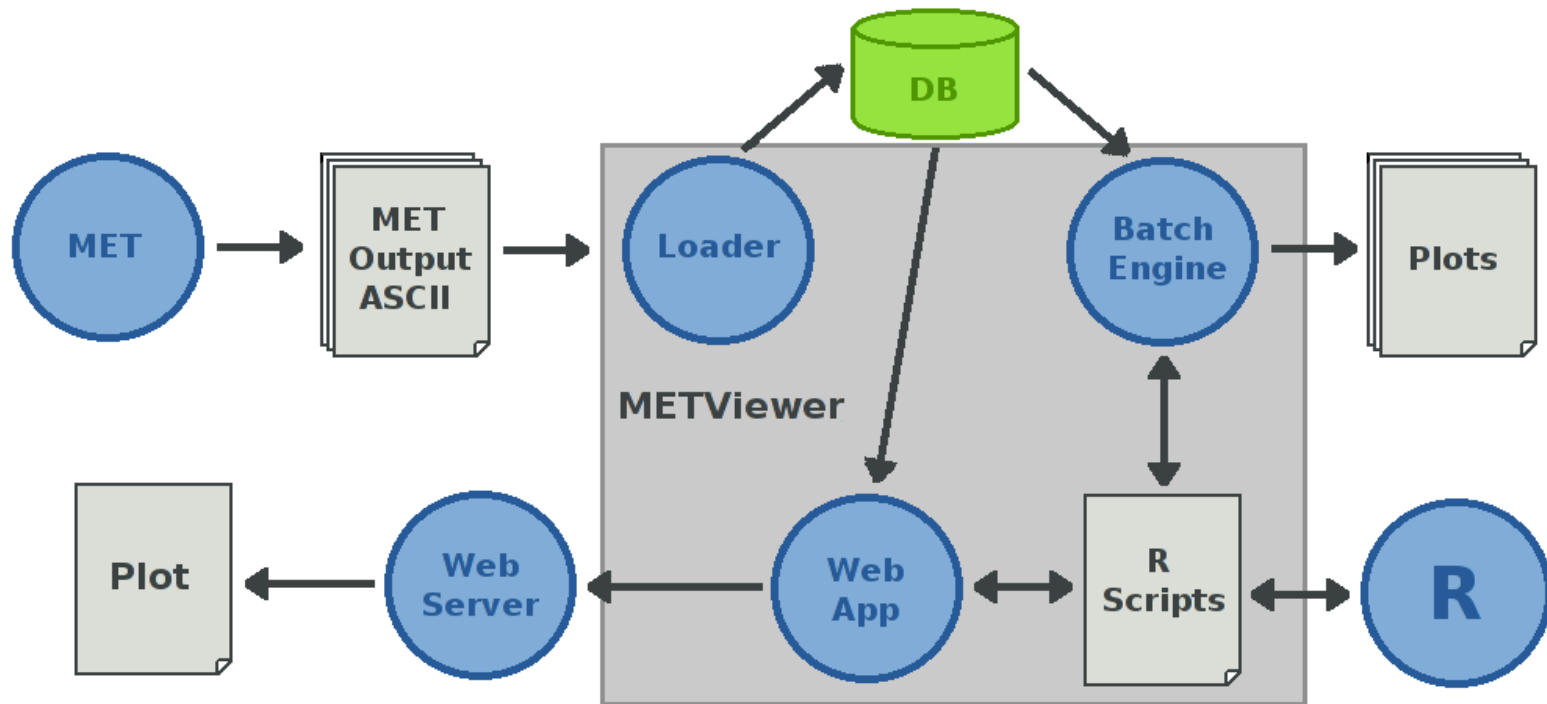
Design ideas coalesce...

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

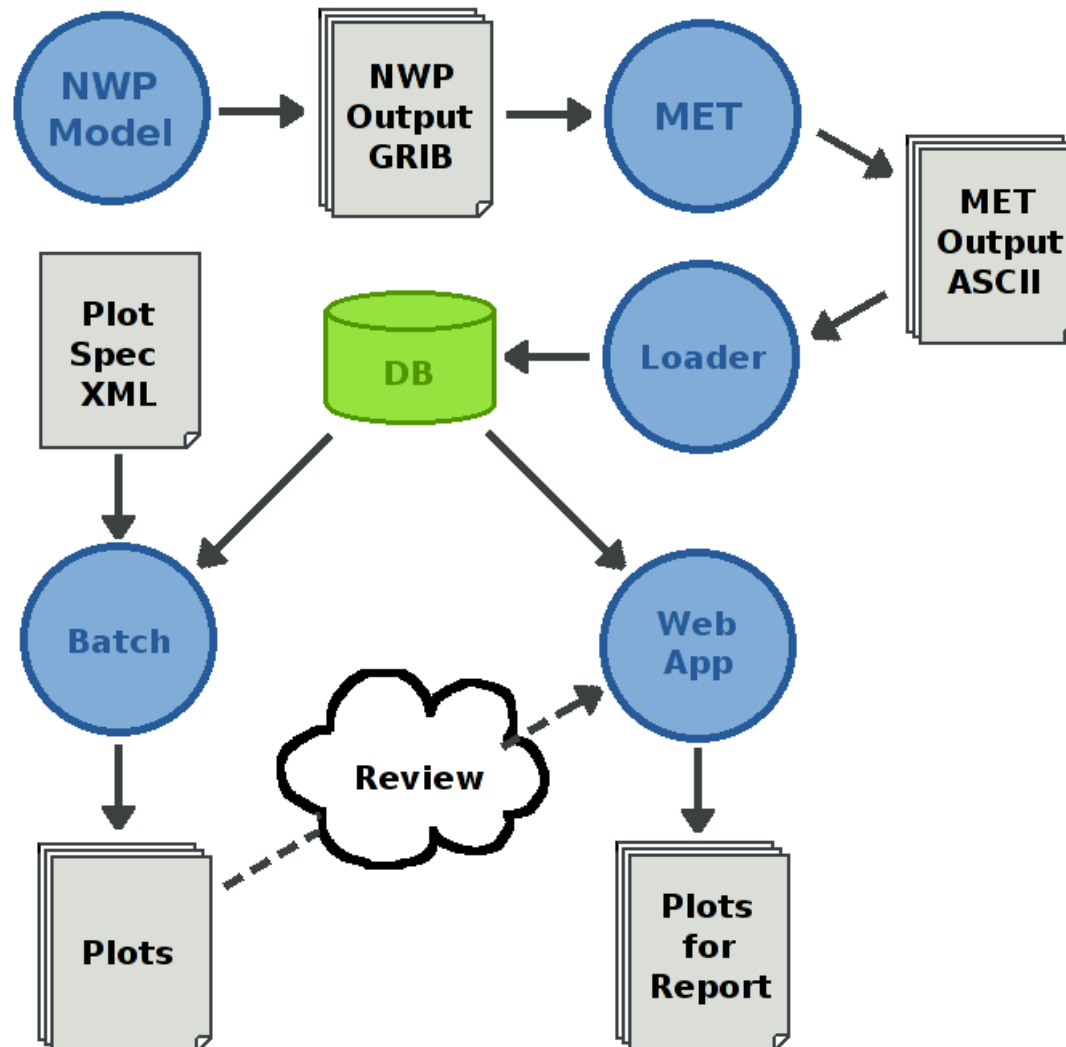
METViewer consists of three components which implement the solution ideas



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?

METViewer Use Case



Plot Specification

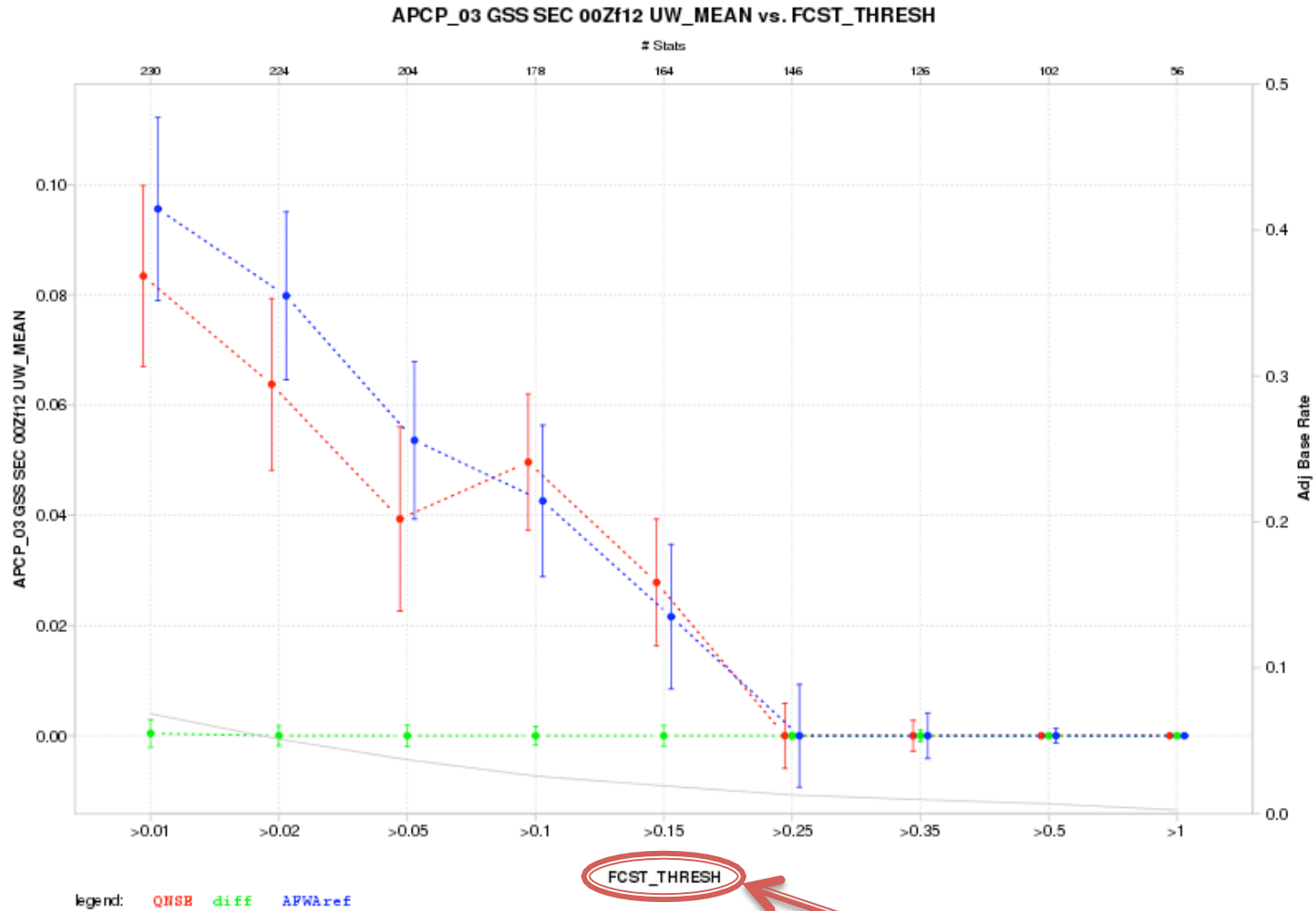
Using web site controls or XML, specify:

- Plot type
- Weather variable
- Independent variable
- Dependent variable(s)
- Case information
- Plot formatting
- Output image file name and folder

Plot Types

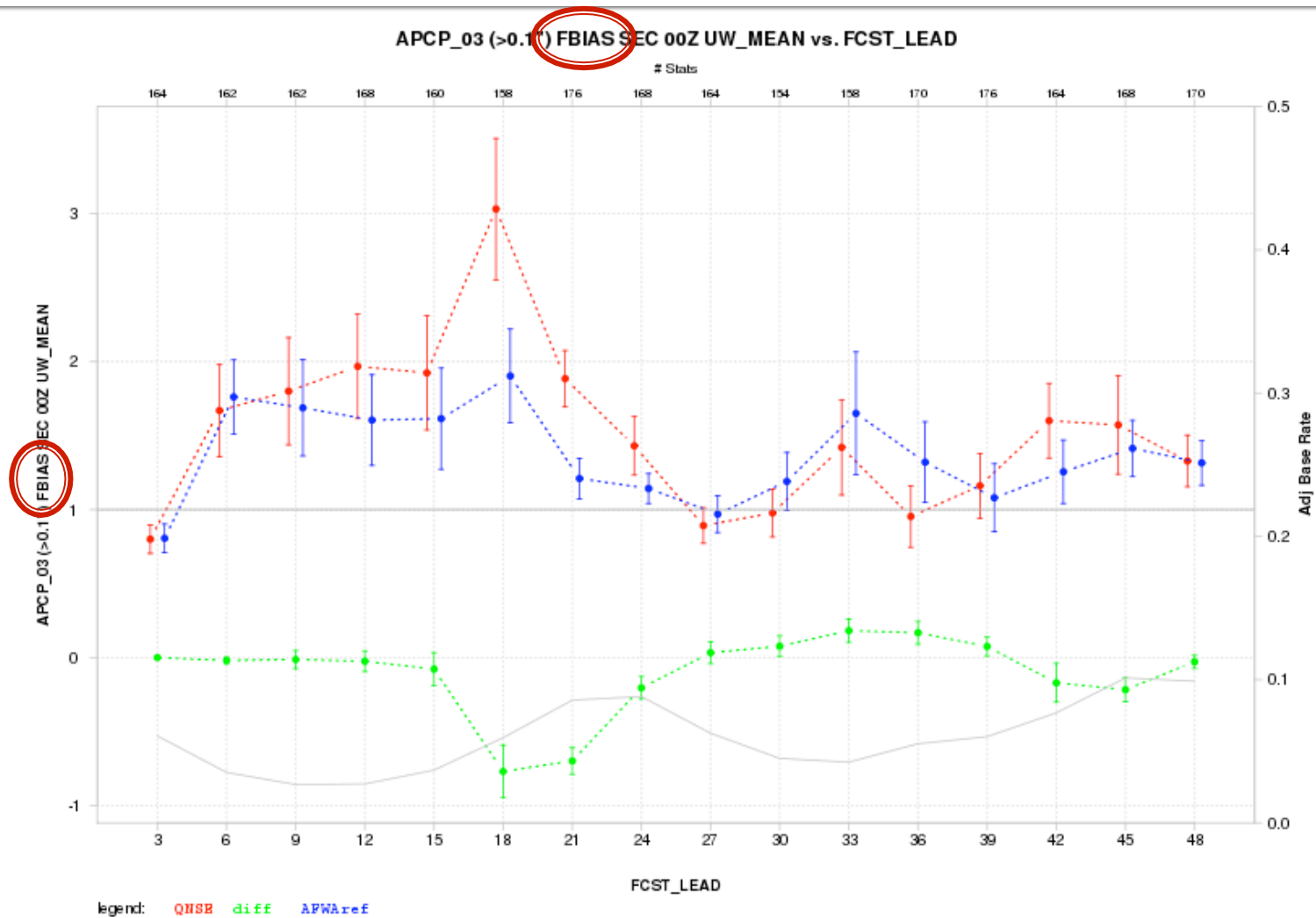
- Time series
- Threshold series
- Vertical levels (independent variable on vertical axis)
- Box plot
- Scatter plot (statistic 1 vs. statistic 2)

Independent Variable

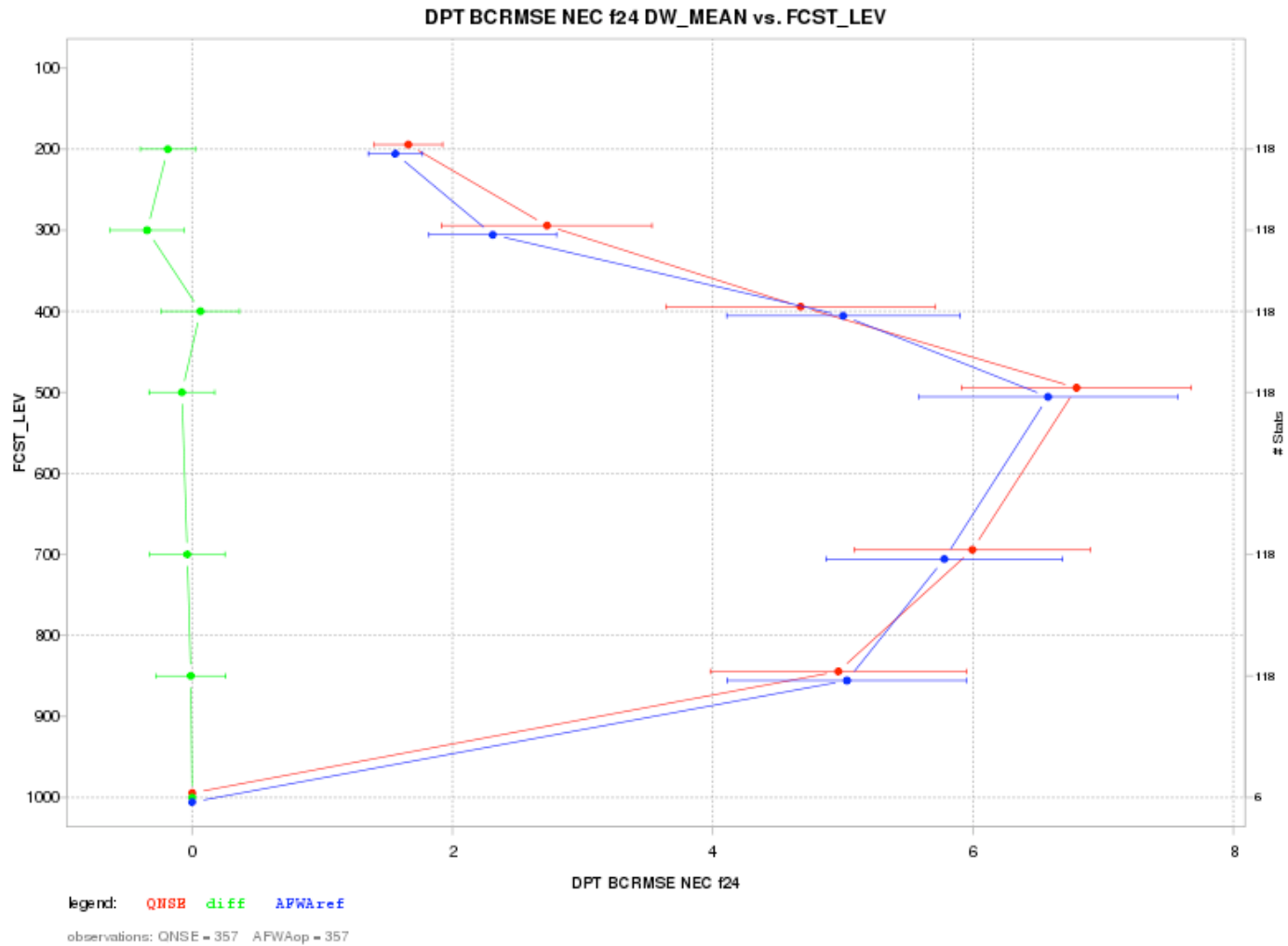


Independent Variable

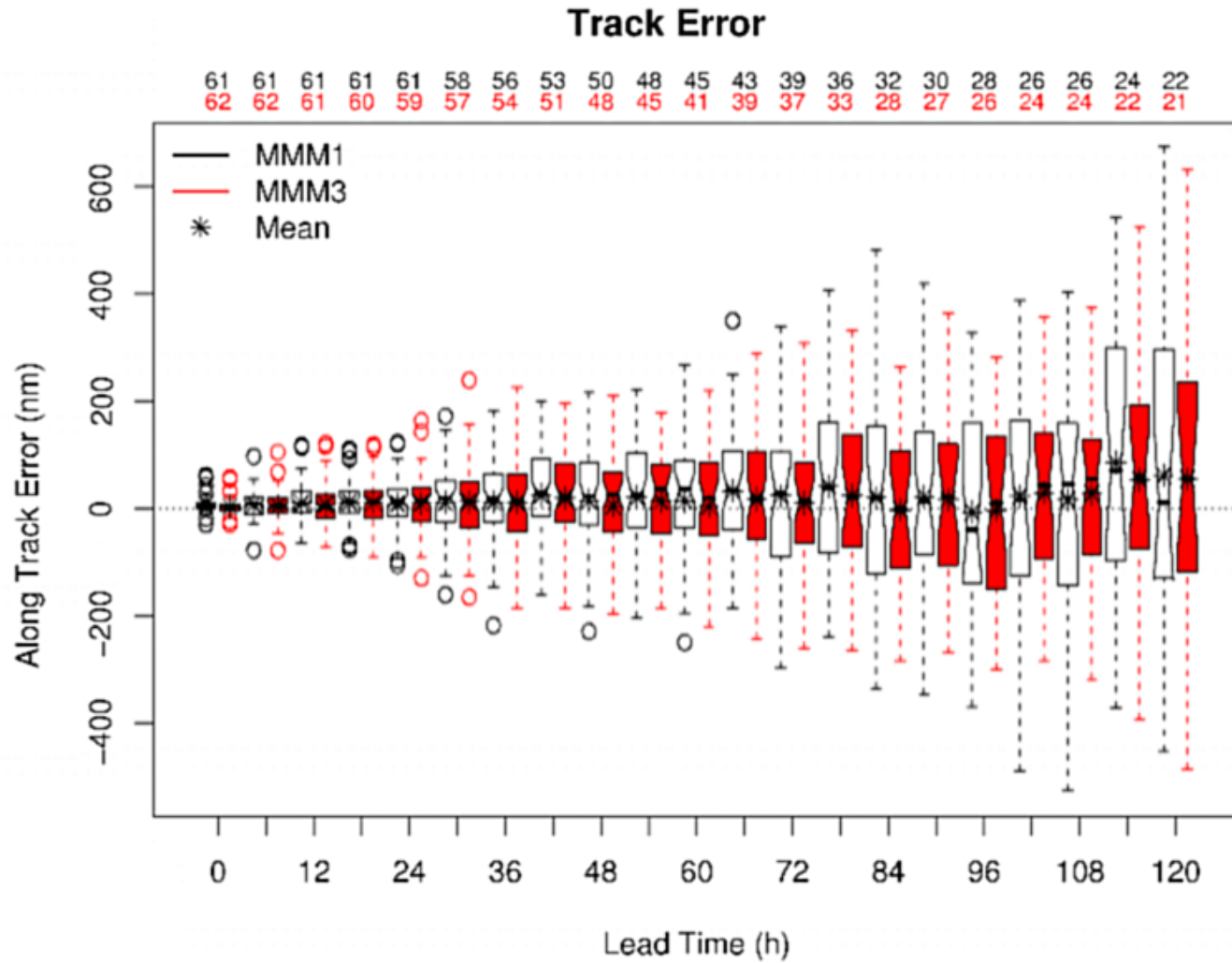
Dependent Variable



Vertical Levels



Box Plot



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 (?)