RITT Presentation

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20 November 2013

What is FDSE?

- The NWS Weather Ready Nation Roadmap outlines concepts for the future of forecasting in the NWS
- Initially labeled **Forecaster Decision Support Environment** (FDSE), it has been renamed to: **Environmental Intelligence Management Capability**
- Among the major concepts, FDSE is to enhance…
  - Situational Awareness
  - Forecast Confidence
  - Impact-based Decision Support Services (IDSS)

Task Development

- GSD proposed a number of tasks to SSDs and three were selected
  - **Forecast Grid Monitor**
  - Short-term Forecast Update Tool
  - Enhanced Ensemble Capabilities for AWIPS II

Forecast Grid Monitor

- Purpose: **Situational Awareness**
- Allow forecasters to better understand the state of the forecast as compared to
  - Observations
  - Numerical Guidance Forecasts
  - Consensus Forecasts

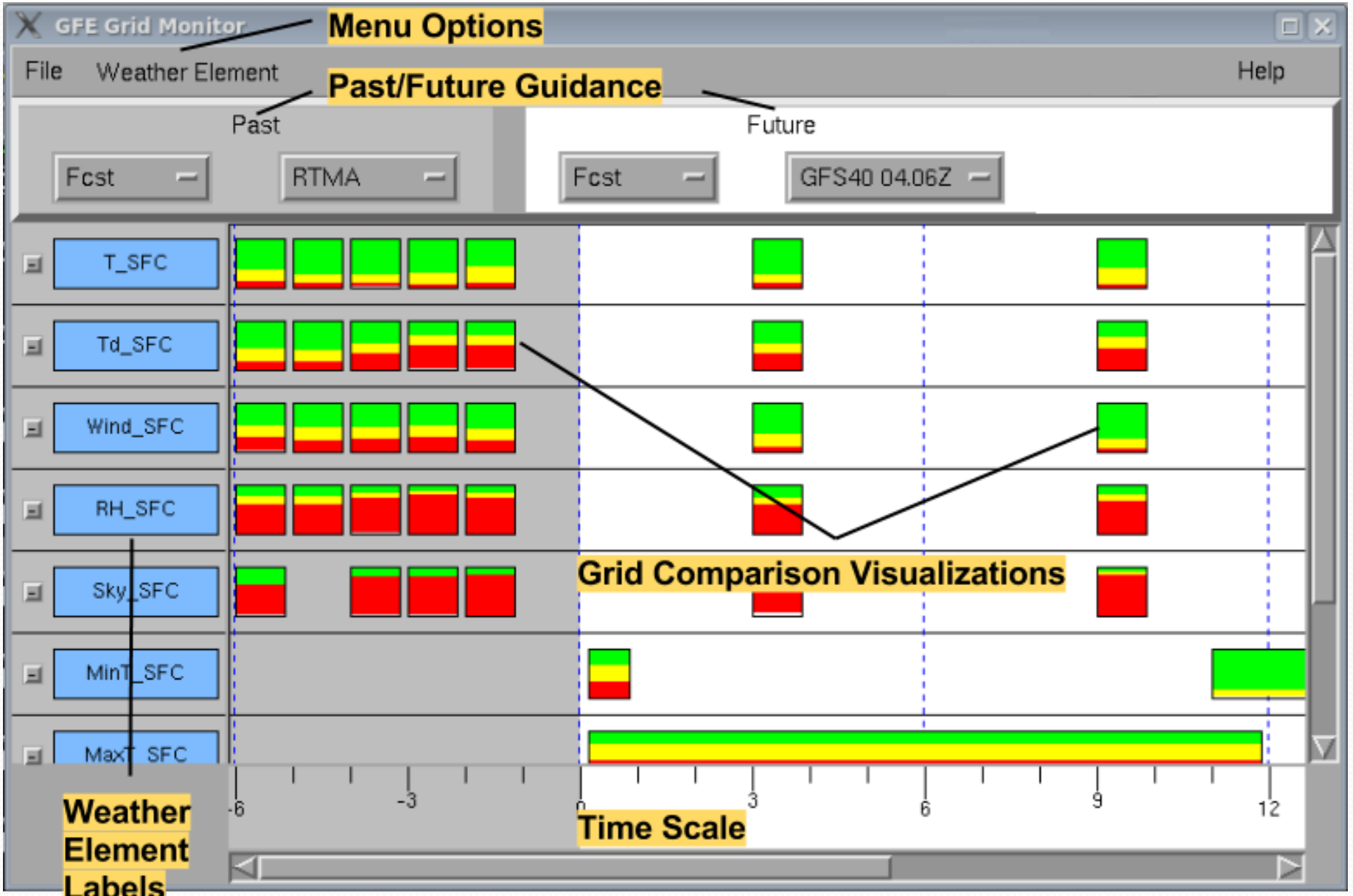
Forecast Grid Monitor

- A framework that compares combinations of GFE forecast grids:
  - Gridded Analyses of Observations:
    - RTMA
    - MSAS
    - “Obs” grids
  - Gridded Forecasts:
    - Official, “Fcst”
    - Downscaled Numerical Guidance Forecasts
    - Consensus forecasts

Forecast Grid Monitor

- How it works
  - Reads GFE grids (observational and forecast)
  - Performs some operation to compare grids for the same valid time
  - Displays the results of that algorithm

Grid Monitor GUI



Grid Monitor GUI

- **Menu Options** – Add / Remove weather elements
- **Past / Future Guidance** – Sets data sets to compare
- **Weather Element Labels** – Identifies weather element
- **Time Scale** – Time in hours from now
- **Grid Comparison Visualizations** – Graphical representation of the algorithm results

Grid Comparisons

- Grid Comparisons are designed to be very flexible
  - Existing algorithms can be modified
  - New algorithms can be created
  - Each algorithm has access to raw data:
    - Two grids to compare
    - The Edit Area over which to do the comparison
    - The rectangle in which to draw/paint
  - Algorithms can draw:
    - Graphical Objects
    - Text

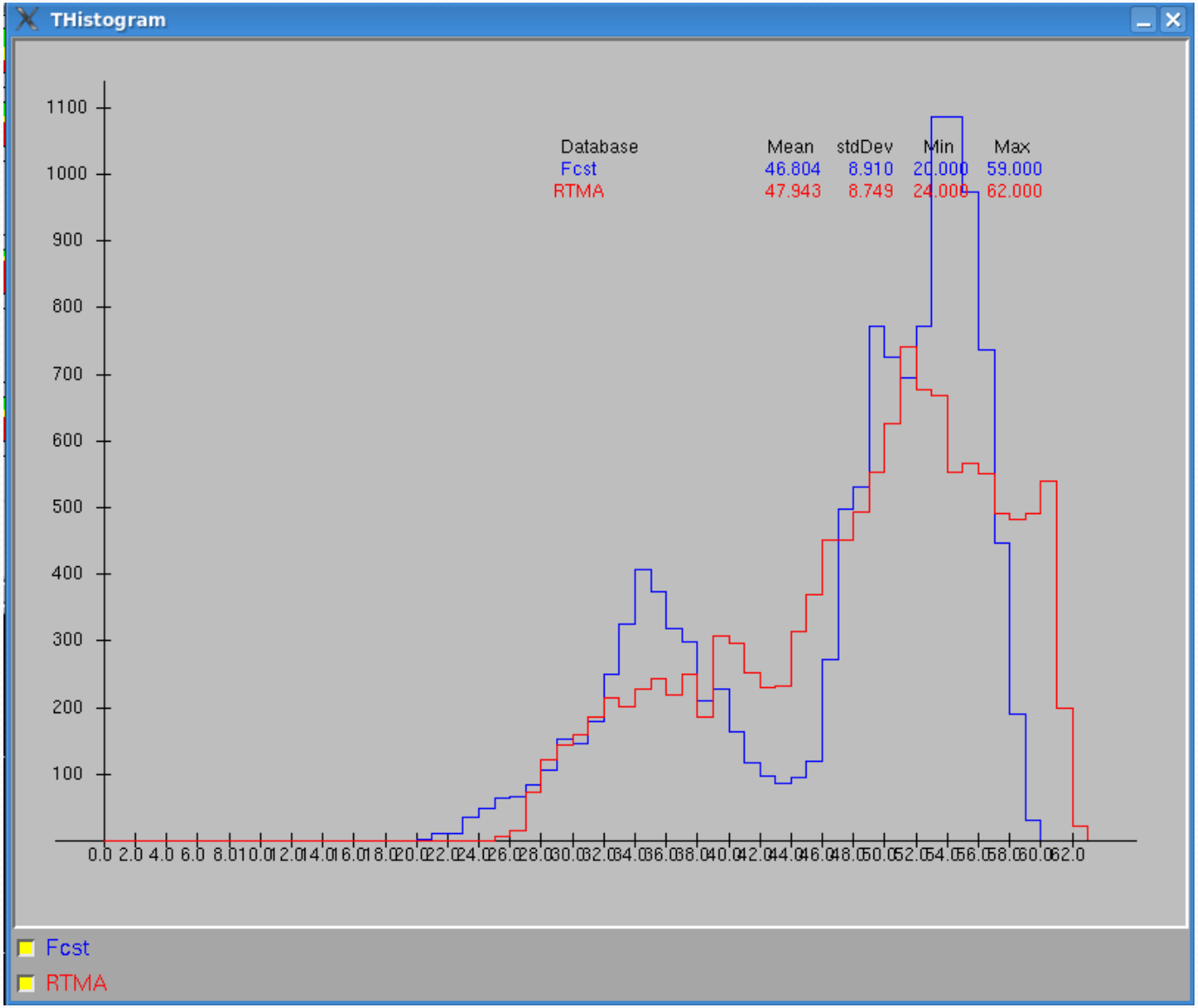
Grid Comparisons

- Grid comparison algorithms can be customized for particular weather elements
- Users only need to add the algorithm and restart the Grid Monitor (no configuration required)
- Each element can use a different comparison algorithm
- Seeking ideas for new algorithms

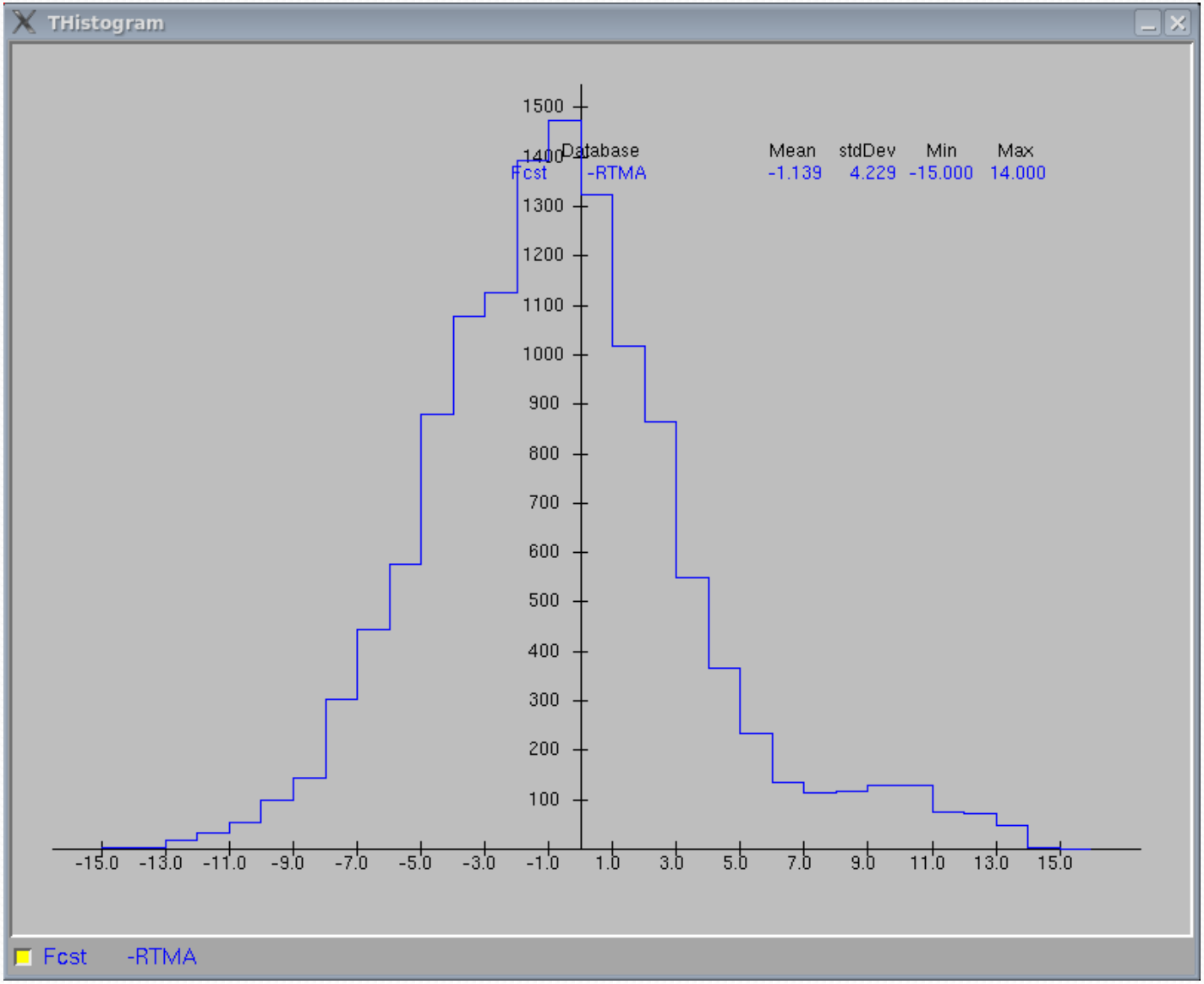
Grid Monitor – Drilling Deeper

- Grid Monitor allows forecasters to also investigate comparison details
  - **Histogram** – Plots overlaid to reveal bias
  - **Error Histogram** – Histogram of error grid
  - **Scatterplot** – X vs. Y plot (e.g., Fcst vs. Obs)
  - **Difference Grid** – Displays in GFE to show **where** differences are greatest

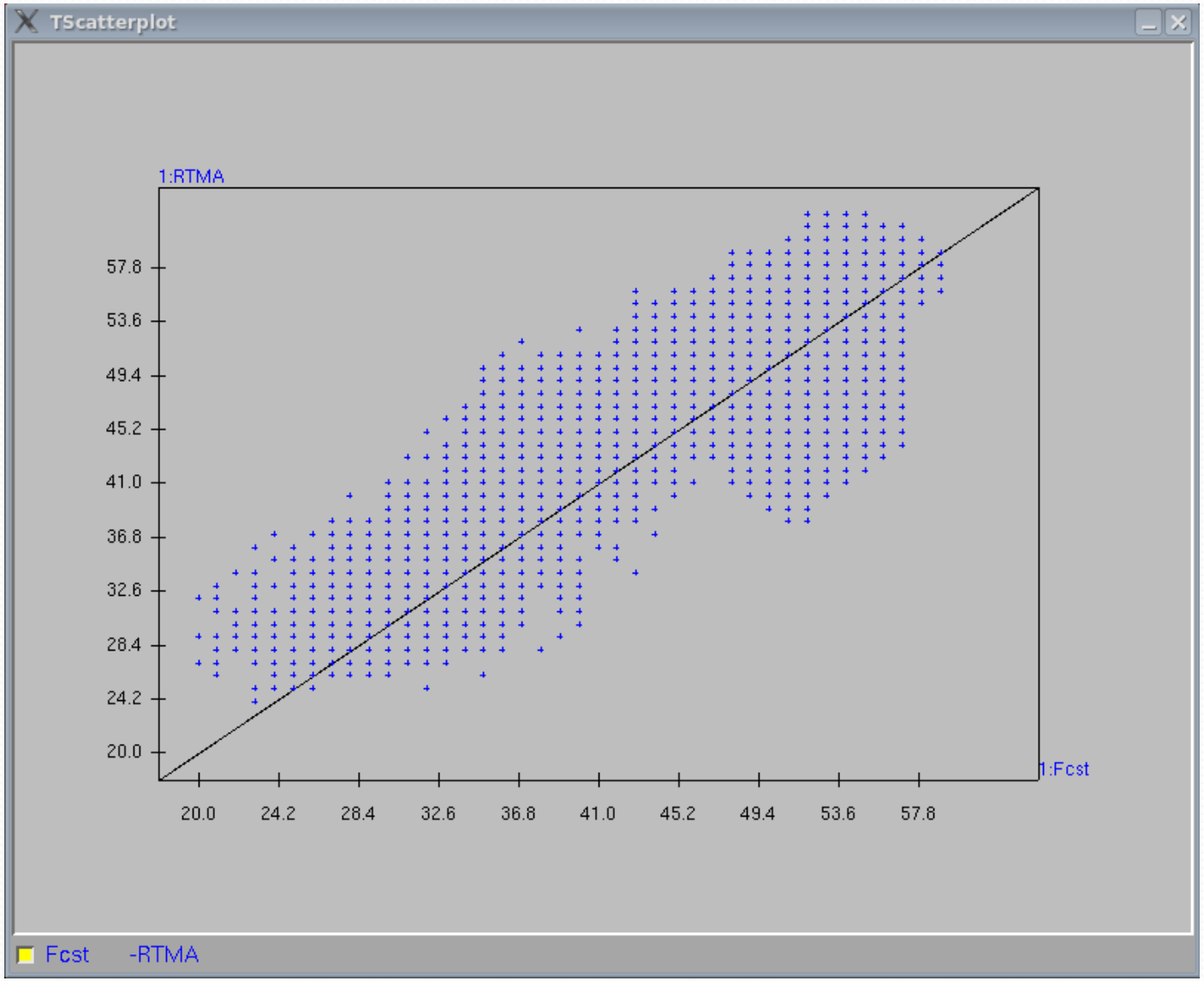
Grid Monitor - Histogram



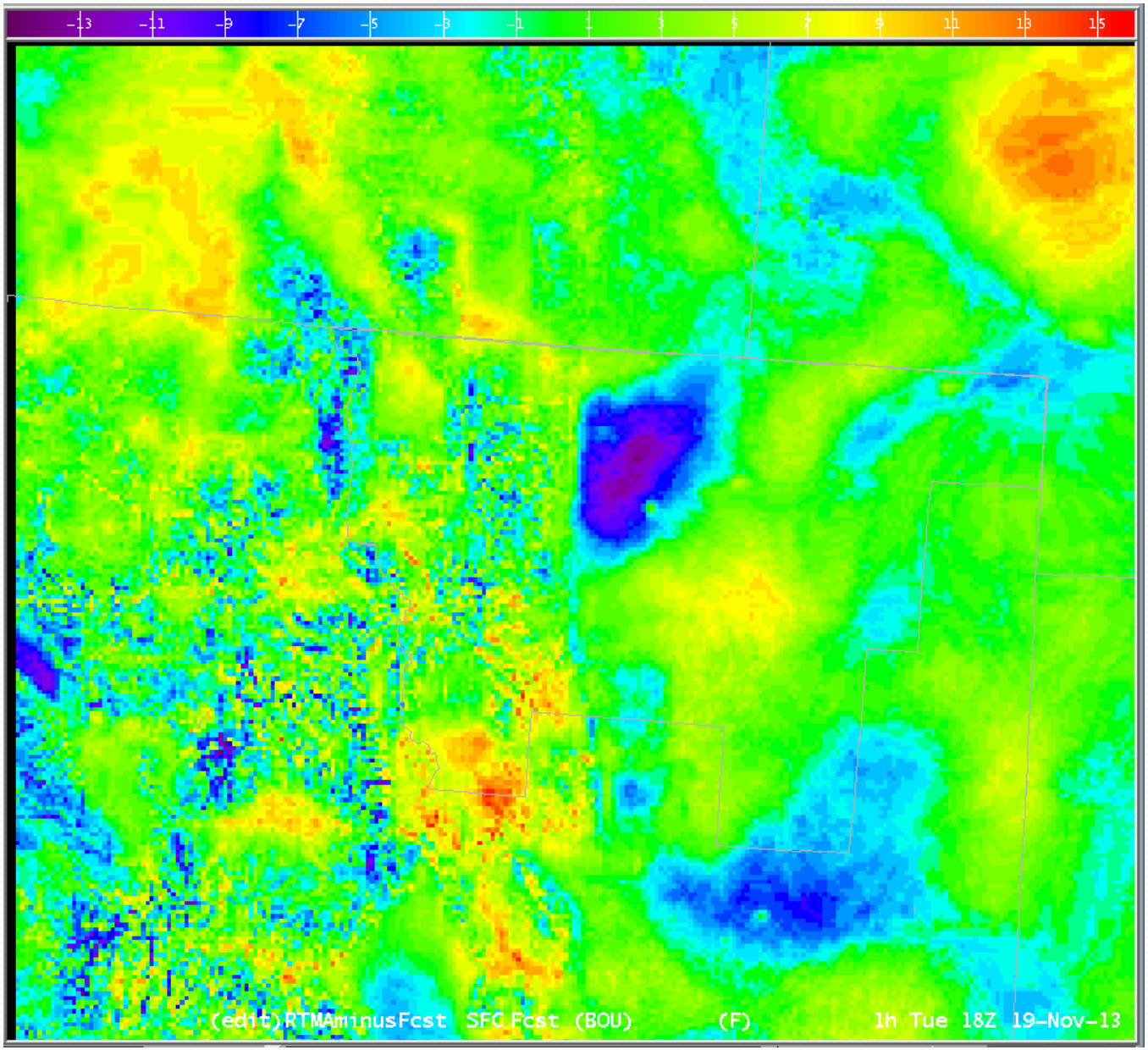
Grid Monitor – Error Histogram



Grid Monitor - Scatterplot



Grid Monitor – Difference Grid



Grid Monitor - Future Work

- Currently gathering feedback from some field offices:
  - Allow for display of single weather element from many sources to view model performance
    - Display models vertically instead of weather elements
  - Allow grid comparisons to calculate areas of predicted watch, warning, and advisory criteria
  - Plot some text summary of grid comparison

Grid Monitor

- Thanks for listening!

- Questions?
- Comments?
- Discussion?