Temperature Forecast Verification at Redstone Arsenal

Utilizing the GMOD, GFS, ETA, NGM, GFX, and 4DWX(MM5)
RTTC Meteorological Team
Redstone Arsenal
Test Area 1

https://weather.rttc.redstone.army.mil
Met Team Functions

- **Daily Forecast for RTTC**
  - Present forecast at Test Range morning briefing.
  - Email to various individuals at RTTC and Redstone Arsenal.
  - Provide to various test facilities at RTTC.

- **Weather Advisories**
  - Lightning within 10 miles (or other special requirements).
  - Severe weather (Severe Thunderstorm/ Tornado watches/warnings).
  - WBGT advisories. *(Wet Bulb Globe Temperature is the Army standard for heat stress)*
  - Provide forecast and real-time conditions to Forestry personnel for controlled burns.
  - Provide Demo & Burn site real-time data and forecast conditions.

- **Climate Data to Customers**
  - Maintain database accessible on the internet.
  - Data for planning tests.

- **Monthly Summaries**
  - Cooling and Heating Degree Days E-mailed to several customers.

- **Web Site**  [https://weather.rttc.redstone.army.mil](https://weather.rttc.redstone.army.mil)
  - Contains Forecast, upper-air sounding and current weather conditions on the Test Range.
  - Can be accessed by anyone on or off post.
  - Maintained locally at this time.
Much of North Alabama in Exceptional Drought (100 year)

U.S. Drought Monitor
Alabama

July 10, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

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<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
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<td>90.3</td>
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<td>Last Week</td>
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<td>(07/03/2007 map)</td>
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<td>3 Months Ago</td>
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Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, July 12, 2007
Author: Douglas Le Comte, CPC/NOAA
Dry conditions of historical proportions, but still no restrictions for water use.

- **FIVE DRIEST CALENDAR-YEARS-TO-DATE...ENDING JULY 11TH 2007:**
  - HUNTSVILLE:
    - 1ST ...14.75 / 2007
    - 2ND...15.90 / 1925
    - 3RD...17.70 / 1914
    - 4TH...18.09 / 1988
    - 5TH...18.38 / 1902

- **RAINFALL & RAINFALL DEFICITS: HSV...THROUGH JULY 11TH:**
  - MONTH-TO-DATE ... 2.58 IN... **SURPLUS 0.96 IN .**
  - SINCE JUNE 1 ...... 4.23 IN .... **DEFICIT 1.61 IN.**
  - SINCE MAY 1 ...... 5.01 IN .... **DEFICIT 6.07 IN.**
  - SINCE MARCH 1 ... 9.41 IN ... **DEFICIT 12.89 IN.**
  - YEAR-TO-DATE ... 14.75 IN ... **DEFICIT 18.02 IN.**
  - SINCE JAN 2006... 57.34 IN ... **DEFICIT 33.76 IN.**
  - SINCE JAN 2005... 97.49 IN ... **DEFICIT 50.30 IN.**
Compare All Models

[Graph showing various models' performance over time, with different lines representing each model, and markers indicating data points.]
Daily Highs have been running above the 22 year average. As is typical CMO is often a few degrees cooler than the HSV airport readings.

Temp Verification vs Average

- **ACTUAL CMO HI**
- **ACTUAL HSV HI**
- **22 yr AVG HI**
Lows were harder to spot a trend, but again the HSV airport readings were still a bit warmer.
GMOD verification

High has a 2.1 avg error with warm bias
Low has a 2.7 avg error with a slight warm bias
GFS verification

High has a 1.6 avg. error with a slight cool bias
Low has a 2.8 avg. error with a slight cool bias
ETA verification

High has a 1.7 avg error with a cool bias
Low has a 3.4 avg error with a warm bias
GFX verification

High has a 2.0 avg error with a warm bias
Low has a 2.8 avg error with a warm bias
4DWX verification

High has a 3.1 avg error with a cool bias
Low has a 5.6 avg error with a warm bias
NGM verification

High has an avg error 1.3 with a warm bias
Low has an avg error 3.4 with a slight warm bias
Conclusions

- GMOD did well with lows, close second was GFS and GFX
- NGM did well with highs, second went to ETA
- Best model for highs and lows, GFS.
- Worst model for highs and lows 4DWX(MM5)