VERIFICATION ACTIVITIES AT THE LMRFC

Kai Roth

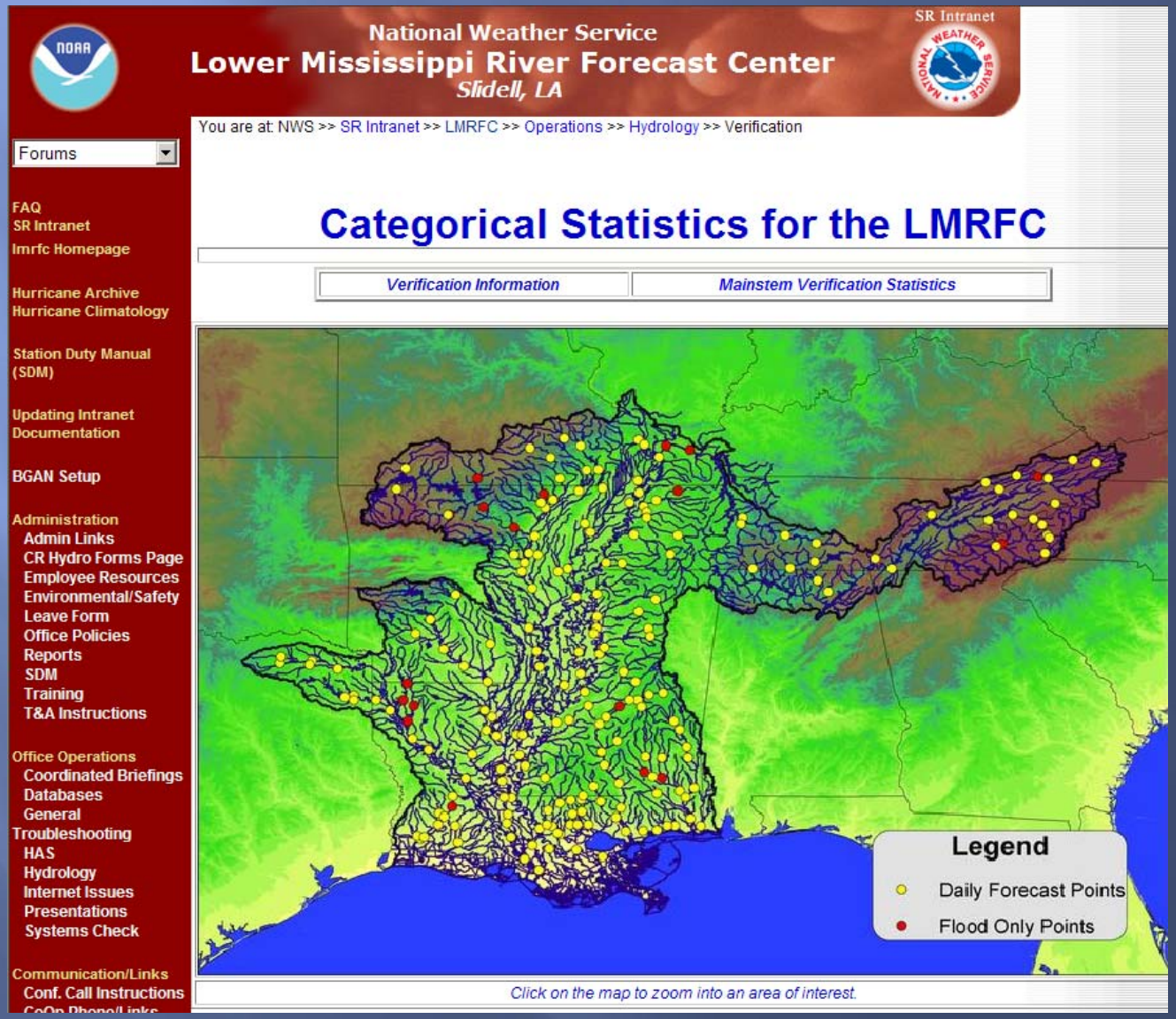
kai.roth@noaa.gov

Verify Who??? What???

Outline

- Website
- Outreach
- Future Activities

Website


National Weather Service
Lower Mississippi River Forecast Center
Slidell, LA
SR Intranet
You are at: NWS >> SR Intranet >> LMRFC >> Operations >> Hydrology >> Verification
Forums
FAQ
SR Intranet
lmrfc Homepage
Hurricane Archive
Hurricane Climatology
Station Duty Manual (SDM)
Updating Intranet Documentation
BGAN Setup
Administration
Admin Links
CR Hydro Forms Page
Employee Resources
Environmental/Safety
Leave Form
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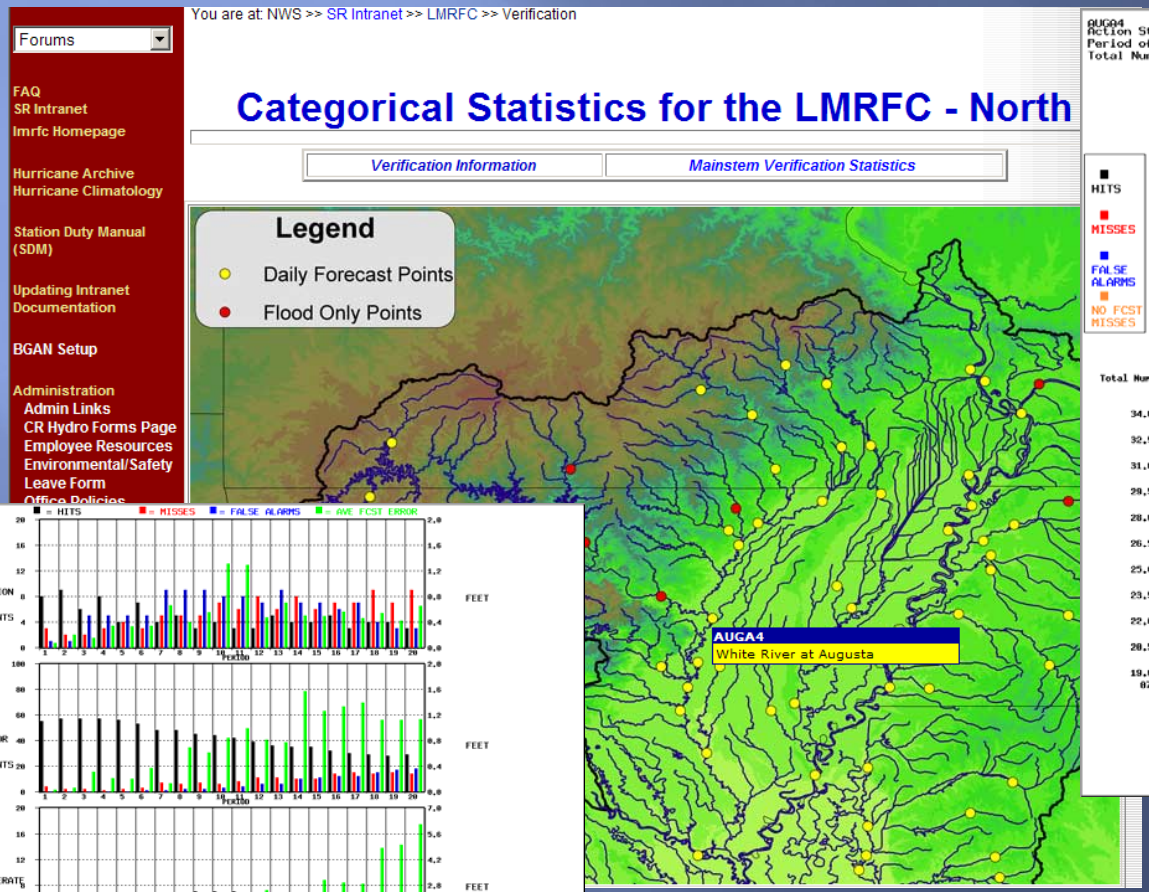
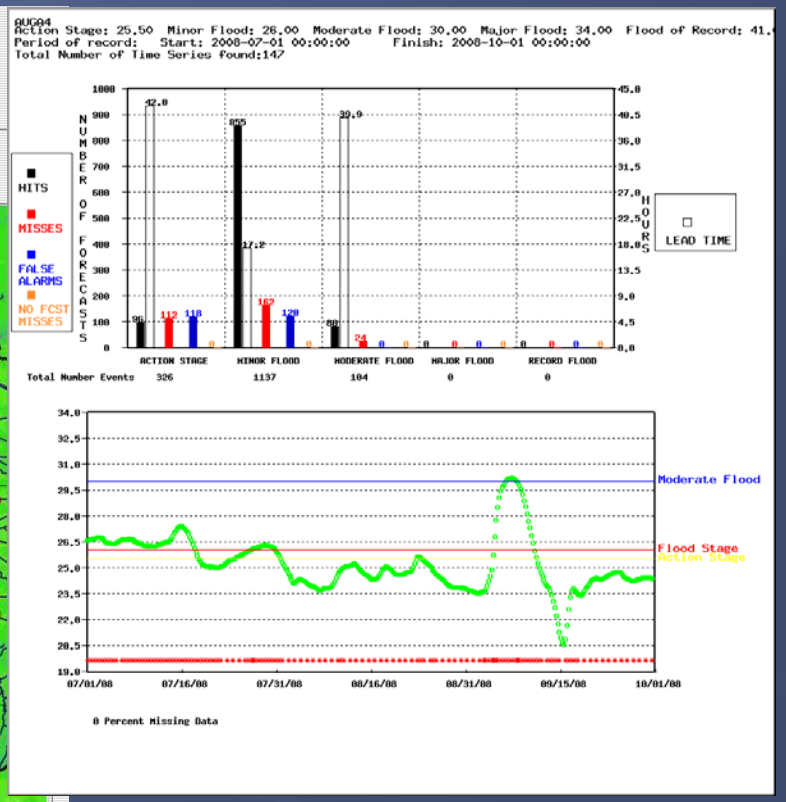
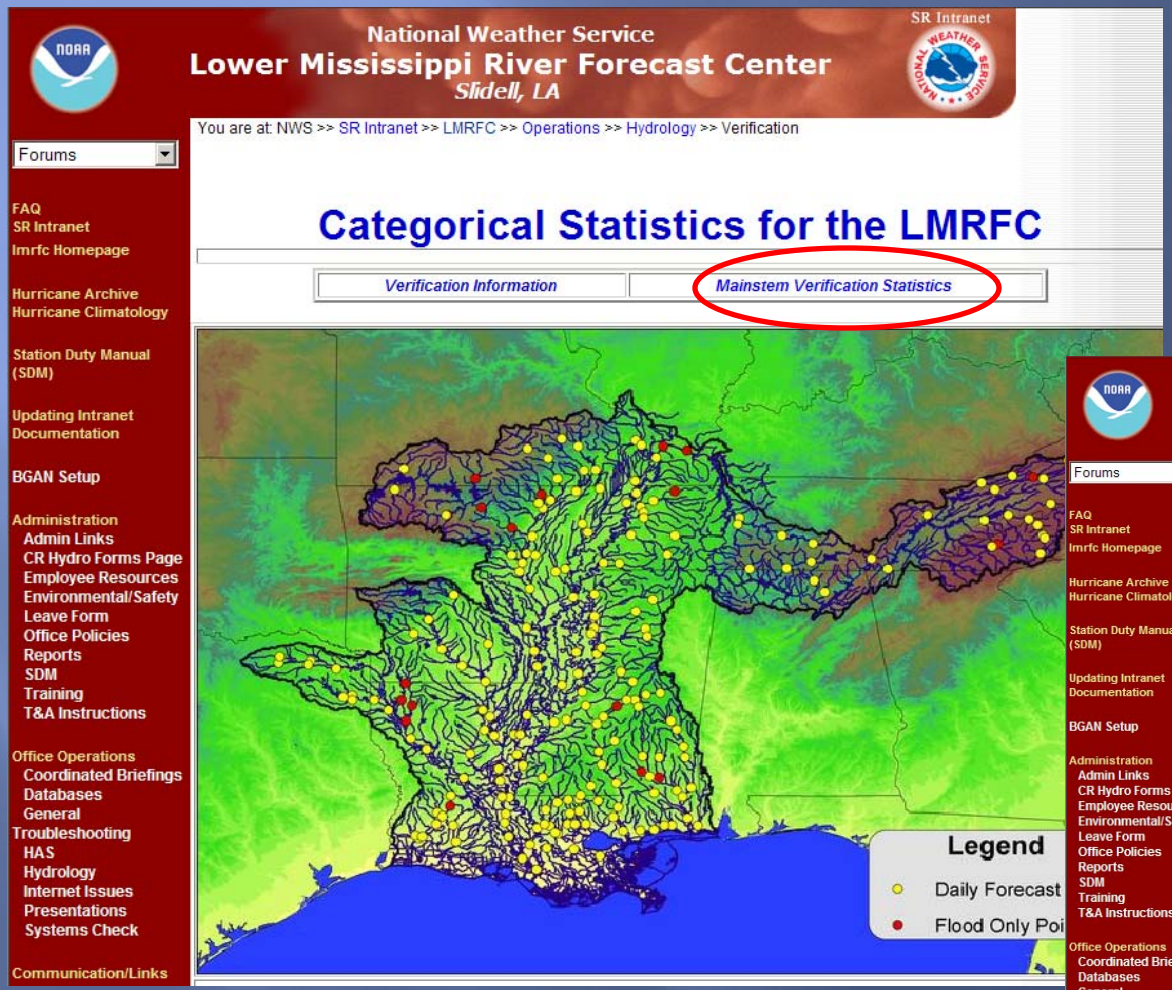
Reports
SDM
Training
T&A Instructions
Office Operations
Coordinated Briefings
Databases
General
Troubleshooting
HAS
Hydrology
Internet Issues
Presentations
Systems Check
Communication/Links
Conf. Call Instructions
Categorical Statistics for the LMRFC
Verification Information
Mainstem Verification Statistics
Legend
Daily Forecast Points
Flood Only Points
Click on the map to zoom into an area of interest.

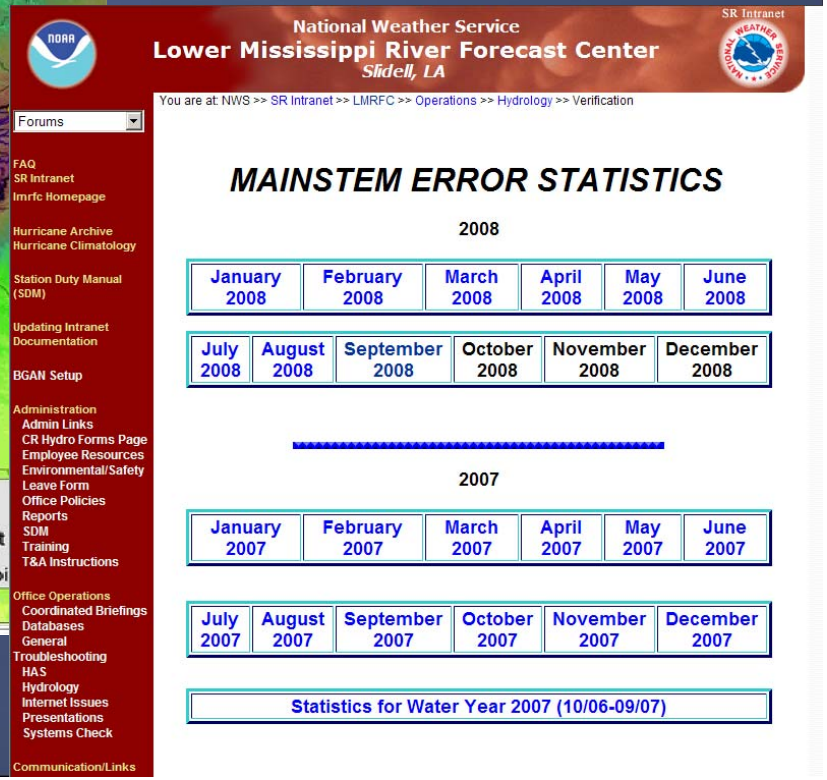
Southern Region Categorical Verification





Mainstem Stats

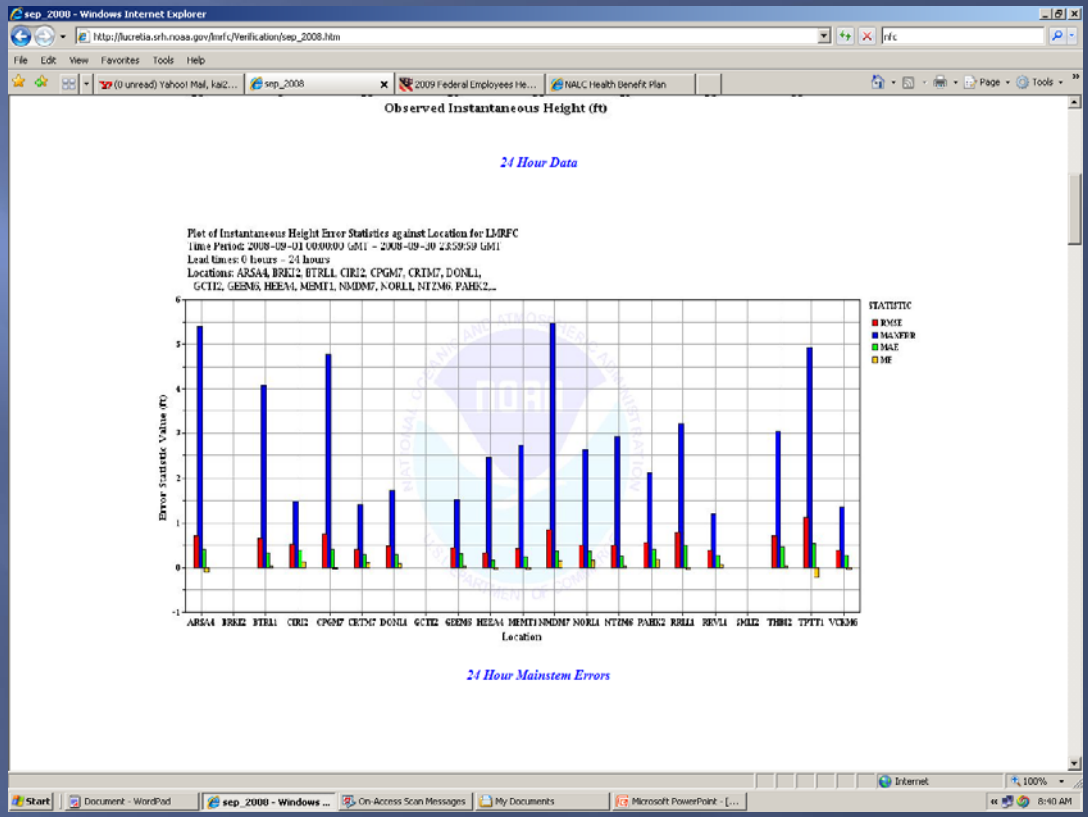




2003 – Present Archive

Mississippi River Verification

- Done monthly for each forecast point on the Mississippi River.
- Graphics generated on a 24 hour time step through 120 hours



Verification Information Link

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Troubleshooting
- HAS
- Hydrology
- Internet Issues
- Presentations
- Systems Check

Communication/Links
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Categorical Statisti

Verification Information

Click on the map to zoom in

www.srh.noaa.gov

National Weather Service
Southern Region

www.srh.noaa.gov

Cumulative RFC Statistics

Individual RFC Statistics

Archives

Verification Information

Flood Categories

Minor - Some public inconvenience, but minimal or no property damage likely.

Moderate - Closure of secondary roads. Transfer to higher elevation may be necessary to save property. Some evacuations may be required.

Major - Extensive inundation and property damage. Usually characterized by the evacuation of people and livestock and the closure of primary and secondary roads

Record - The highest observed River stage or discharge at a given site during the period of record keeping.

Categorical Flood Forecast Verification System - History and Information

1. Introduction

The National Weather Service (NWS) River Forecast Centers(RFC) are responsible for providing flood forecasts for major rivers and streams throughout the country. For some time now, there has been a recognized need for a river forecast verification system to evaluate the RFC's skill in the delivery of this service. The agency cites two goals for verification: (1) Improve accuracy and timeliness of river forecasts and (2) document overall trends in forecast performance (OHD, 2001). Verification of river forecasts at individual locations are required to identify areas where forecast skill is lacking. Hydrologic development efforts can then be concentrated on the areas where an RFC consistently does a poor job of forecasting. Accumulating pertinent verification information for an RFC over a period of time, an RFC can show trends in their overall river prediction performance. As technology and science continue to advance, "improvements" will continue to be made to our hydrologic models and their underlying infrastructure. We are now capable of generating river forecasts quicker and at higher resolution than ever before. Without concrete performance measures, there is no way of knowing how these changes affect the accuracy of our forecasts.

With these two goals in mind, the Southern Region Categorical Flood Forecast Verification System(CFFVS) was developed. The system is designed to provide a meaningful analysis of flood forecast performance at the individual forecast point scale, as well as over a larger scale, such as RFC wide or even nation wide.

2. Verification History

There has never been a national river forecast verification in place until the recent initiative by the Office of Hydrologic Development (OHD), which was fueled by the agency's increased emphasis on "performance measures". Verification methodology has been debated over the years, but chiefly due to the complexity of the problem, a consensus has never been reached on the proper metrics necessary to measure forecast performance.

Several river forecast verification initiatives have been implemented over the years. Most of these schemes, including the current NWS national verification software,

SR RFC Verification Statistics - Windows Internet Explorer

http://www.srh.noaa.gov/srh/cwwd/hsd/verification/hydro/

File Edit View Favorites Tools Help

SR RFC Verification Statistics

www.srh.noaa.gov

National Weather Service Southern Region

www.srh.noaa.gov

- Cumulative RFC Statistics
- Individual RFC Statistics
- Archives
- Verification Information

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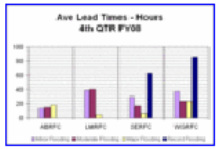
Categorical Flood Forecast Verification System - Cumulative River Forecast Center Verification Statistics

4th Quarter (Jul 2008 - Sep 2008) FY2008

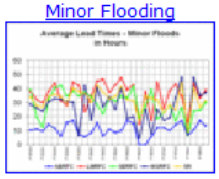


Average Lead Time

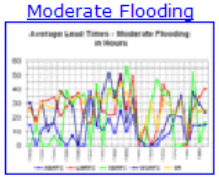
A categorical lead time is the number of hours from the time of forecast issuance to the time of the forecast hit. A lead time is only computed when, (1) the ordinate□s forecast and observation are in the same category, and (2) the previous ordinate□s observation was lower than the current category. This restricts lead time calculations to instances where the stage is rising, and crossing categories.

Average Lead Time Trends

Minor Flooding

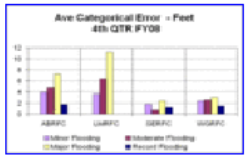


Moderate Flooding



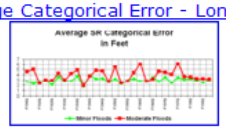
Average Categorical Errors

This is the amount the forecast would have to be changed to reach the observed category. Categorical error is only computed when you have a miss.

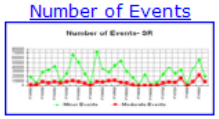


Long Term Averages

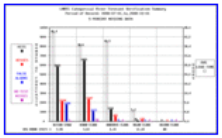
Average Categorical Error - Long Term



Number of Events



Lower Mississippi River Forecast Center



Statistical Snapshot

A quick look at hits, misses, false alarms, no forecast misses, and average lead time.

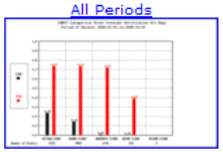
False Alarm Ratio & Probability of Detection by Category

FAR and POD are calculated here for each flood category. The categories are: action stage, minor flood, moderate flood, major flood, and record flood.

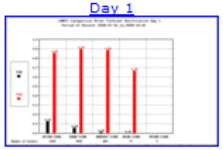
FAR = (False Alarms / (False Alarms + Hits)) {0.00 is best}

POD = (Hits / (Hits + Misses + No Forecast Misses)) {1.00 is best}

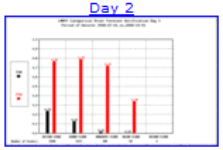
All Periods



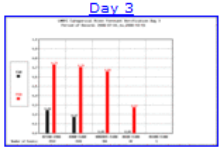
Day 1



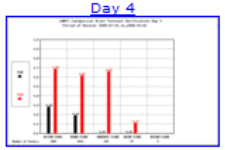
Day 2



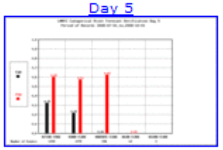
Day 3



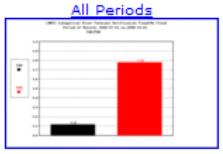
Day 4



Day 5



All Periods



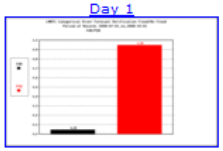
False Alarm Ratio & Probability of Detection for Flood or No Flood

FAR and POD are calculated here for hits and misses based on flood stage only.

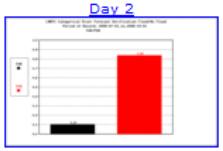
FAR = (False Alarms / (False Alarms + Hits)) {0.00 is best}

POD = (Hits / (Hits + Misses + No Forecast Misses)) {1.00 is best}

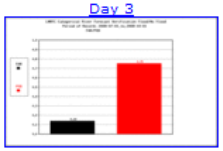
Day 1



Day 2



Day 3



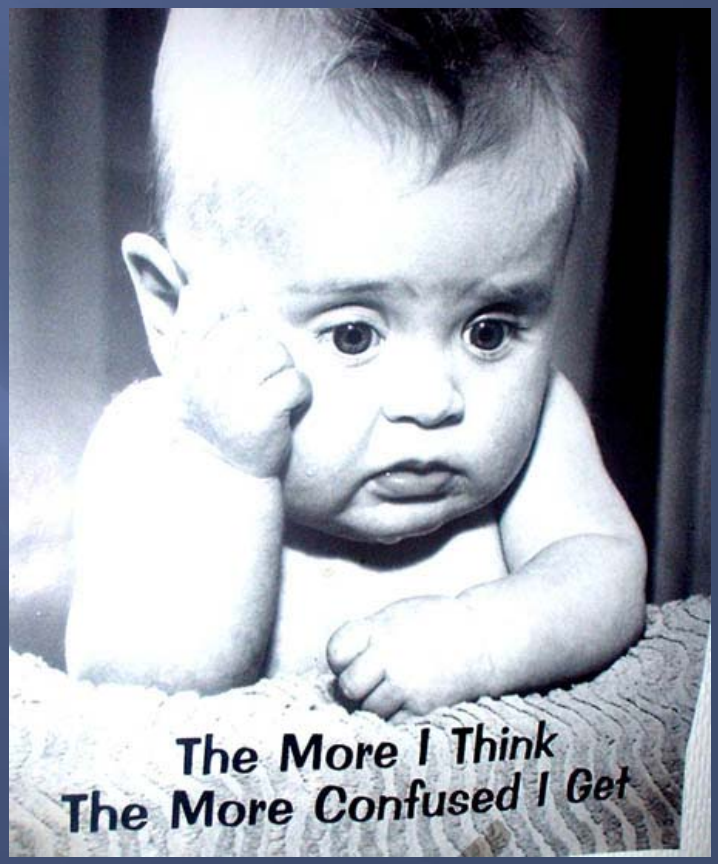
Day 4

Day 5

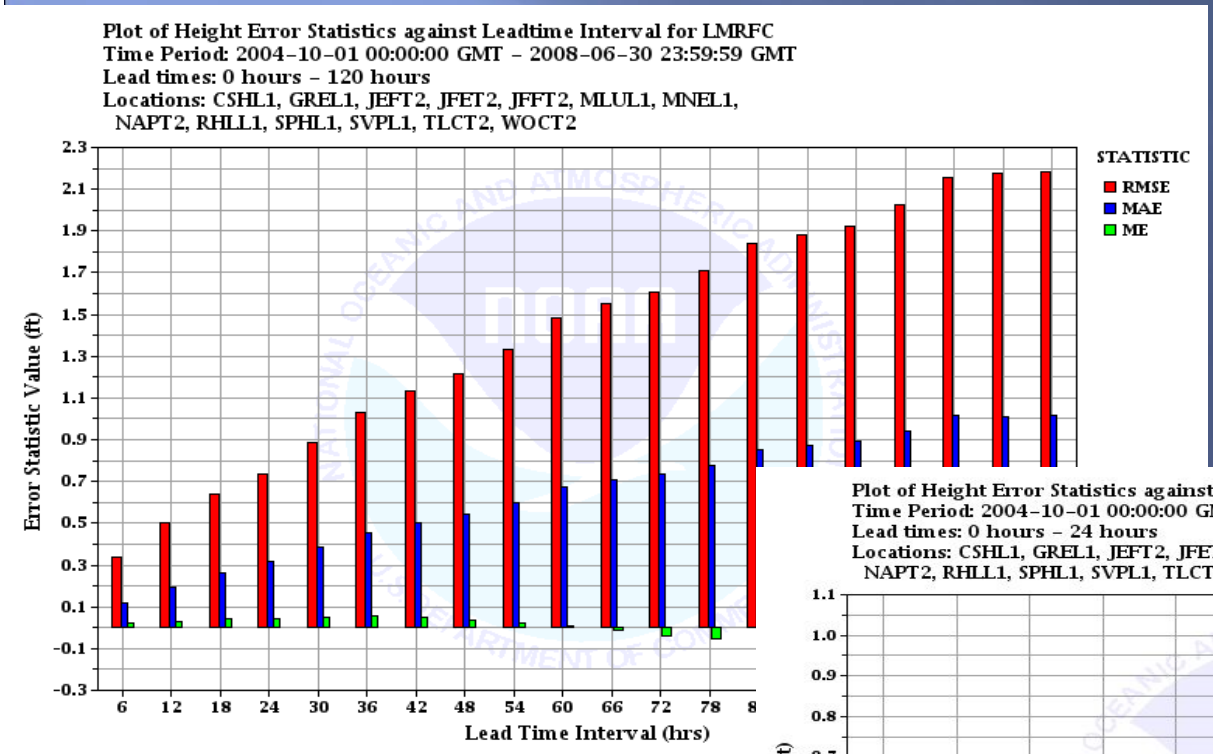
http://www.srh.noaa.gov/srh/cwwd/hsd/verification/hydro/

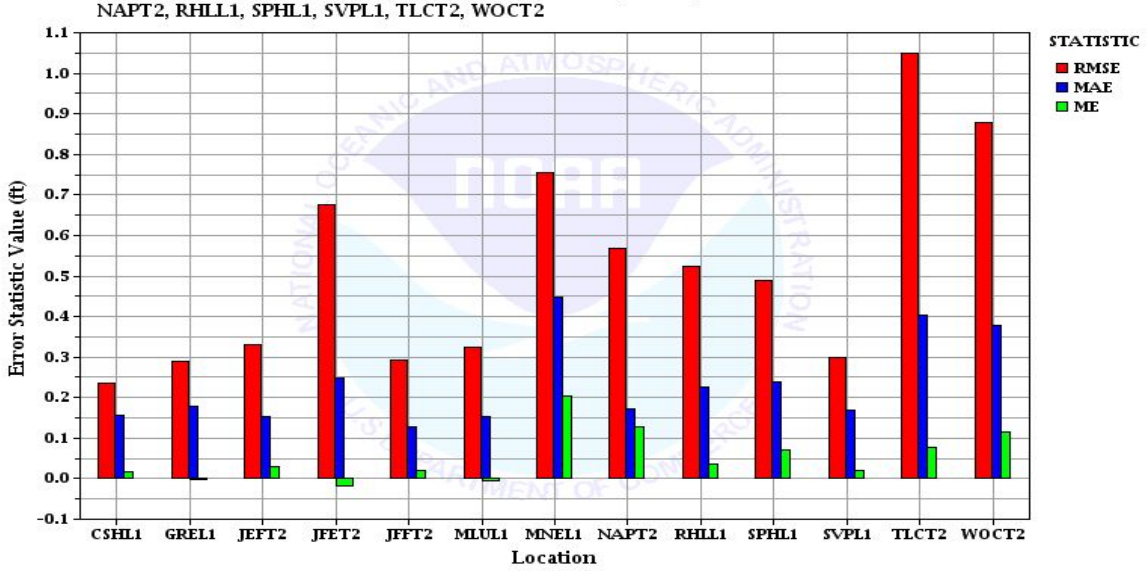
Outreach

- The new Service Coordination Hydrologist (SCH) has been bringing verification to local WFOs.



Examples of Stats conveyed to the WFOs






THE
END
IS
NEAR

Future Activities?

Future

- Verification of MAP & MAPX against FMAP values.
- Expansion of case study.
- Expanding WFO visits with statistics.