



NWRFC Verification Program

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NOAA NWS ~ NORTHWEST RIVER FORECAST CENTER



“Meaningful” Verification

**The NWRFC is committed to
performing “meaningful”
Hydro-meteorological
Verification**



Meaningful Verification will help us to answer the following questions:

- **How good are your forecasts?**
- **Are you improving?**
- **Why did you miss that forecast?**
- **What are your biggest sources of error?**
- **In general, which basin forecasts are your most/least reliable?**
- **Where should we apply our available resources to most effectively improve our forecasts?**



Goal: “Meaningful” Verification

1. Save Everything!

- Storage: Archive DB, Flatfiles, etc.
- Disaggregate and save forecast “pieces” - Obs data, operational OFS Files, forecast inputs, final forecasts, etc.)

2. Perform Regular Analysis

- Qualitative and Quantitative (IVP, IFP,FAVO, other)
- monitor trends
- Identify “persistent” problems

3. Establish Baseline Statistics

- Helps customers establish “confidence levels”
- Identify “problem” basins
- Starting point for trend analysis

4. Use info to Improve Forecasts!



NWRFC Verification – Current Status

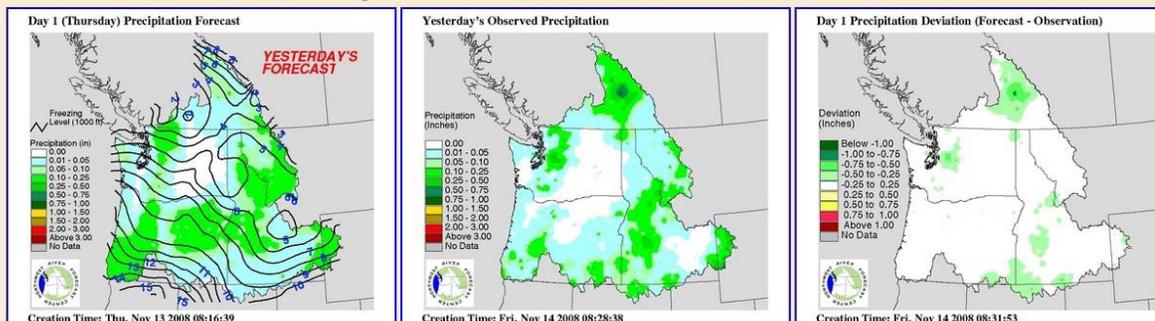
- **Archive**
 - **Recent improvements to posting speeds and storage**
- **National Program**
 - **National Verification Team, National product**
- **Regional Program**
 - **Regional Verification Team- Report recommendations**
- **Routine Qualitative Verification/Review**
 - **Web Plots – Daily precip/temp**
 - **FAVO – review of river forecasts**
- **Web (Water Supply, ESP)**
- **Post Event Analysis / Storm Studies**



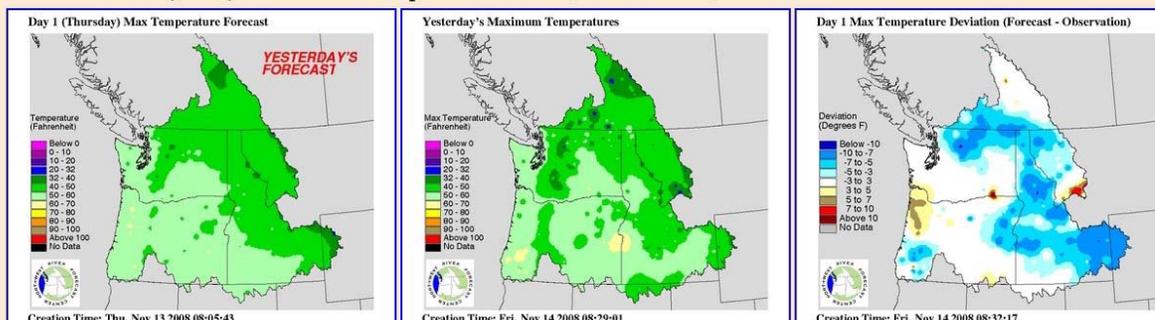
Web Verification – Precip, Temp

(forecast, observed, forecast-observed)

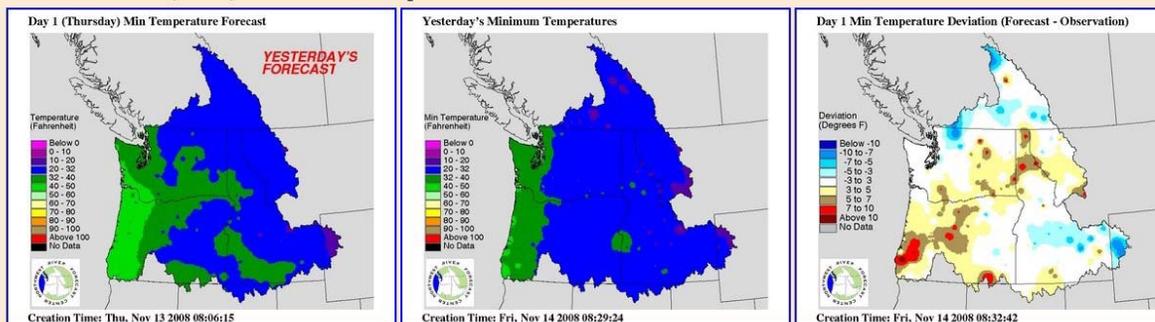
Yesterday's Day 1 Precipitation Forecast, Observations, and Observed Deviation from Forecast



Yesterday's Day 1 Maximum Temperature Forecast, Observations, and Observed Deviation from Forecast



Yesterday's Day 1 Minimum Temperature Forecast, Observations, and Observed Deviation from Forecast





FAVO – Forecast Against Values Observed

Enter Station ID

ortw1

PLOT BACK 5 days

- HG QT
- HM HP
- QI PP
- QR PC

Enter Other PE

Zoom precip / snow

Raise HG max

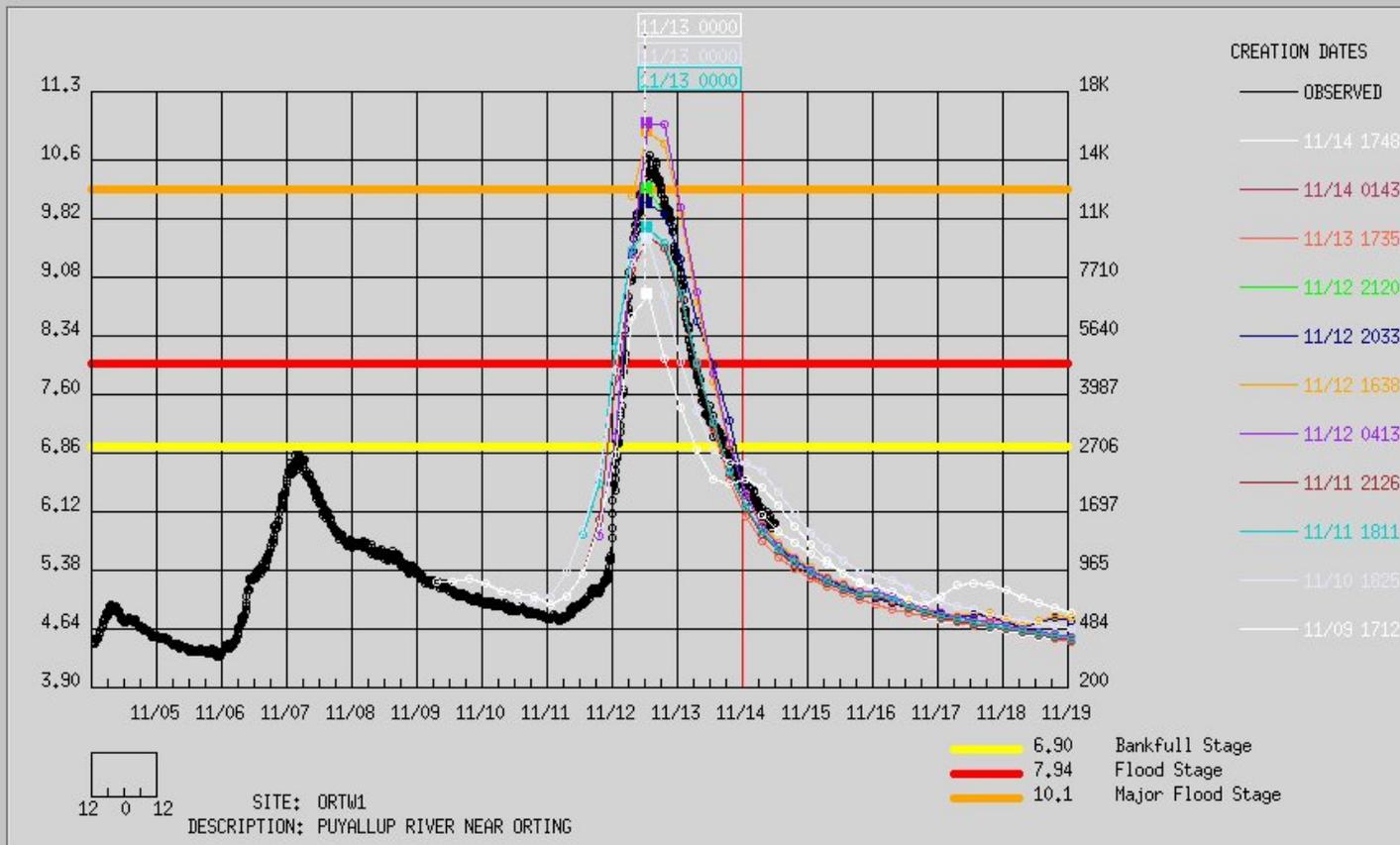
Use FA

RUN

SEARCH BY STATE

SEARCH BY FGROU

QUIT



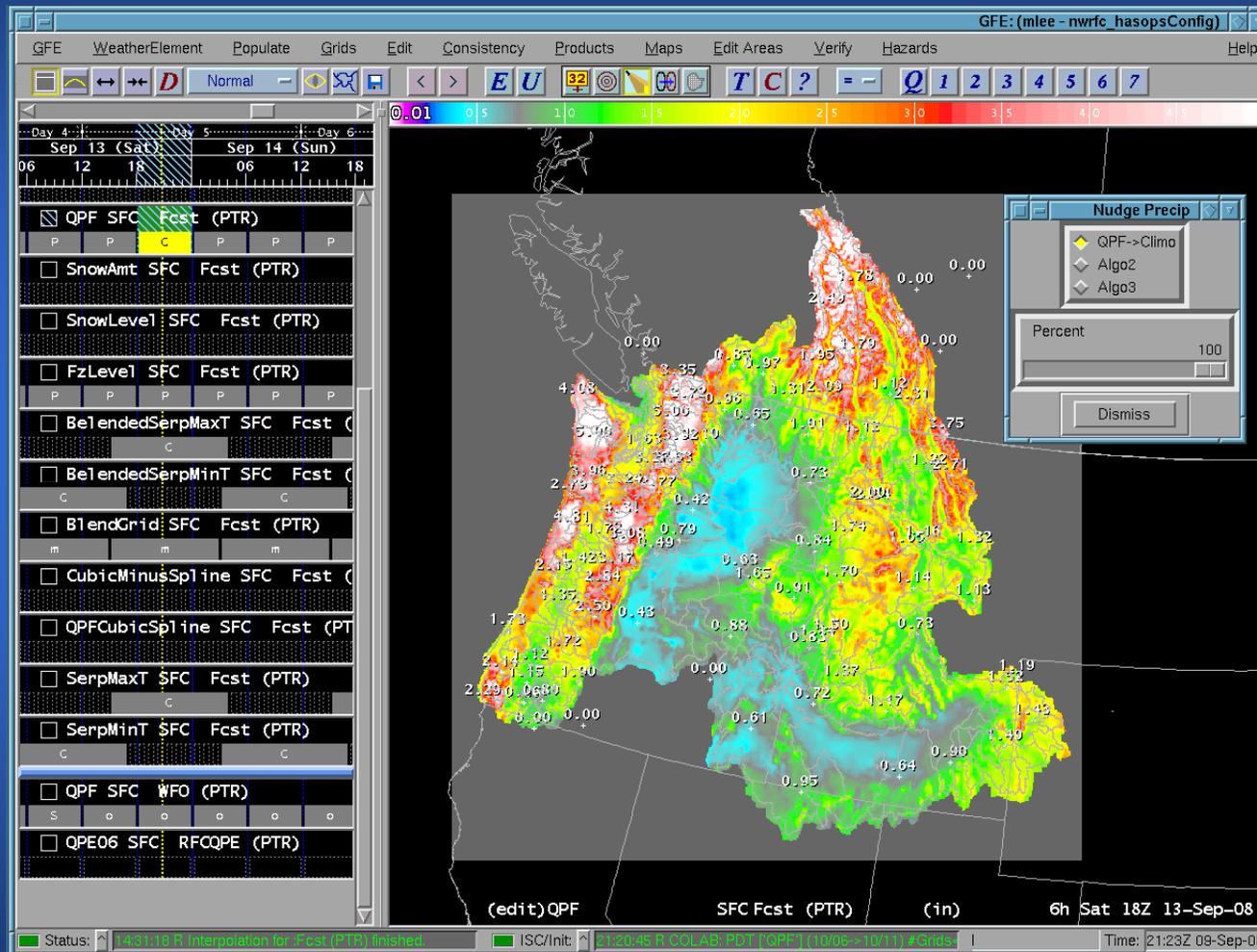


Special Projects (Active)

- **Daily QPF Verification IVP Batch pilot project**
- **GFE QPF Comparison (HAS, ISC, HPC, GFS, NAM, EUR)**
- **GFE FMAP (from grids) vs FMAP (from weighted stations)**
- **CHPS 1-hour Gridded Forcings (obs & fcst) – (MPE, GFE, etc.)**



GFE QPF Comparison Project



- Each time that HAS QPF forecast is created within GFE, a script is executed which extracts similar point forecasts from other sources (i.e. ISC, HPC, GFS, NAM, EUR).
- Corresponding Basin FMAP values are produced for each source as well.
- This will allow us to evaluate various forecast sources (point and areal) on a somewhat “level playing field”.



GFE FMAP Project

GFE: (TextTest - SITEconfig)

GFE WeatherElement Populate Grids Edit Consistency Products Maps Edit Areas Verify Help

0.03 0.05 0.07 0.09 0.11 0.13 0.15 0.17 0.19 0.21 0.23

Today... Tonight... Tomorrow...
Oct 12 Oct 13 (Mon) Oct 14
18 06 12 18 06

QPFshefExample

```
.B SHEF HEADER
.B1 SHEF SUBHEADER
:Edit Area
12Z/12 18Z/12 0Z/13 6Z/13 12Z/13 18Z/13 0Z/14 6Z/14 12Z/14 18Z/14 0Z/15 6Z/15
White_Bird_ltn_5000ft 0.02 0.01 0.03 0.06 0.05 0.02 0.00 0.00 0.03 0.02 0.01 0.01
White_Bird_grt_5000_lt_7000ft 0.03 0.02 0.04 0.06 0.05 0.03 0.01 0.01 0.04 0.03 0.02 0.02
White_Bird_grt_7000ft 0.10 0.09 0.13 0.14 0.13 0.10 0.09 0.09 0.12 0.11 0.10 0.10
.END
$$
```

Wind SFC Fcst (PTR)

WindGust SFC Fcst (PTR)

Sky SFC Fcst (PTR)

Wx SFC

AVN AVN

PoP SFC

AVN AVN

QPF SFC

SnowAmt

AVN AVN

SnowLevel

FzLevel

Headline

Product Generation

Remember to publish before generating products.

Publish to Official...

Products

- GLF
- MVF
- MaxTshefExample
- MinTshefExample
- MultipleElementTable
- MyProduct
- NSH
- Official Grids to LDAD
- Png Images...
- QPFshefExample

Data Source:

Official Fcst ISC

Run Run/Dismiss Cancel

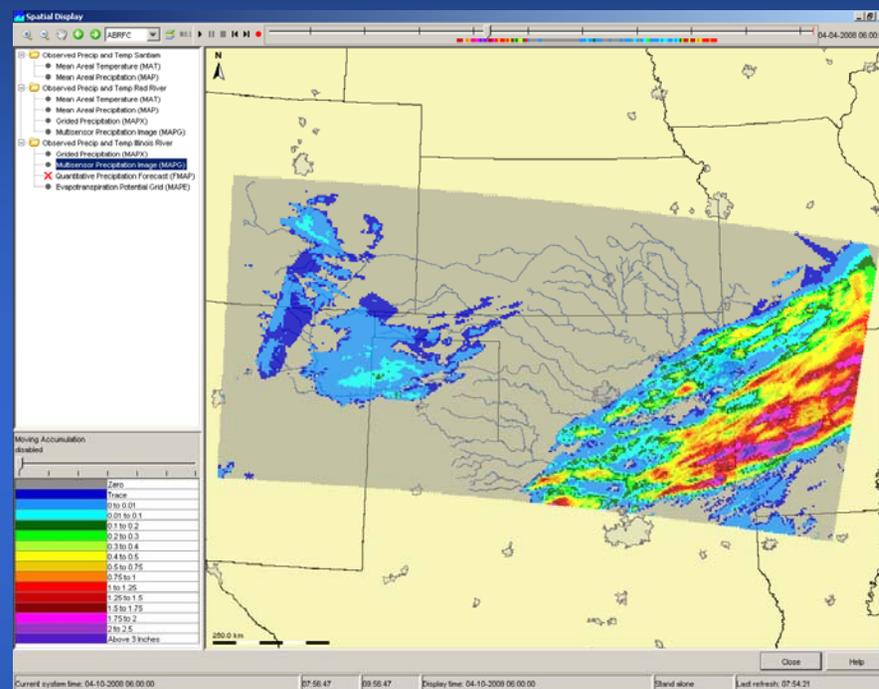
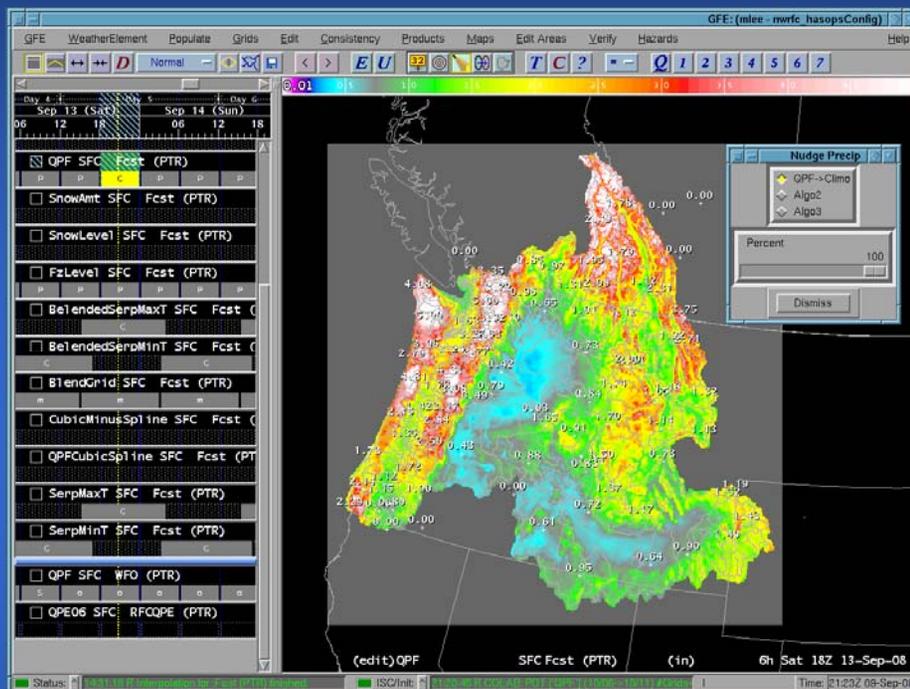
Status: 20:52:55

Init: 20:52:55 Model: GFS (PTR) #Grids: 3

Time: 20:56Z 12-Oct-03



CHPS/FEWS – Gridded Forcings



- CHPS will be “fed” gridded 1-hour forcings (observed and forecast)
- Areal and Temporal processing will occur within CHPS.

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Other Projects – (1-2 yr time frame)

- Expansion of IVP project to include other elements and sites (i.e. temperature, stage, flow)
- Add IVP products to Web (WR Verif. Report Recommendations)
- Test and implement Ensemble Verification System (EVS)
- Test and evaluate Gridded Verification options
- Test and evaluate forecast “re-analysis” capabilities within CHPS/FEWS
- Establish and verify simulations using varied sources for the forcings (i.e. raw model w/no mods, various mean areal input sources, etc.)
- Establish “canned” and mostly automated method for post event analysis. This includes links to update peak-to-peak crossplots and other relationships.



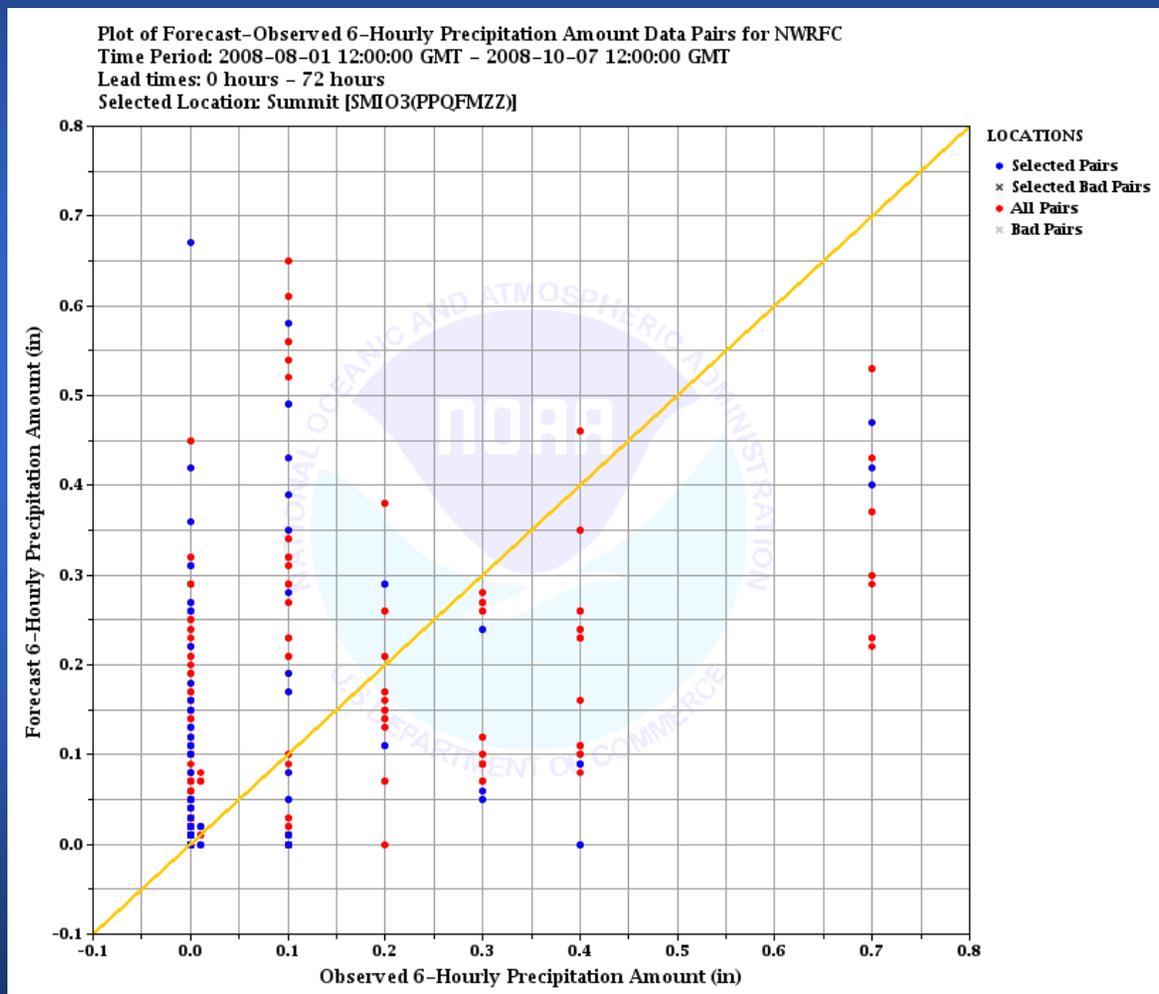
Thank You!



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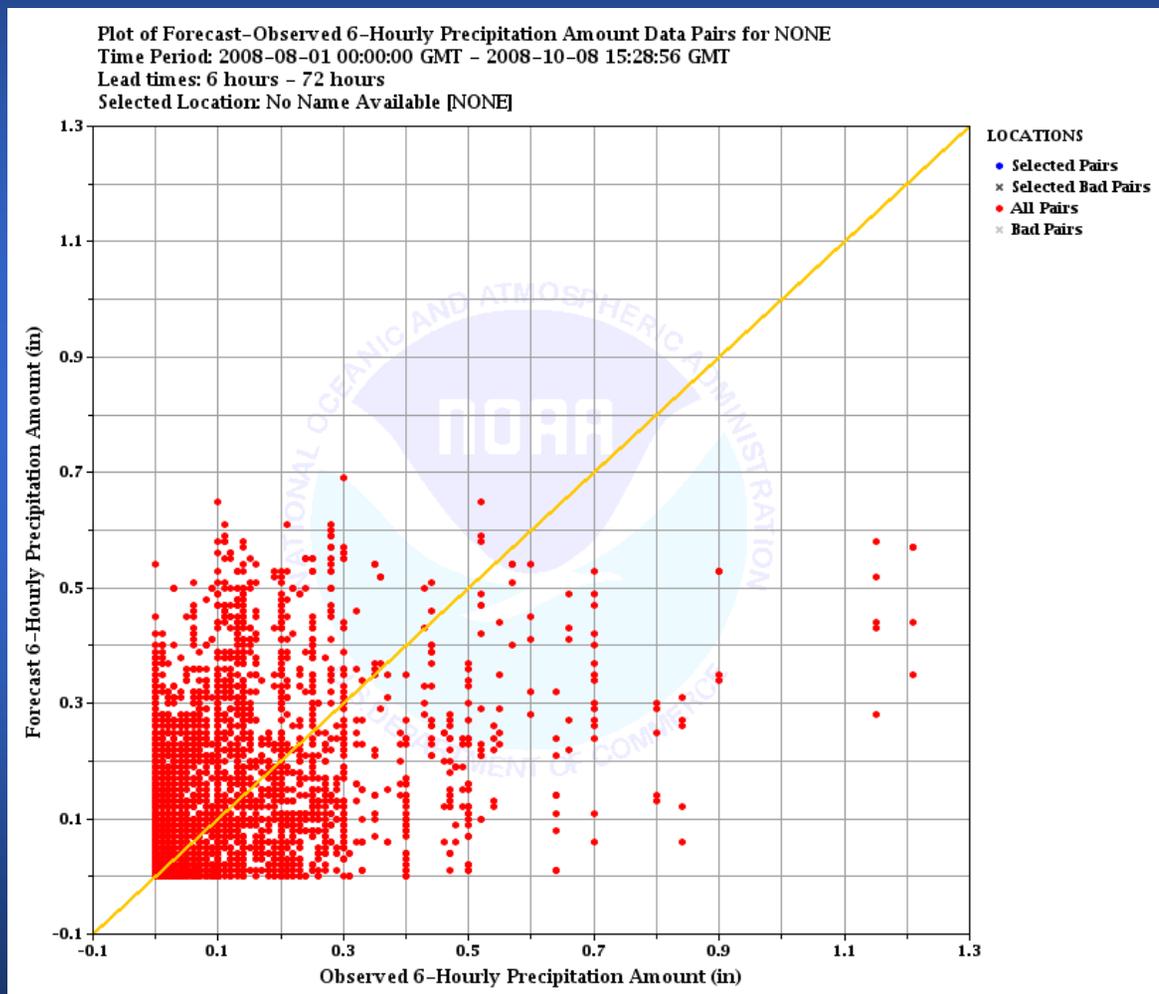


IVP Scatter Plot





IVP Scatter Plot





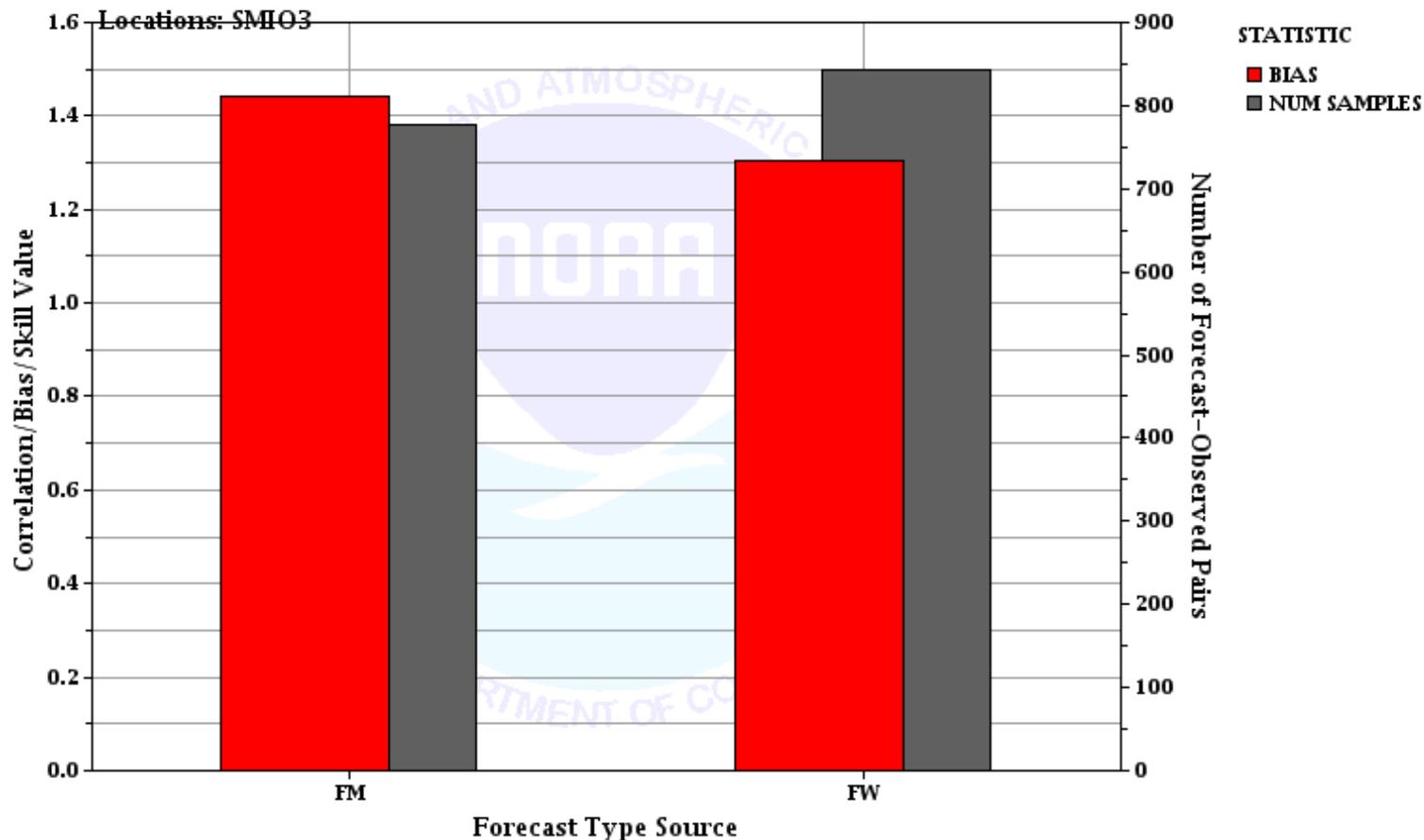
IVP BIAS Plot

Plot of 6-Hourly Precipitation Amount Correlation, Bias, and/or Skill against Forecast Type Source for NWRFC

Time Period: 2008-08-01 12:00:00 GMT - 2008-10-07 12:00:00 GMT

Lead times: 0 hours - 72 hours

Locations: SMIO3





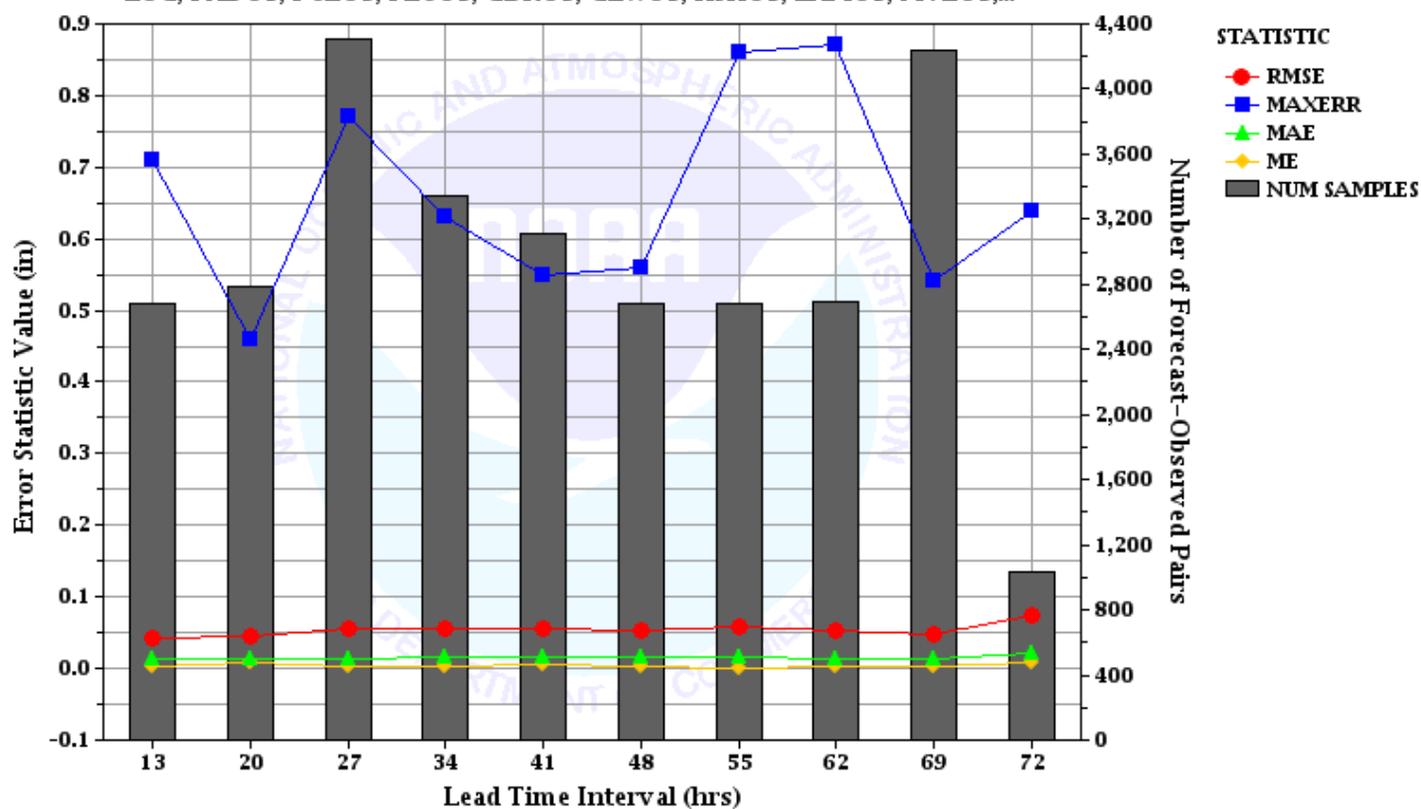
IVP Error Plot

Plot of 6-Hourly Precipitation Amount Error Statistics against Leadtime Interval for NWRFC

Time Period: 2008-08-01 00:00:00 GMT - 2008-10-08 15:28:56 GMT

Lead times: 6 hours - 72 hours

Locations: BUXO3, CLTO3, CWBO3, DASO3, DIXO3, DSTO3, ESCO3, EUG, FADO3, FCLO3, FLCO3, GDRO3, GLWO3, HSKO3, LAMO3, MVLO3,...





NWRFC Verification – Current Status

