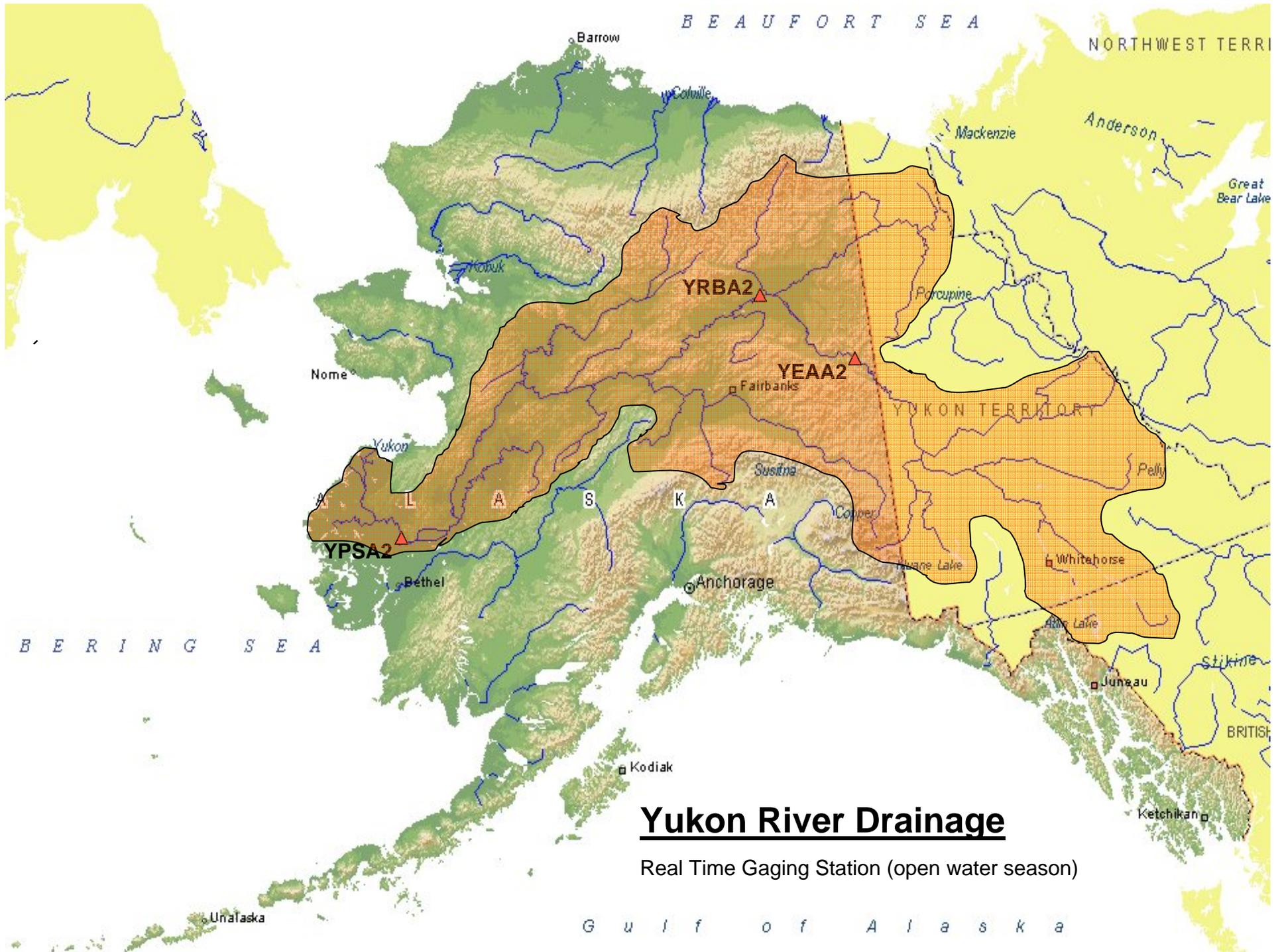


Yukon River in Alaska and Canada

- 321,000 mi.² drainage area
- Only 3 real time gaging stations on the mainstem in US
- > 125,000 mi.² in Canada
- 102,000 mi.² on the main stem
- 8 real time gaging stations in Canada above Eagle (YEAA2)



Yukon River Drainage

Real Time Gaging Station (open water season)

Yukon River Drainage in Canada



Old Modeling

- Canadian points used to route flows to Eagle
- Local Inflows for Dawson (YDAQ9) and Eagle (YEAA2) computed as a percentage of total upstream flow
- Future flows from most upstream stations were calculated as a simple recession
- SRFQ9 and SRMQ9 (Stewart River) were calibrated in 2007

New Calibration

- Use Reanalysis Data to calibrate Canadian basins
- Pick historical Reanalysis points that correspond to GFS model output points
- GFS output will be used operationally
- QPF not a regular input to either model

Yukon River Drainage in Canada

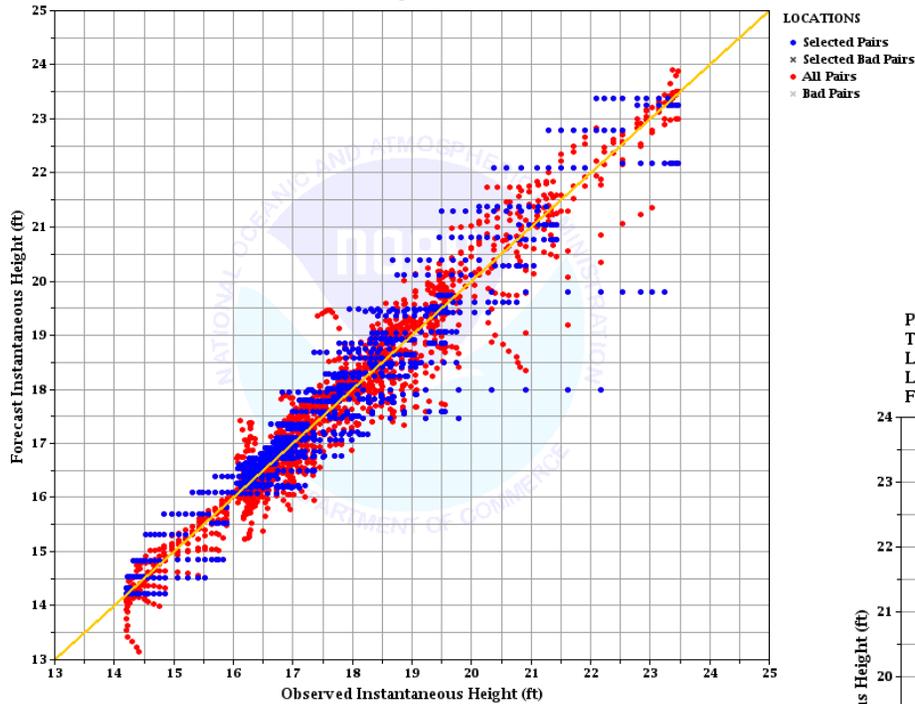


Verification Study

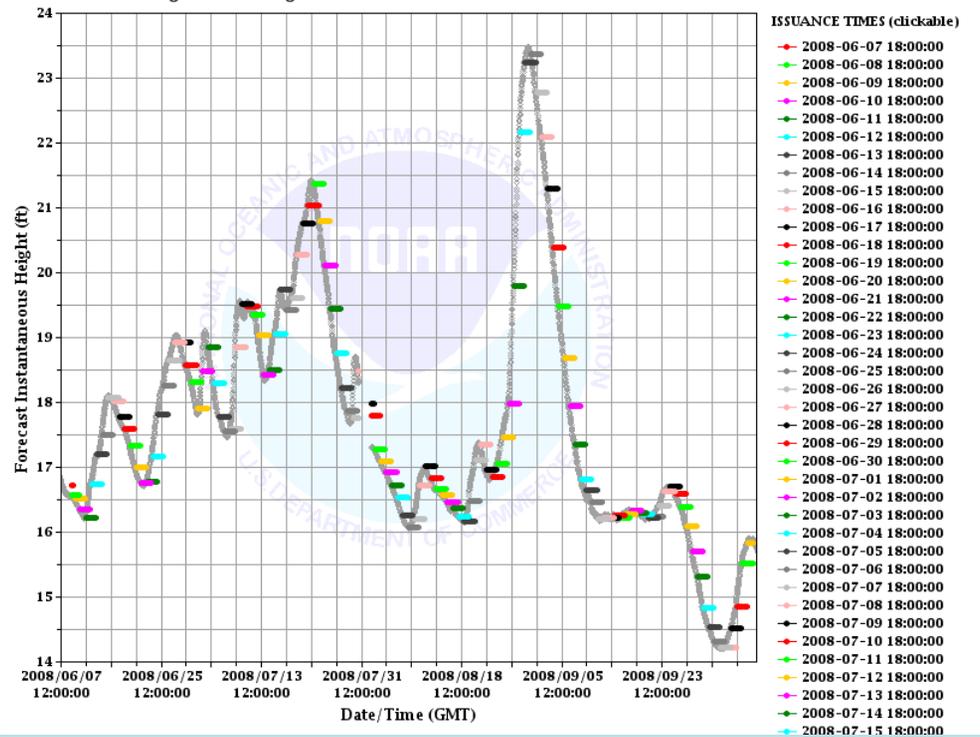
- Use IVP to analyze improvement (or not) to the forecast for YEAA2
- Type Sources
 - FE : Forecasts at YEAA2 created from new calibrations
 - FX : Forecasts at YEAA2 created from old Forecast group definition
 - FR : Persistence forecasts

Persistence Forecasts

Plot of Forecast-Observed Instantaneous Height Data Pairs for APRFC
Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
Lead times: 0 hours - 48 hours
Selected Location: YEAA2 - Yukon River at Eagle

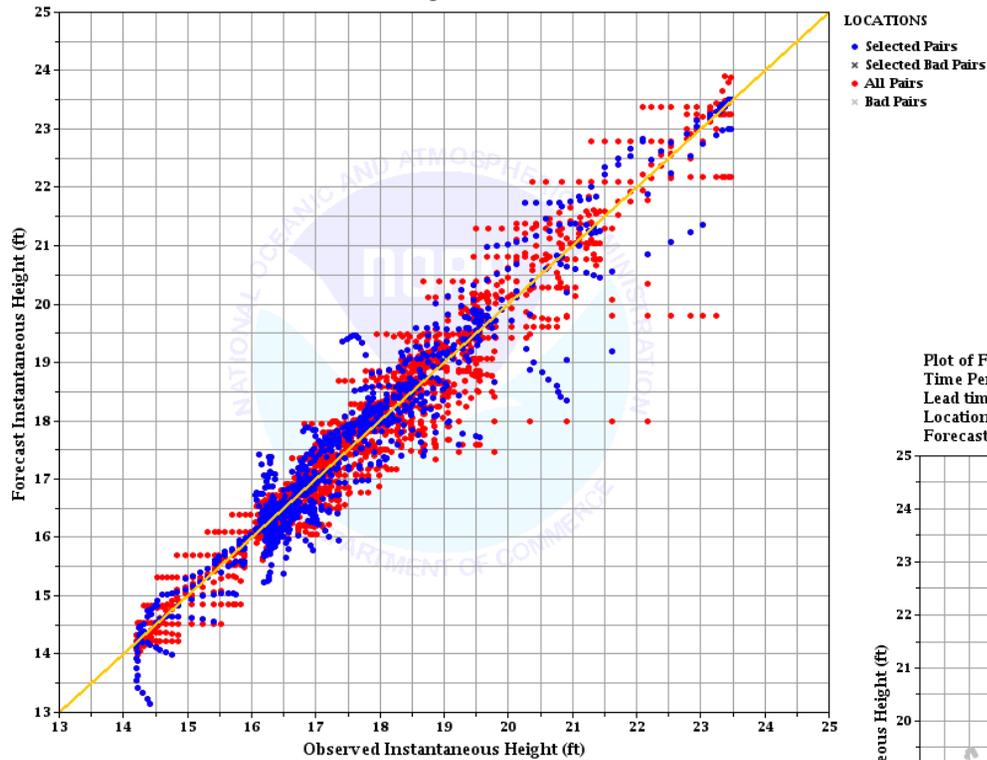


Plot of Forecast and Observed Instantaneous Height Time Series for APRFC
Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
Lead times: 0 hours - 48 hours
Location: Yukon River At Eagle 98 N [YEAA2(HGIFRZZ)]
Forecast Categories: No Categories Defined

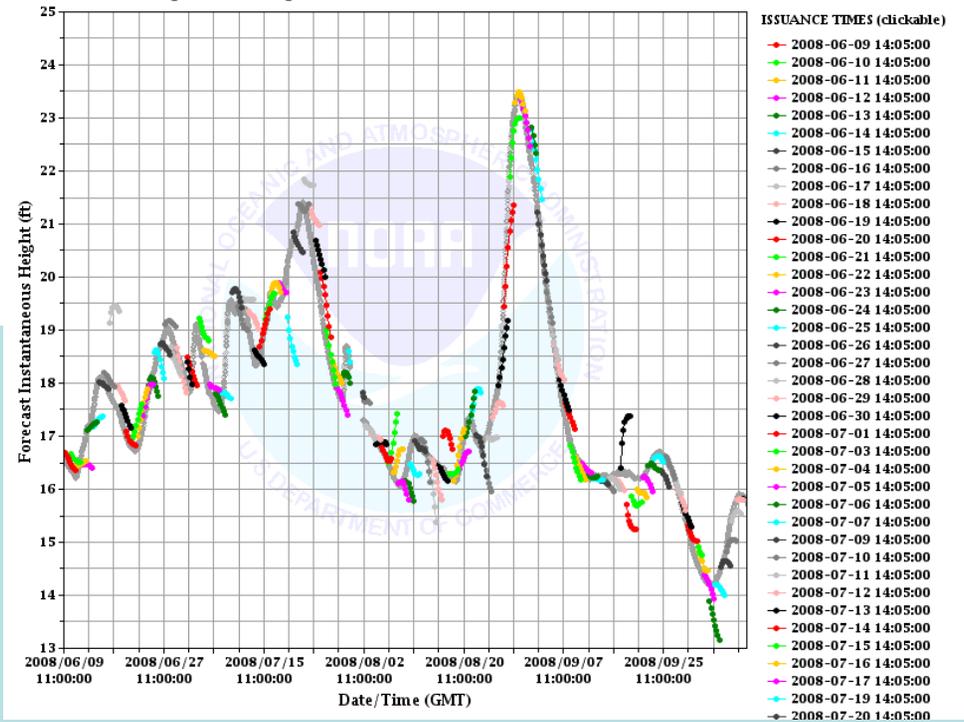


Old Forecasts

Plot of Forecast-Observed Instantaneous Height Data Pairs for APRFC
 Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
 Lead times: 0 hours - 48 hours
 Selected Location: YEAA2 - Yukon River at Eagle

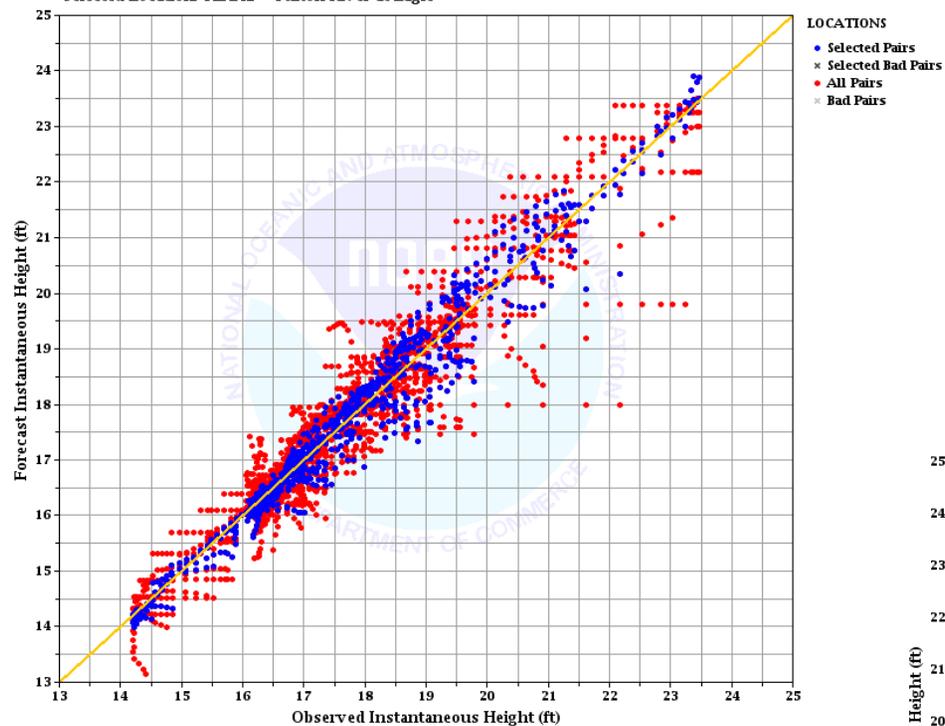


Plot of Forecast and Observed Instantaneous Height Time Series for APRFC
 Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
 Lead times: 0 hours - 48 hours
 Location: Yukon River At Eagle 98 N [YEAA2(HGIFXZZ)]
 Forecast Categories: No Categories Defined

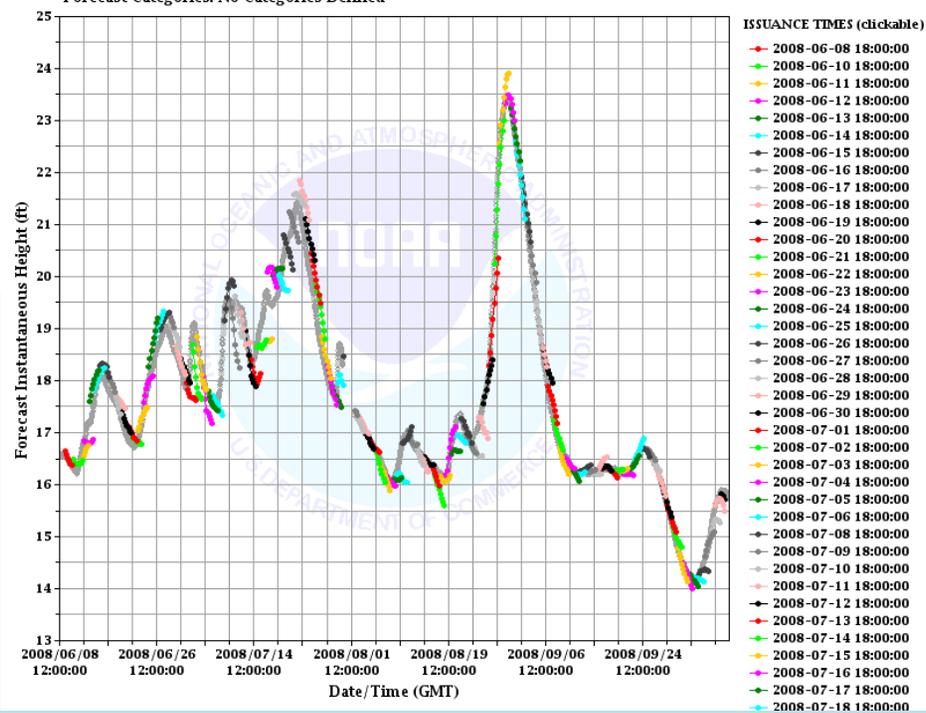


New Calibration Forecasts

Plot of Forecast-Observed Instantaneous Height Data Pairs for APRFC
 Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
 Lead times: 0 hours - 48 hours
 Selected Location: YEAA2 - Yukon River at Eagle



Plot of Forecast and Observed Instantaneous Height Time Series for APRFC
 Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT
 Lead times: 0 hours - 48 hours
 Location: Yukon River At Eagle 98 N [YEAA2(HGIFEZZ)]
 Forecast Categories: No Categories Defined



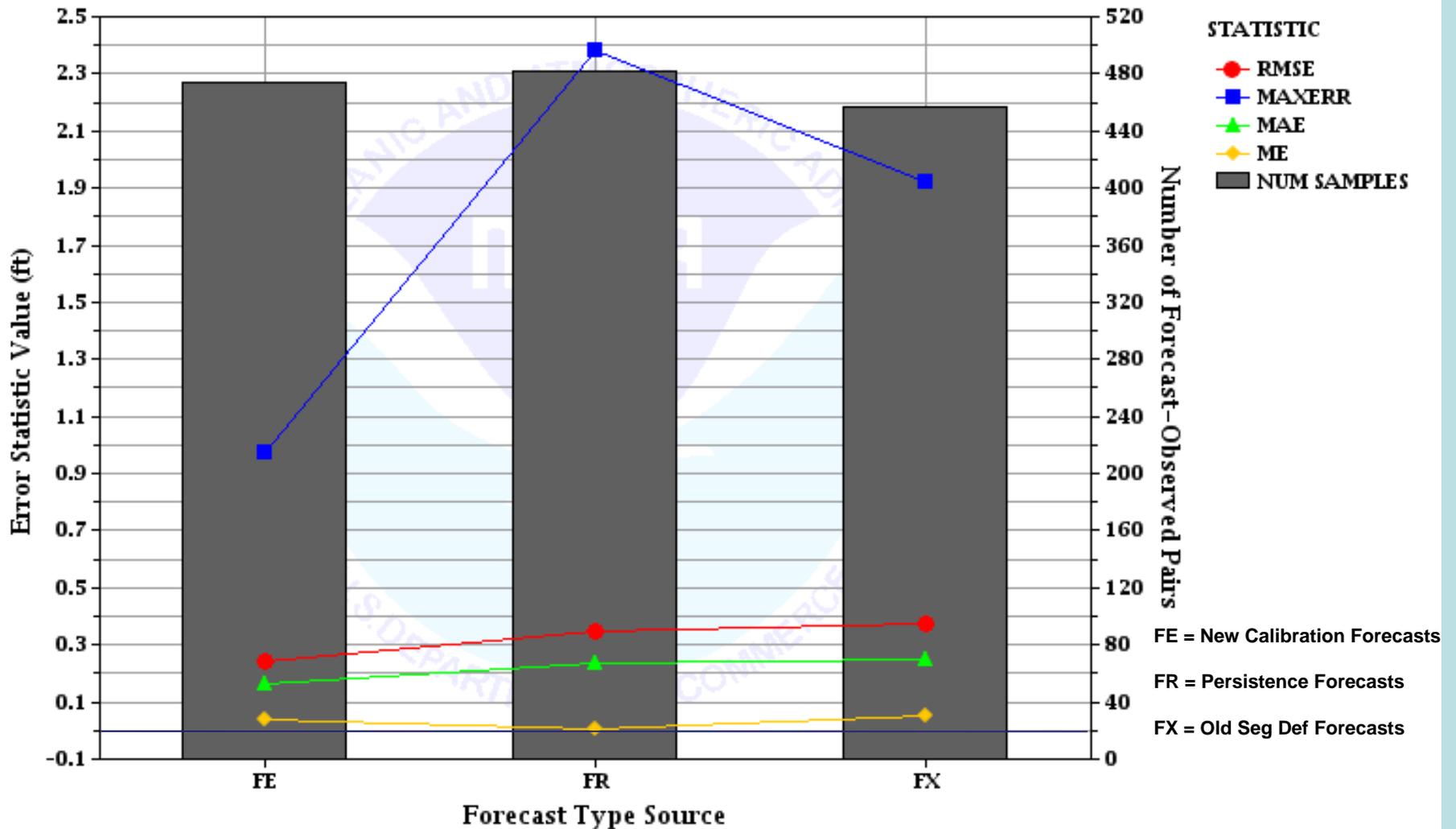
Error Statistics for 0 to 24 Hours by Type Source

Plot of Instantaneous Height Error Statistics against Forecast Type Source for APRFC

Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 18:59:59 GMT

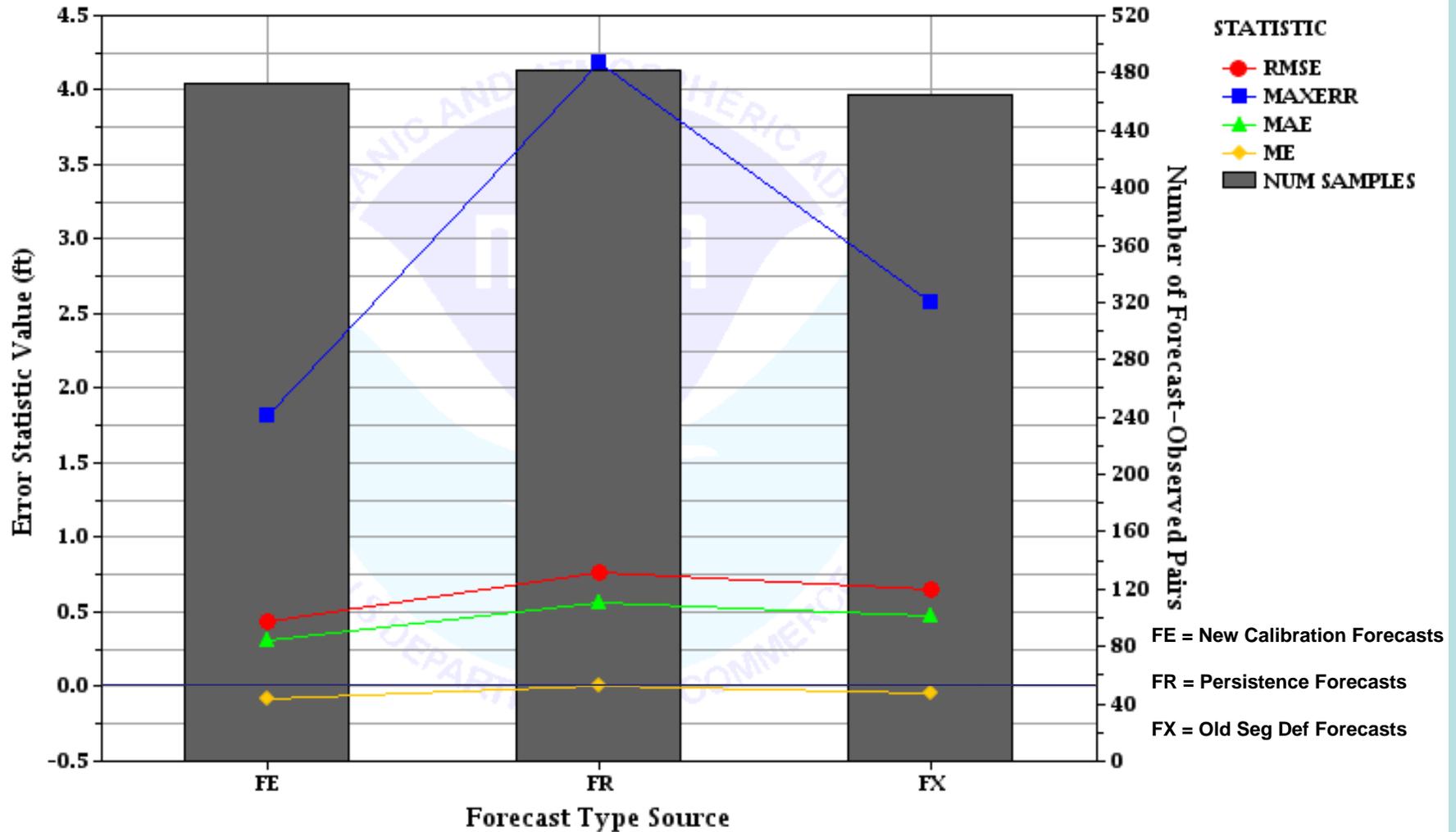
Lead times: 0 hours - 24 hours

Locations: YEAA2



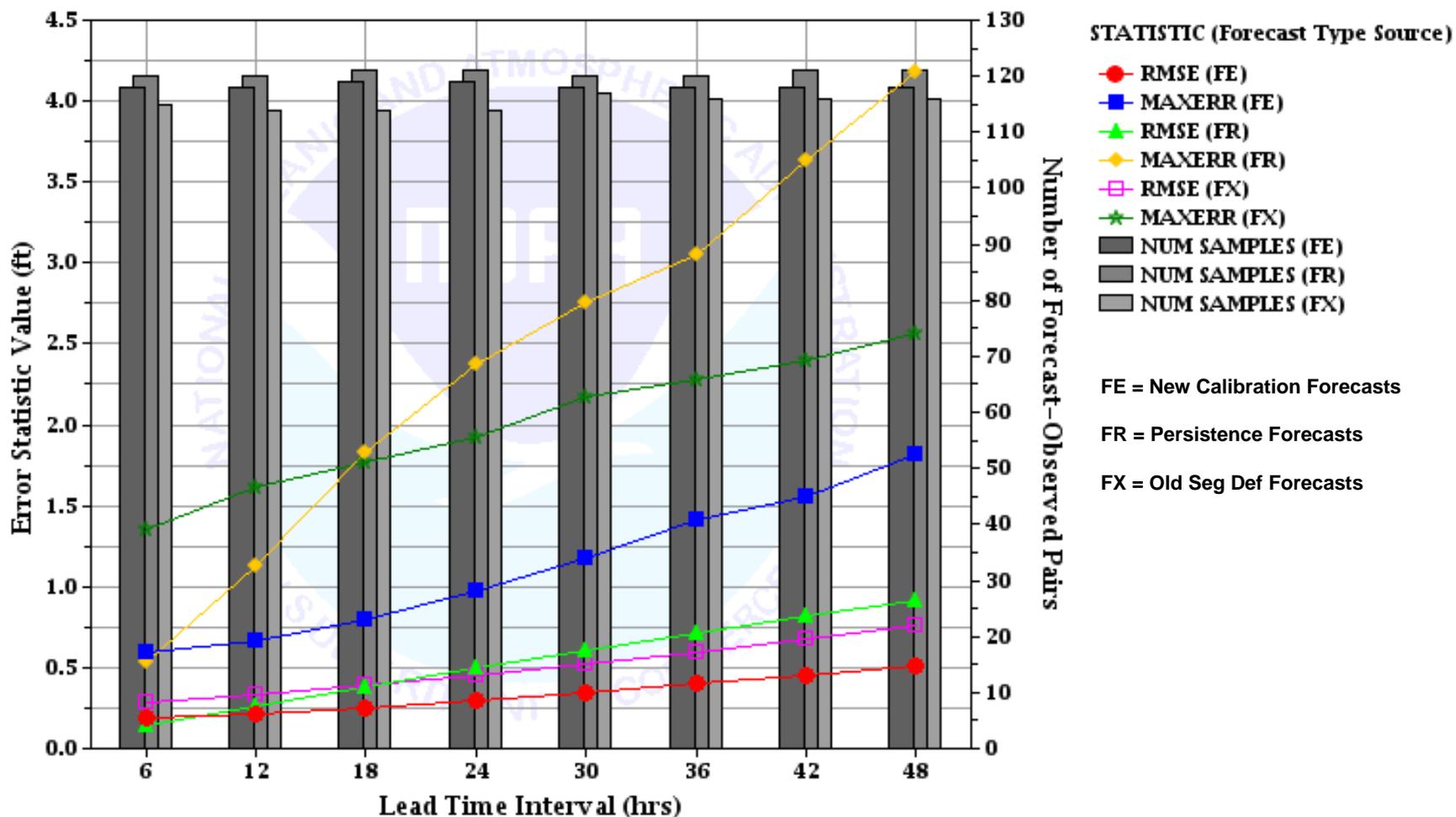
Error Statistics for 24 to 48 Hours by Type Source

Plot of Instantaneous Height Error Statistics against Forecast Type Source for APRFC
Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 23:59:59 GMT
Lead times: 24 hours - 48 hours
Locations: YEAA2



RMSE and MAXERR by Lead Time

Plot of Instantaneous Height Error Statistics against Leadtime Interval for APRFC
 Compared Over Forecast Type Source
 Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 23:59:59 GMT
 Lead times: 0 hours - 48 hours
 Locations: YEAA2



MAE and ME by Lead Time

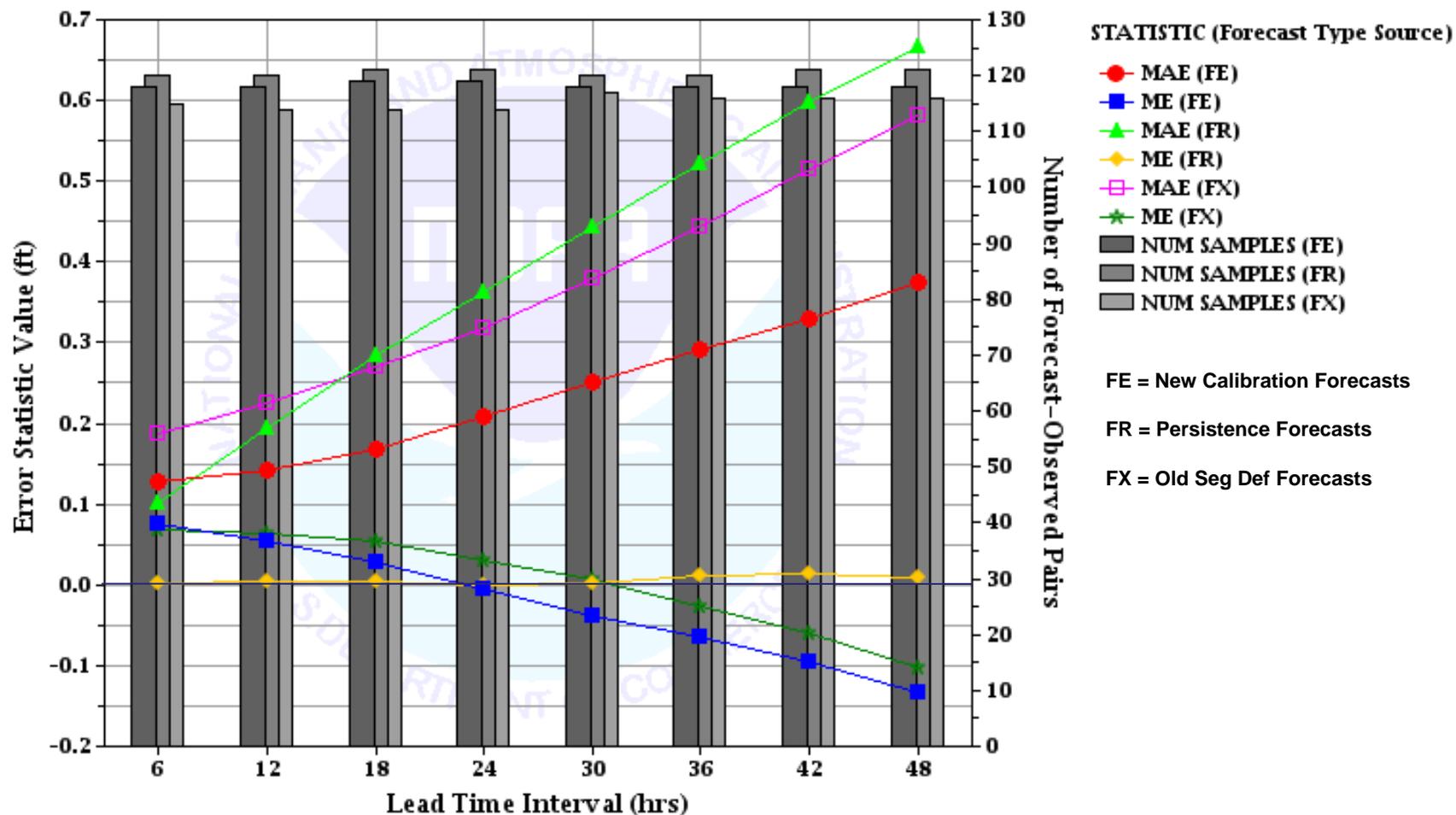
Plot of Instantaneous Height Error Statistics against Leadtime Interval for APRFC

Compared Over Forecast Type Source

Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 23:59:59 GMT

Lead times: 0 hours - 48 hours

Locations: YEAA2



RMSE by Month

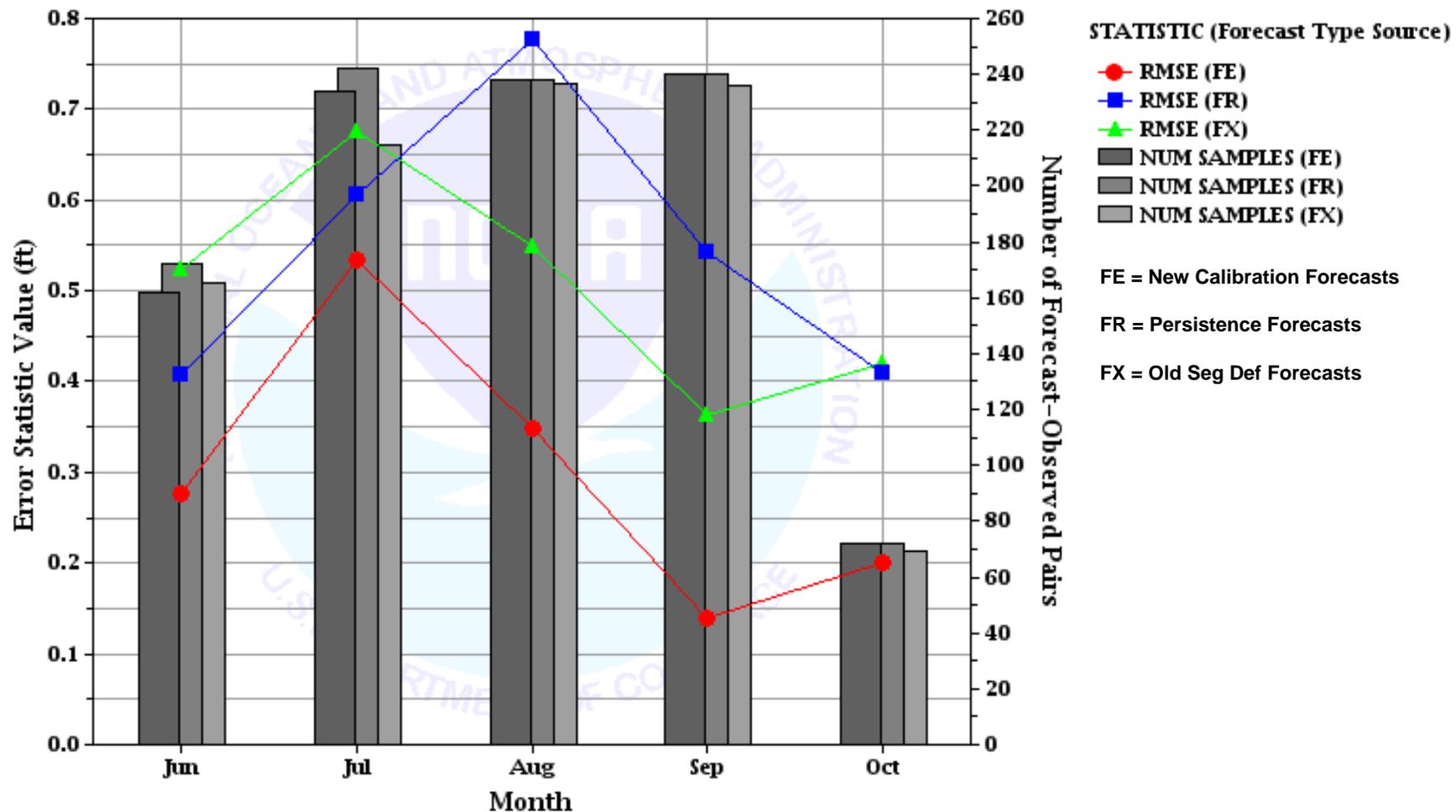
Plot of Instantaneous Height Error Statistics against Analysis Interval for APRFC

Compared Over Forecast Type Source

Time Period: 2008-06-09 12:00:00 GMT - 2008-10-09 23:59:59 GMT

Lead times: 0 hours - 48 hours

Locations: YEAA2



Conclusions

- Calibration with reanalysis data improved the forecasts overall, but particularly for longer lead times
- Adding QPF (next year) should improve the forecasts even more
- Forecaster familiarization with the new segment definitions improved over time and produced better overall forecasts