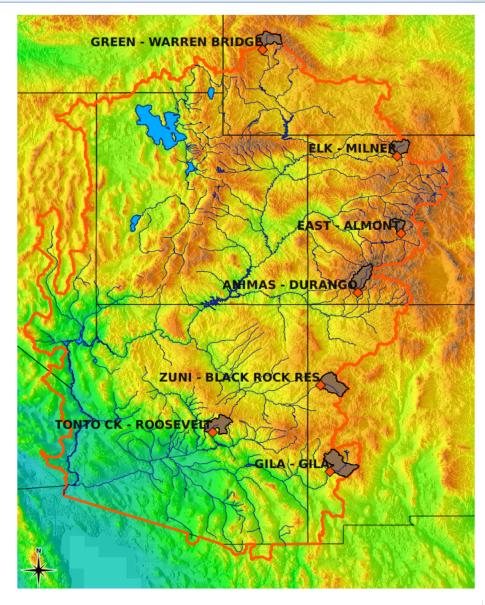
Including Meteorological Models in Extended Streamflow Prediction (ESP)





Presentation Overview

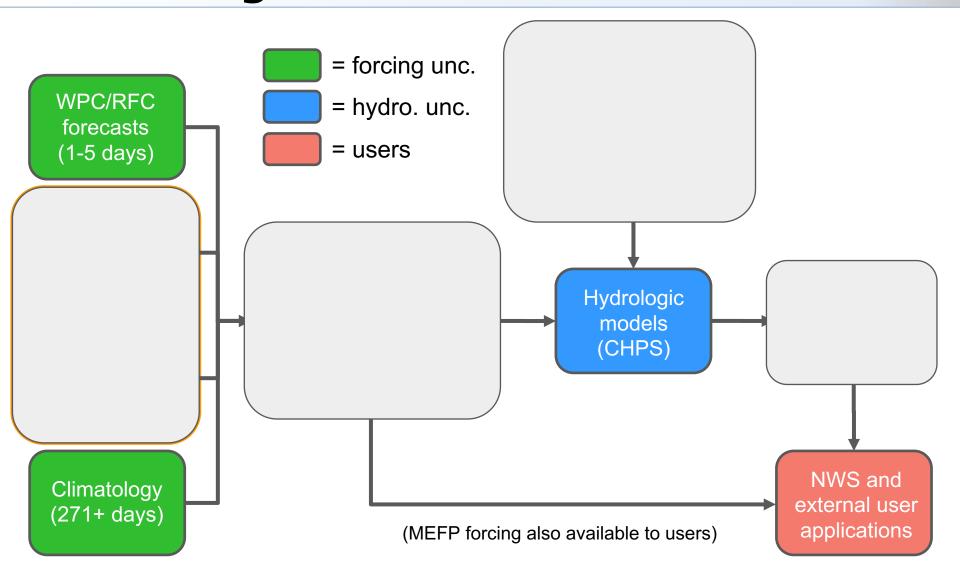
- Inputs to ESP in
- GEFS Temperature and Precipitation Skill
- CFSv2 Temperature and Precipitation Skill
- Reforecast verification plots
 - plus current year evolution plot
- Questions







Meteorological Forecasts in ESP

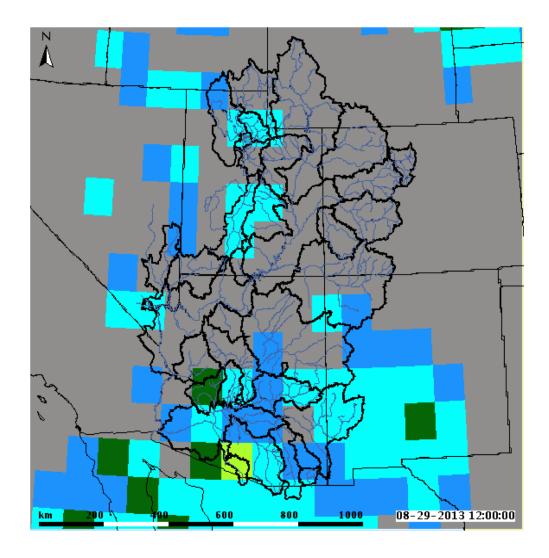






Global Ensemble Forecast System (GEFS)

- short term forecast 15 days out
- precipitation and temperature max/min
- comes as gridded product
- 1 degree resolution
- use the average of the GEFS 20 traces
- reforecasts available for 1985-2010
- http://www.emc.ncep.noa a.gov/GEFS/faq.php

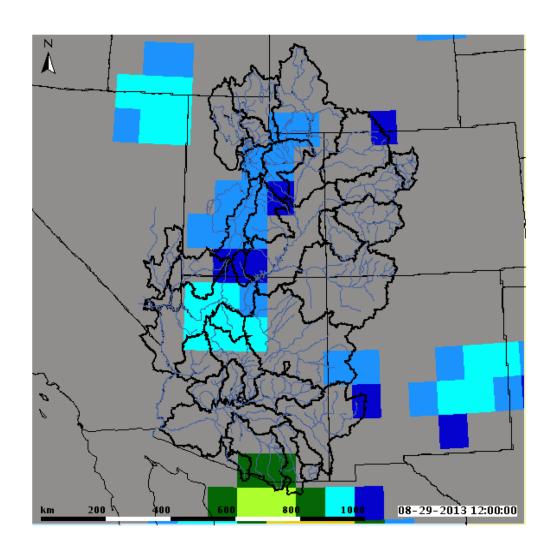






Climate Forecast System (CFSv2)

- long term forecast out 9 months (270 days)
- precipitation and temperature max/min
- comes as gridded product
- 1 degree resolution
- use the lagged ensemble mean
- reforecasts available for 1982-2011
- http://cfs.ncep.noaa.gov/c fsv2.info



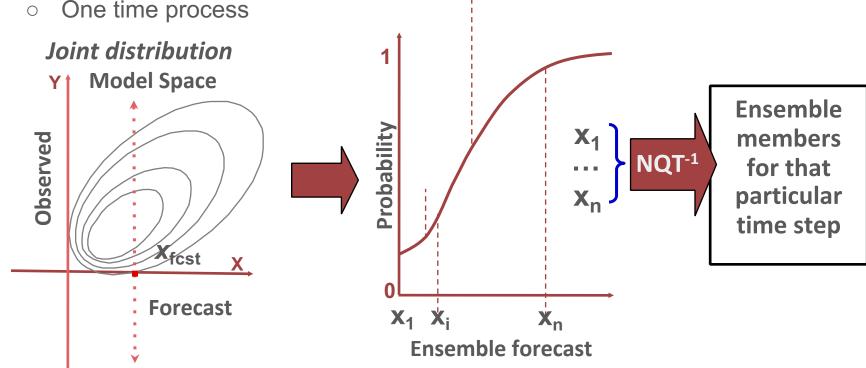




GEFS and CFSv2 Processor (MEFP)

- Meteorological Ensemble Forecast Processor
 - Historical Observation, precipitation and max/min temperature, are statically related to GEFS and CFSv2 hindcasts to develop a bivariate relationship

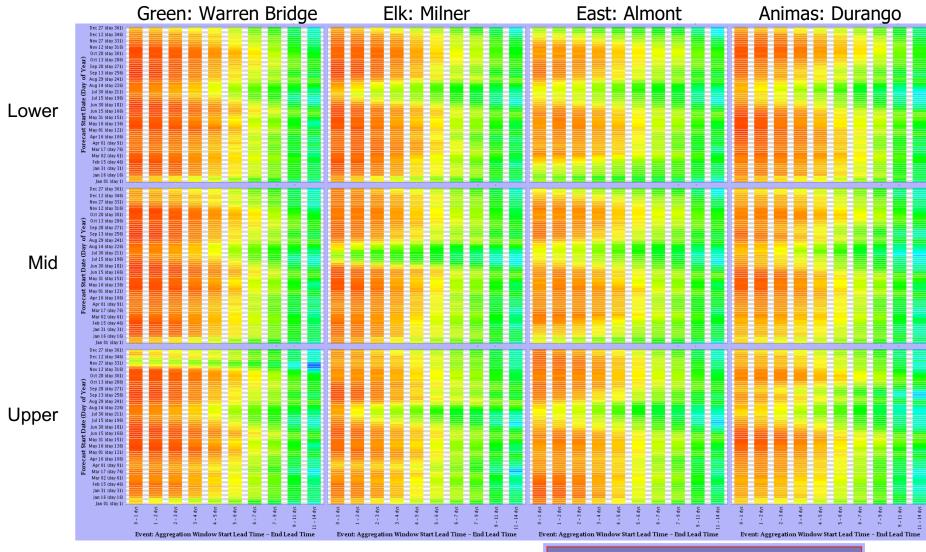
Parameters used in forecast process
 One time process



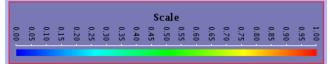




GEFS Temperature MAX Skill

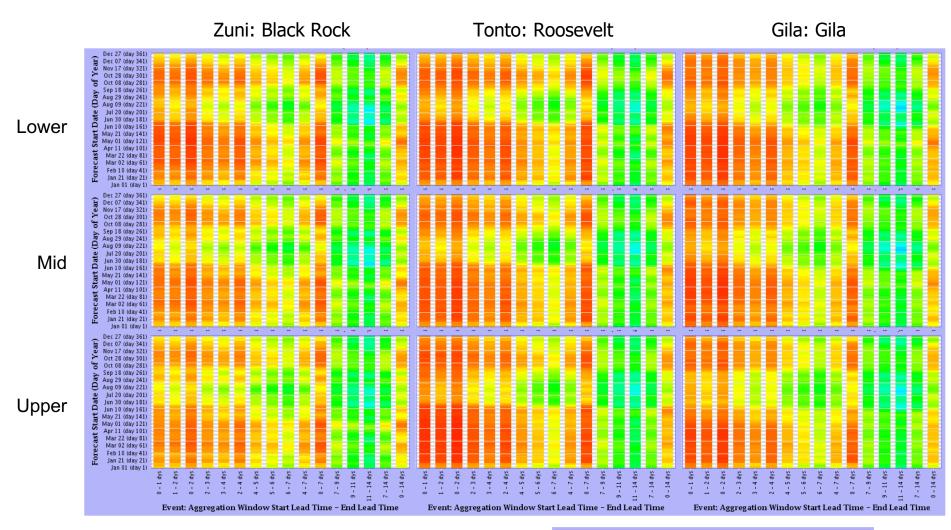




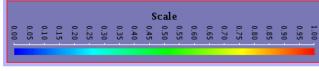




GEFS Temperature MAX Skill

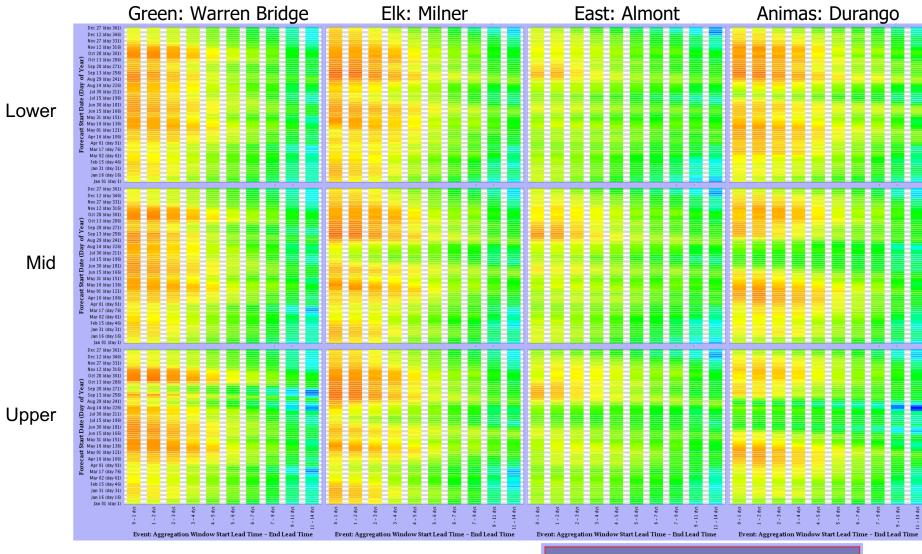




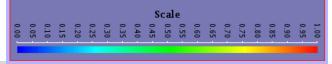




GEFS Temperature MIN Skill

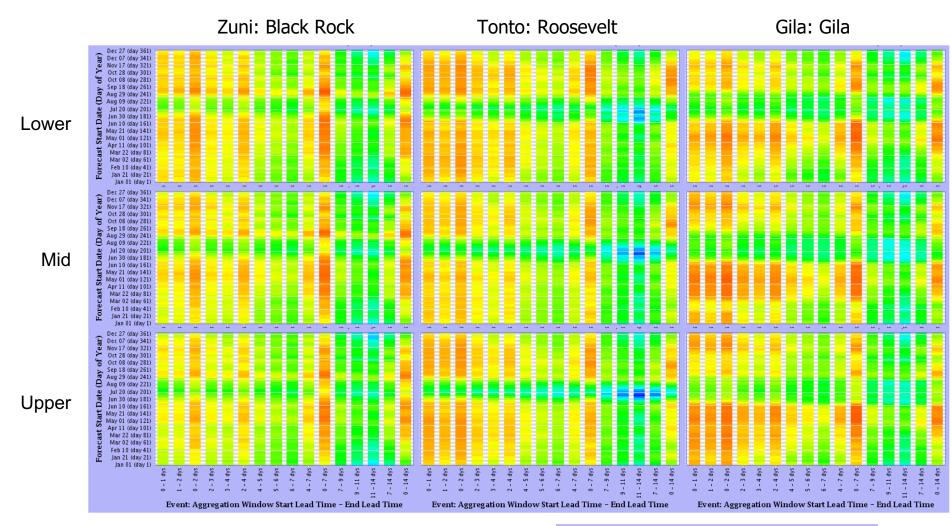




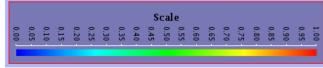




GEFS Temperature MIN Skill

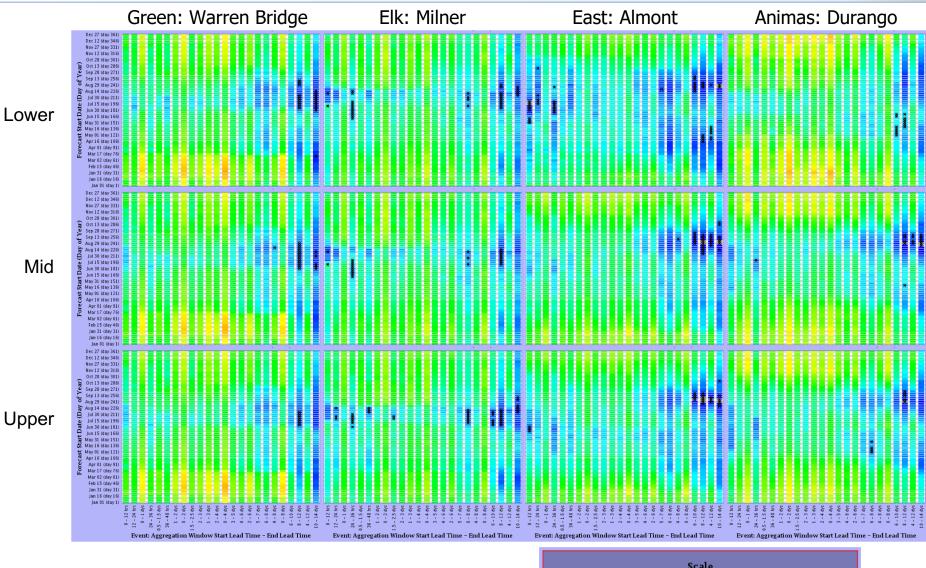








GEFS Precipitation Skill

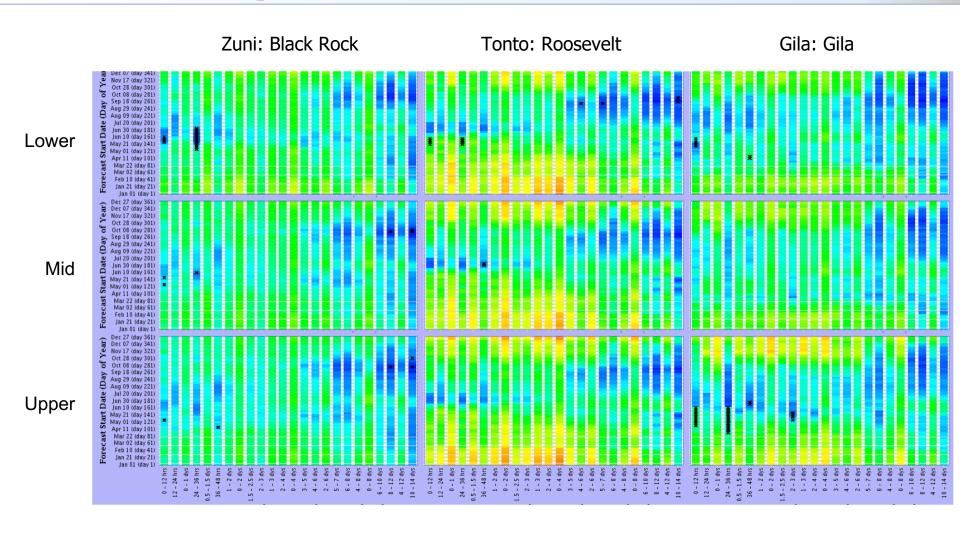








GEFS Precipitation Skill

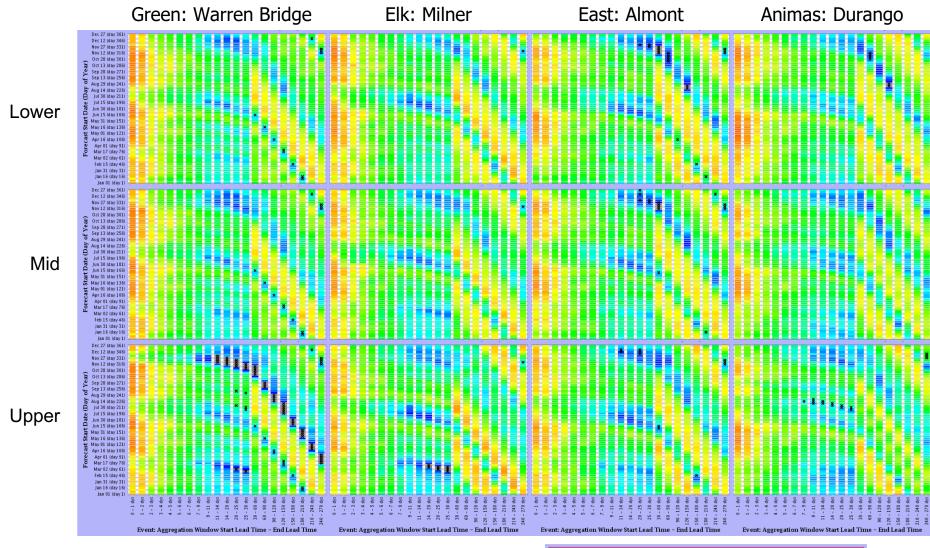








CFSv2 Temperature MAX Skill



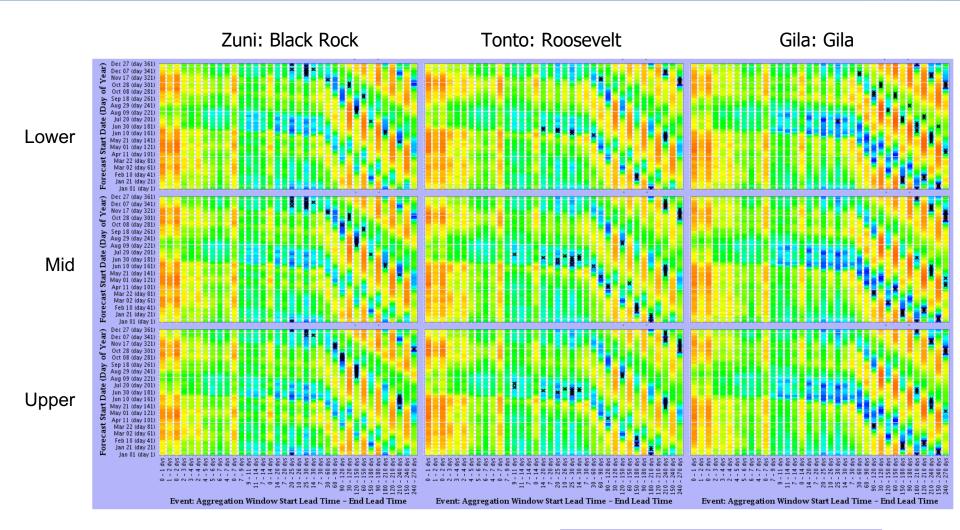






13

CFS Temperature MAX Skill

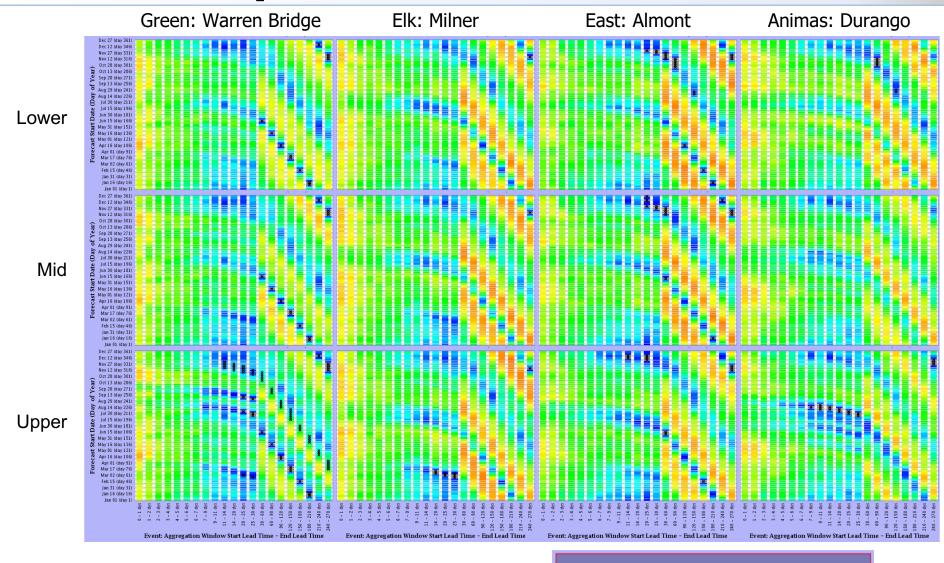




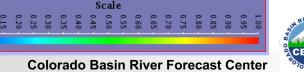




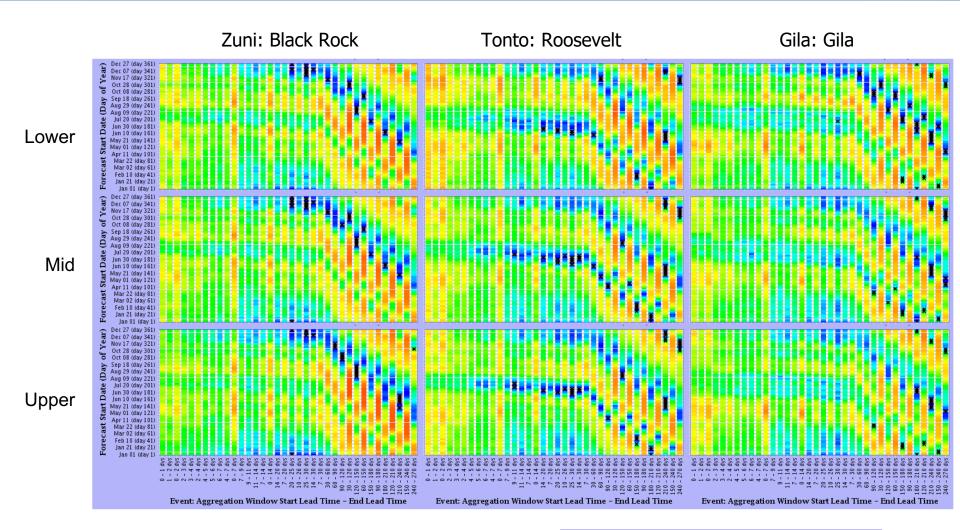
CFSv2 Temperature MIN Skill







CFS Temperature MIN Skill

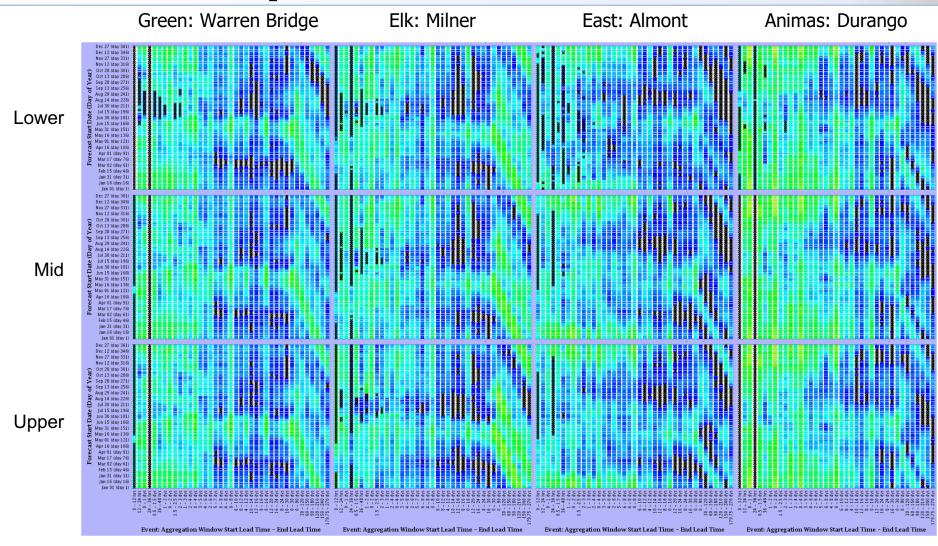








CFSv2 Precipitation Skill









CFS Precipitation Skill

Gila: Gila Zuni: Black Rock Tonto: Roosevelt Dec 27 (day 361)
Dec 07 (day 341)
Nov 17 (day 321)
Oct 28 (day 301)
Oct 08 (day 281)
Sep 18 (day 261)
Aug 29 (day 261)
Jul 20 (day 201)
Jun 30 (day 181)
Jun 10 (day 161)
May 21 (day 141)
May 01 (day 121)
May 01 (day 121) Lower D Jun 10 (day 11)

Jun 10 (day 11)

Jun 10 (day 11)

Jun 10 (day 11) Dec 27 (day 361) Dec 07 (day 341) Dec 07 (day 341)
Nov 17 (day 321)
Oct 28 (day 301)
Oct 08 (day 281)
Sep 18 (day 261)
Aug 29 (day 241)
Aug 09 (day 221)
Jul 20 (day 221)
Jun 30 (day 181)
Jun 30 (day 181)
Jun 10 (day 161)
May 21 (day 141)
May 21 (day 141) Mid Jun 10 (day 141)

May 21 (day 101)

May 22 (day 81)

Mar 22 (day 81)

Feb 10 (day 41)

Jan 21 (day 21) Jan 01 (day 1)

Dec 27 (day 361)

Dec 27 (day 361)

Oct 08 (day 281)

Oct 08 (day 281)

Oct 08 (day 281)

Aug 09 (day 241)

Jun 21 (day 301)

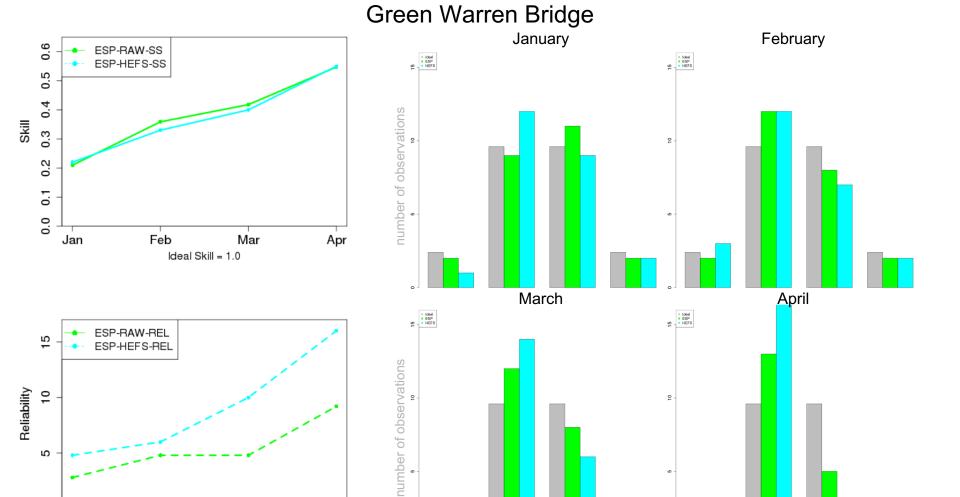
Jun 21 (day 301) Jul 20 (day 221) Jun 30 (day 181) Jun 10 (day 161) May 21 (day 141) Upper May 21 (day 141)
May 01 (day 121)
Apr 11 (day 101)
Mar 22 (day 81)
Mar 02 (day 61)
Feb 10 (day 41)
Jan 21 (day 21) 10 - 12 12 - 11 12 - 2 16 - 2 16 - 3 16 - 3 30 - 1 120 - 1 120 - 2 150 - 2 Event: Aggregation Window Start Lead Time - End Lead Time Event: Aggregation Window Start Lead Time - End Lead Time Event: Aggregation Window Start Lead Time - End Lead Time







April - July Volume HEFS Skill





0

Jan

Ideal Relability = 0

Mar

Apr

Feb

90-50%

<90%

50-10%

>10%

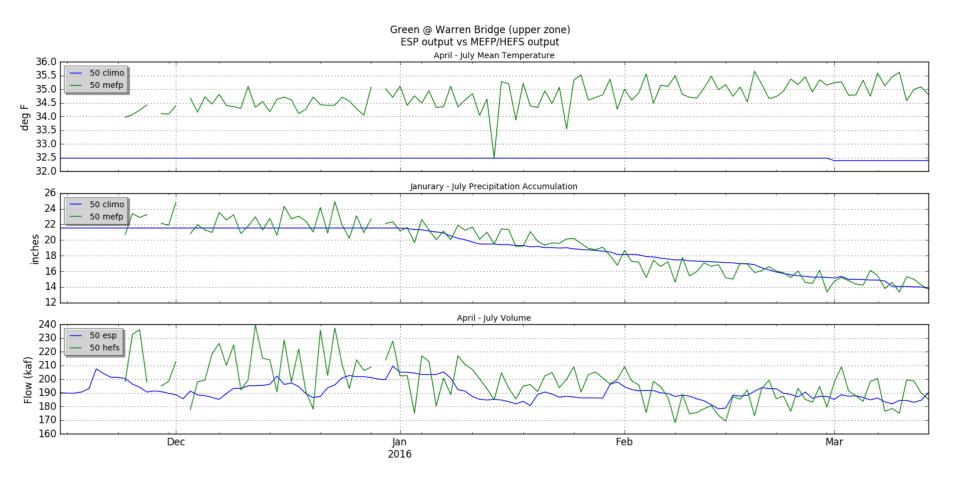
90-50%

<90%

50-10%

>10%

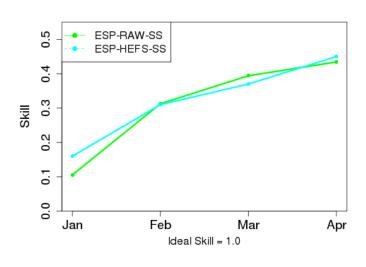
ESP Evolution Climatology vs CFSv2

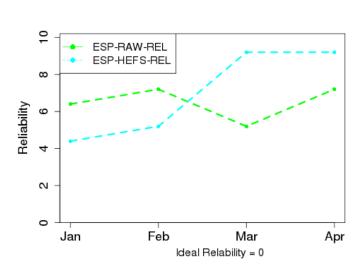


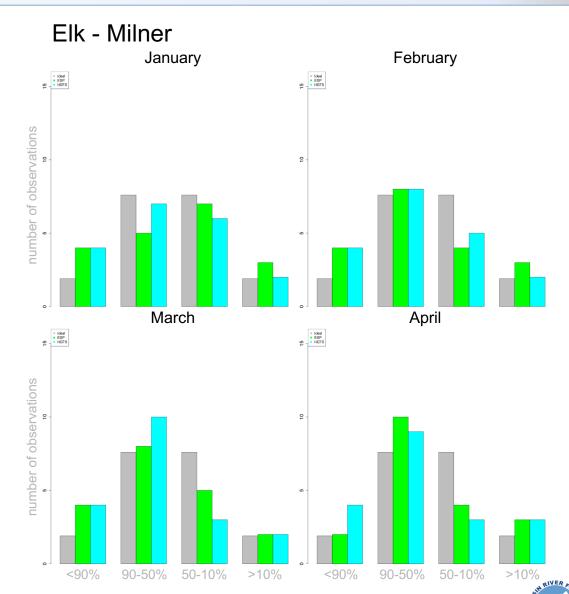




April - July Volume HEFS Skill

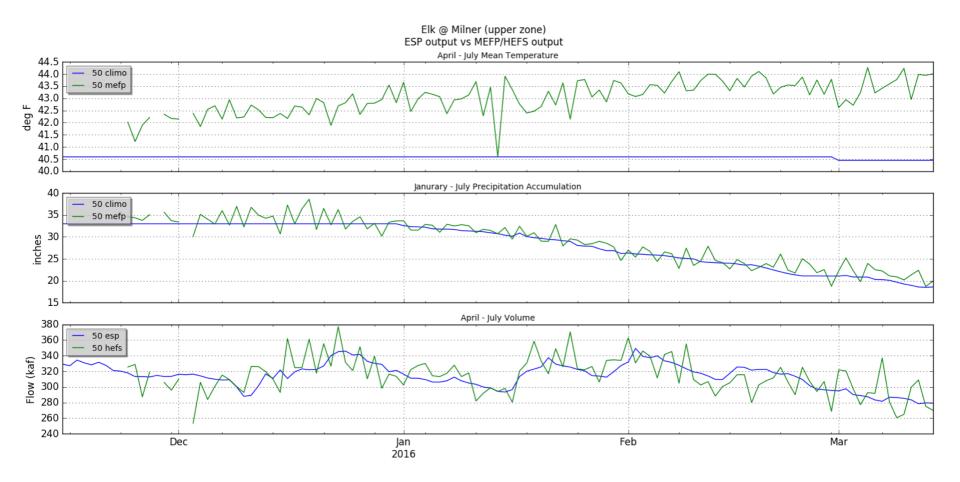








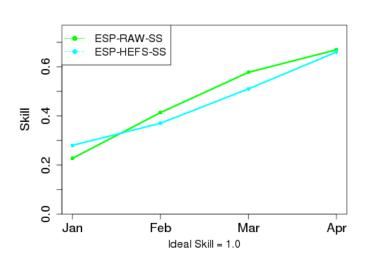
ESP Evolution Climatology vs CFSv2

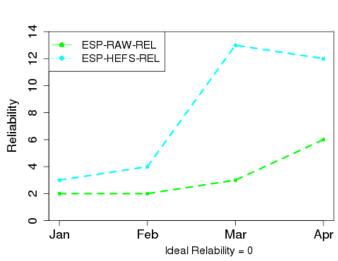


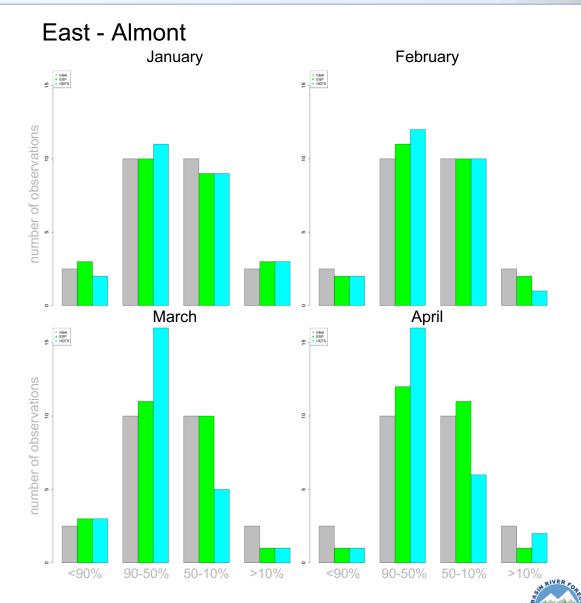




April - July Volume HEFS Skill

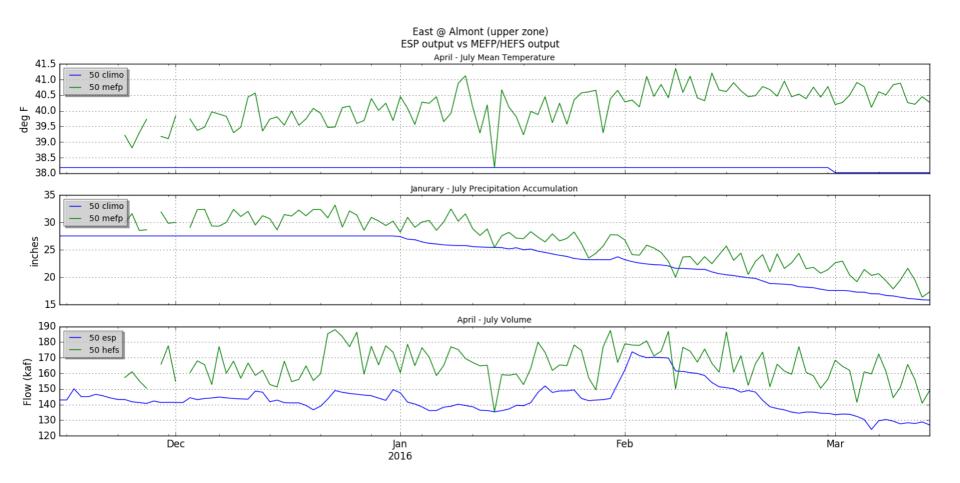








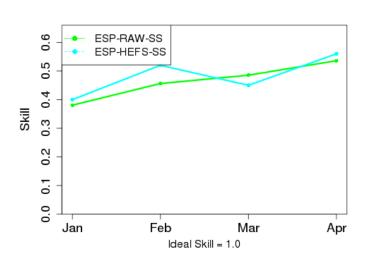
ESP Evolution Climatology vs CFSv2

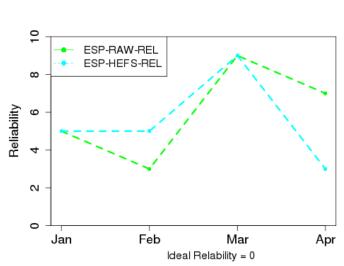


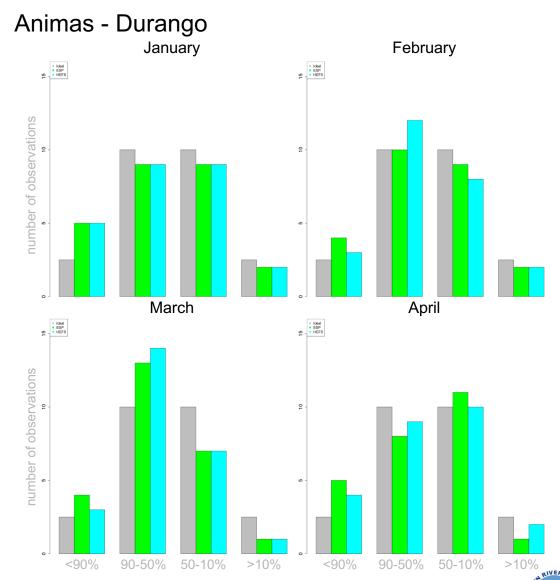




April - July Volume HEFS Skill

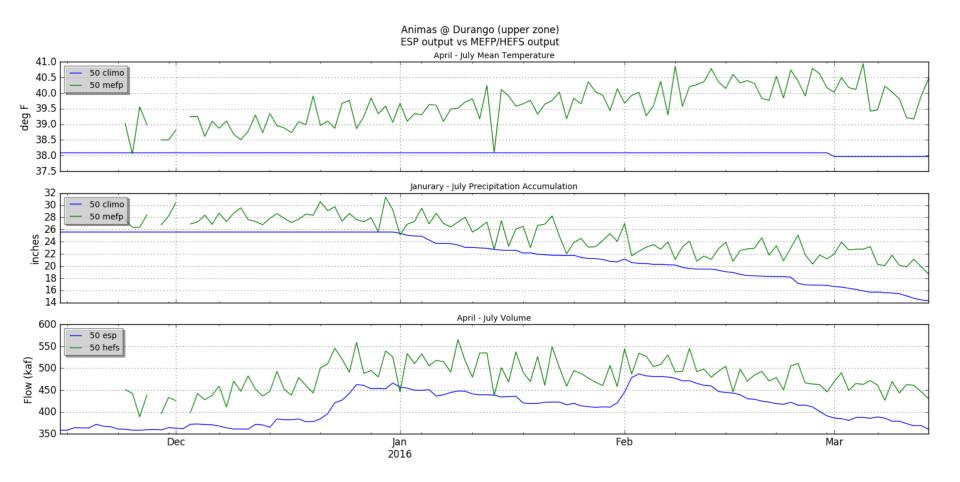








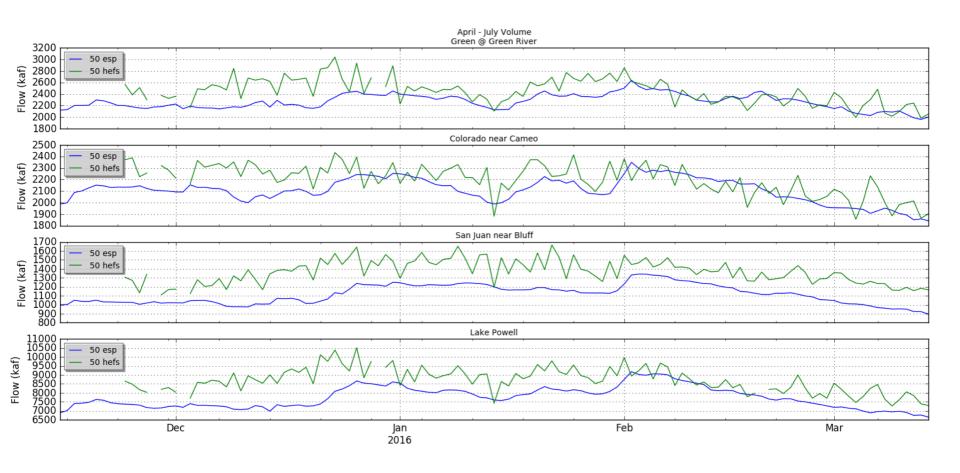
ESP Evolution Climatology vs CFSv2







ESP Evolution Climatology vs CFSv2







Questions



