CPC's 3-month Outlook

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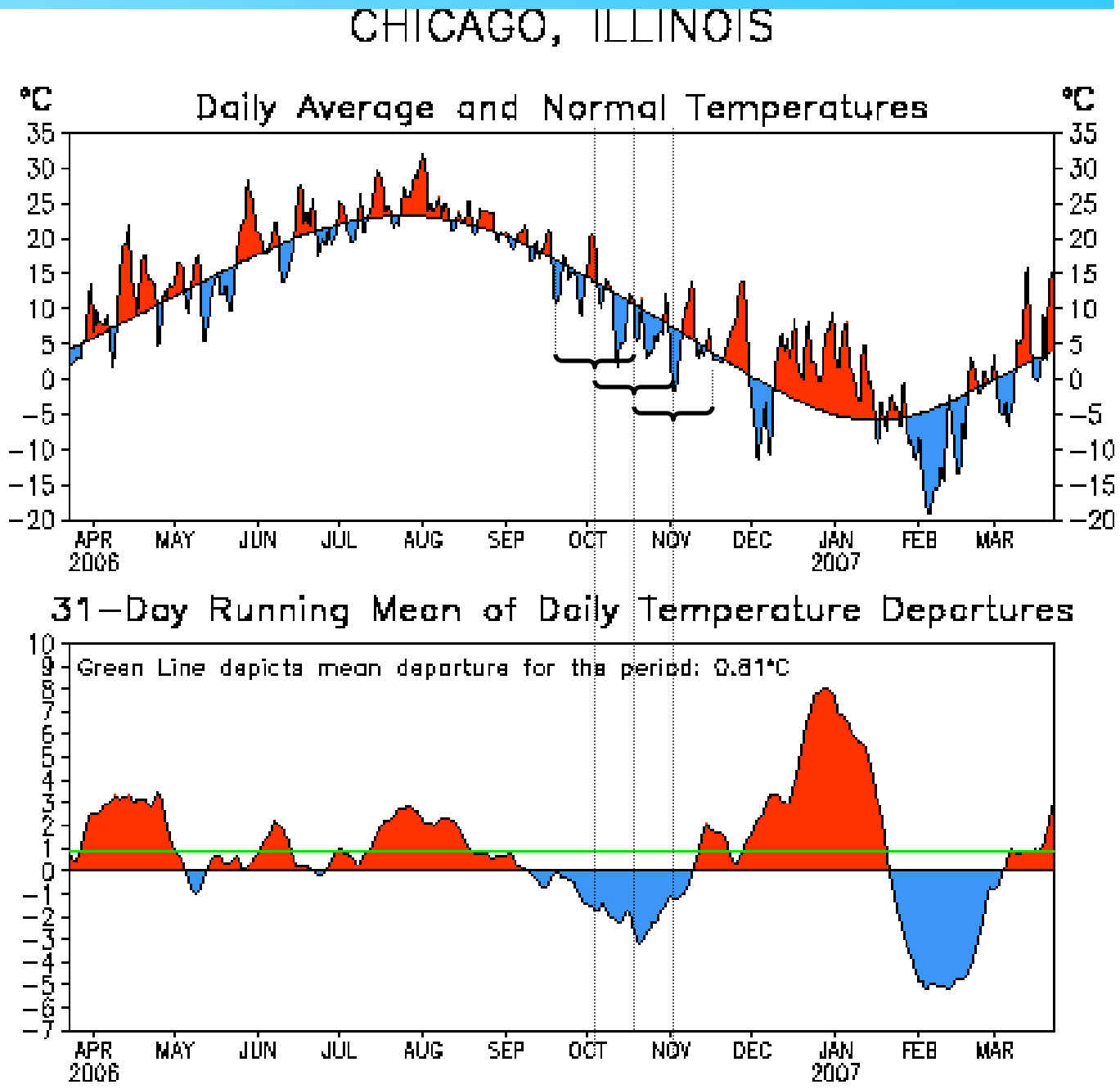
Outline

- Scientific basis in low-frequency variability
- Forecast preparation system
- Factors affecting the forecast
- Regional skill,1995-2005
- Formulation of the forecast
- Recent skill improvements
- Future - New variables, products, based on user requirements.

The Climate-Weather Connection

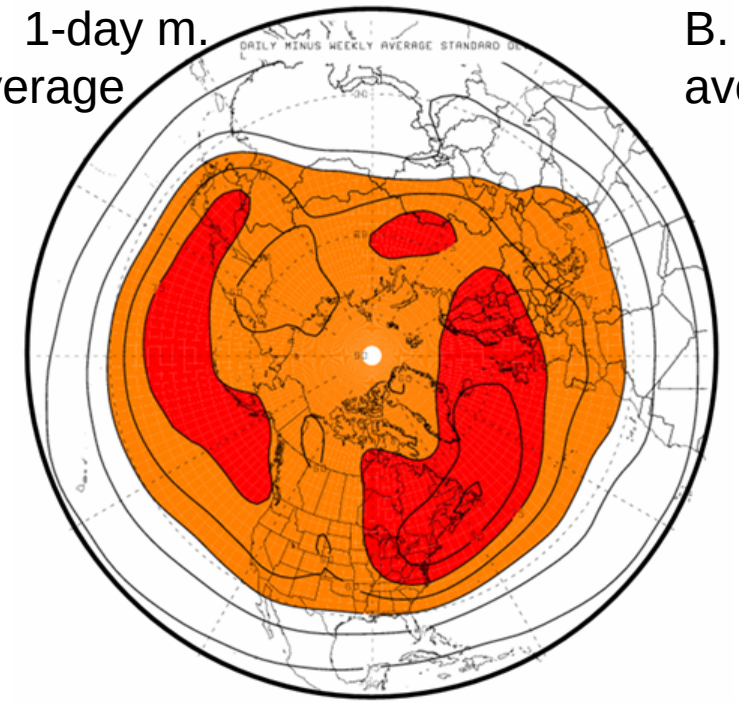
Moving averages reveal different features for different averaging periods.

By using different averaging periods and subtracting the new time series, we can isolate different time scales.

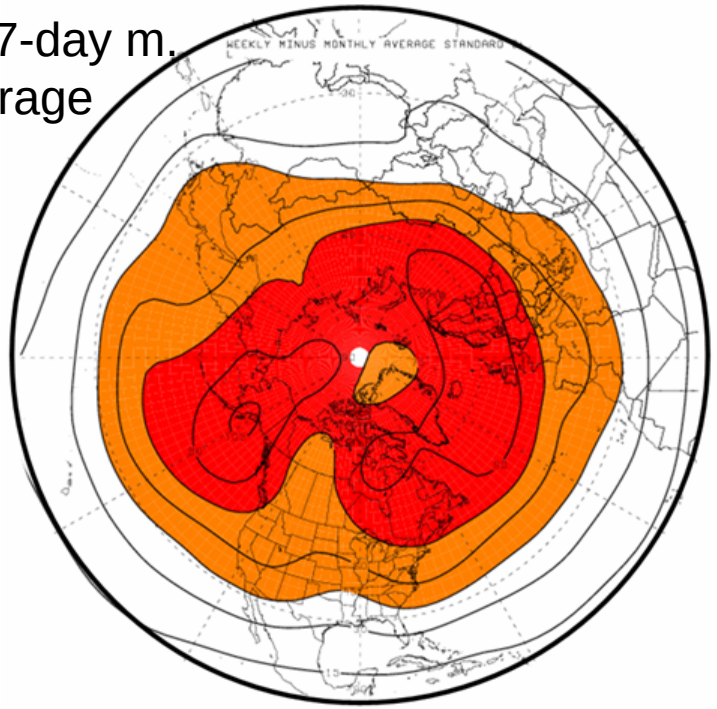


Typical variability (standard deviation) of 26-years of wintertime, daily, 500-hPa height data

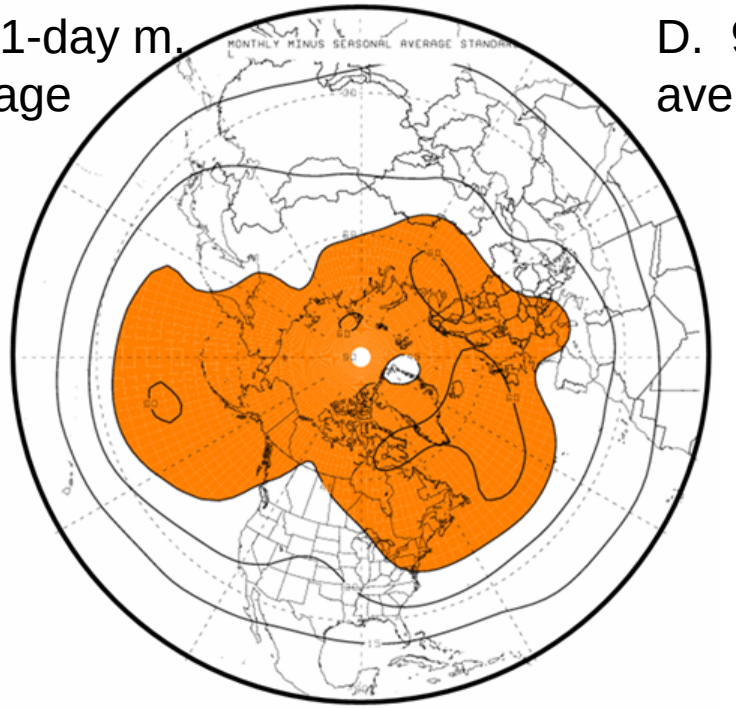
A. 1-day m. average



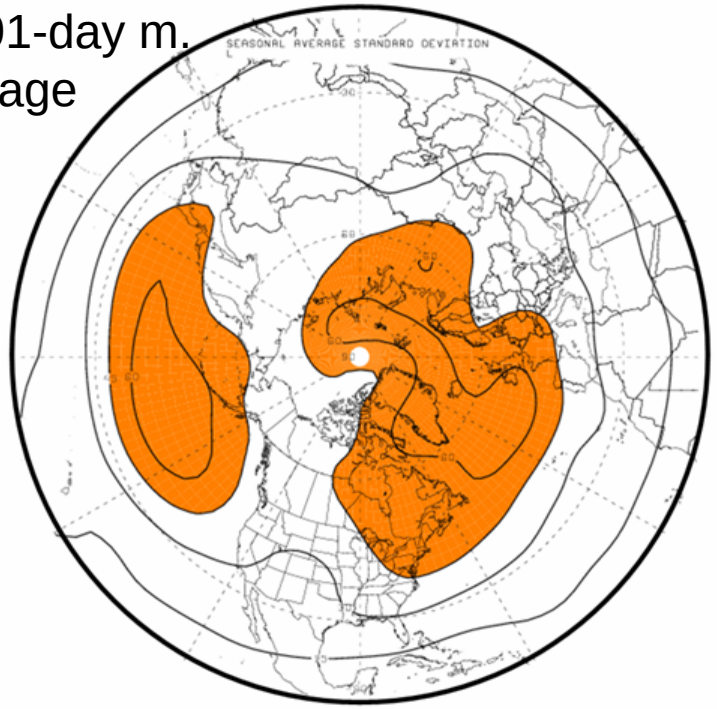
B. 7-day m. average



C. 31-day m. average



D. 91-day m. average

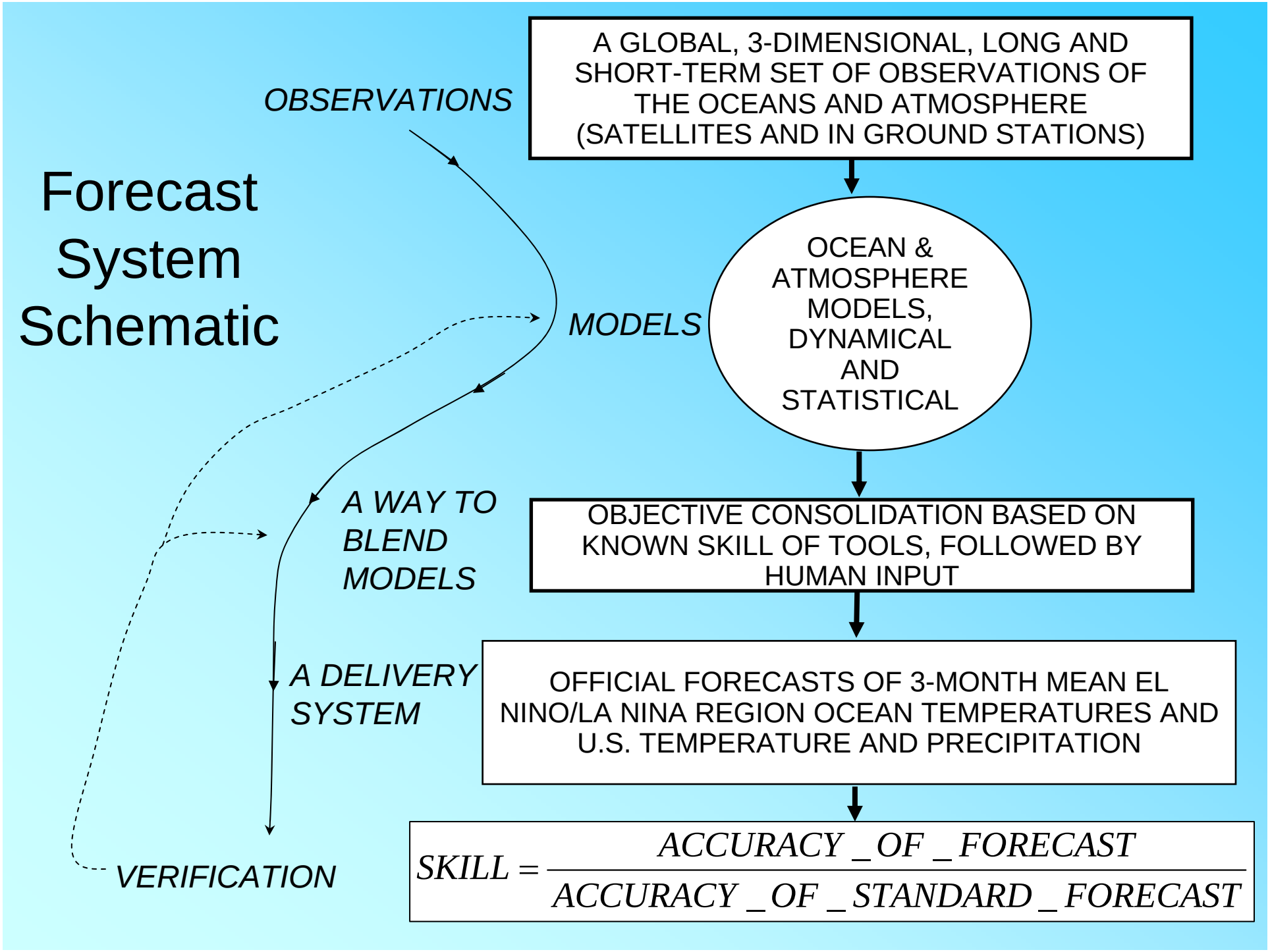


Source of Signal for Climate Forecasts

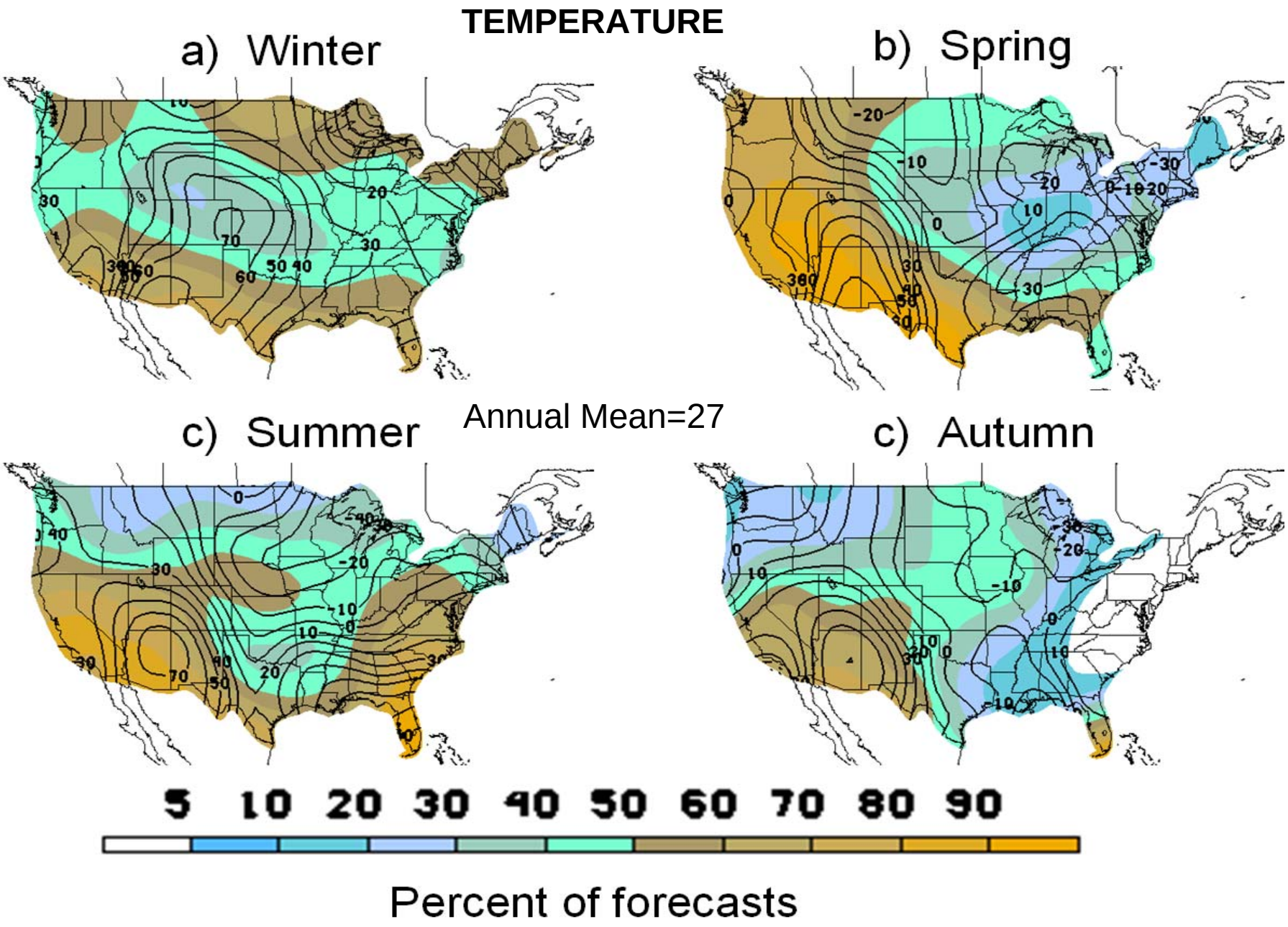
- Strong trends in temperature.
- El Niño and La Niña, other phenomena
- Soil moisture
- Near-coastal ocean temperatures
- Improvements over climatology (skill) of about

27%, for temperature, and 12%, for precipitation, on average, over 1995-2005.

Forecast System Schematic



Lines=% improvement over random forecasts, s-((c-e)/(t-e))*100



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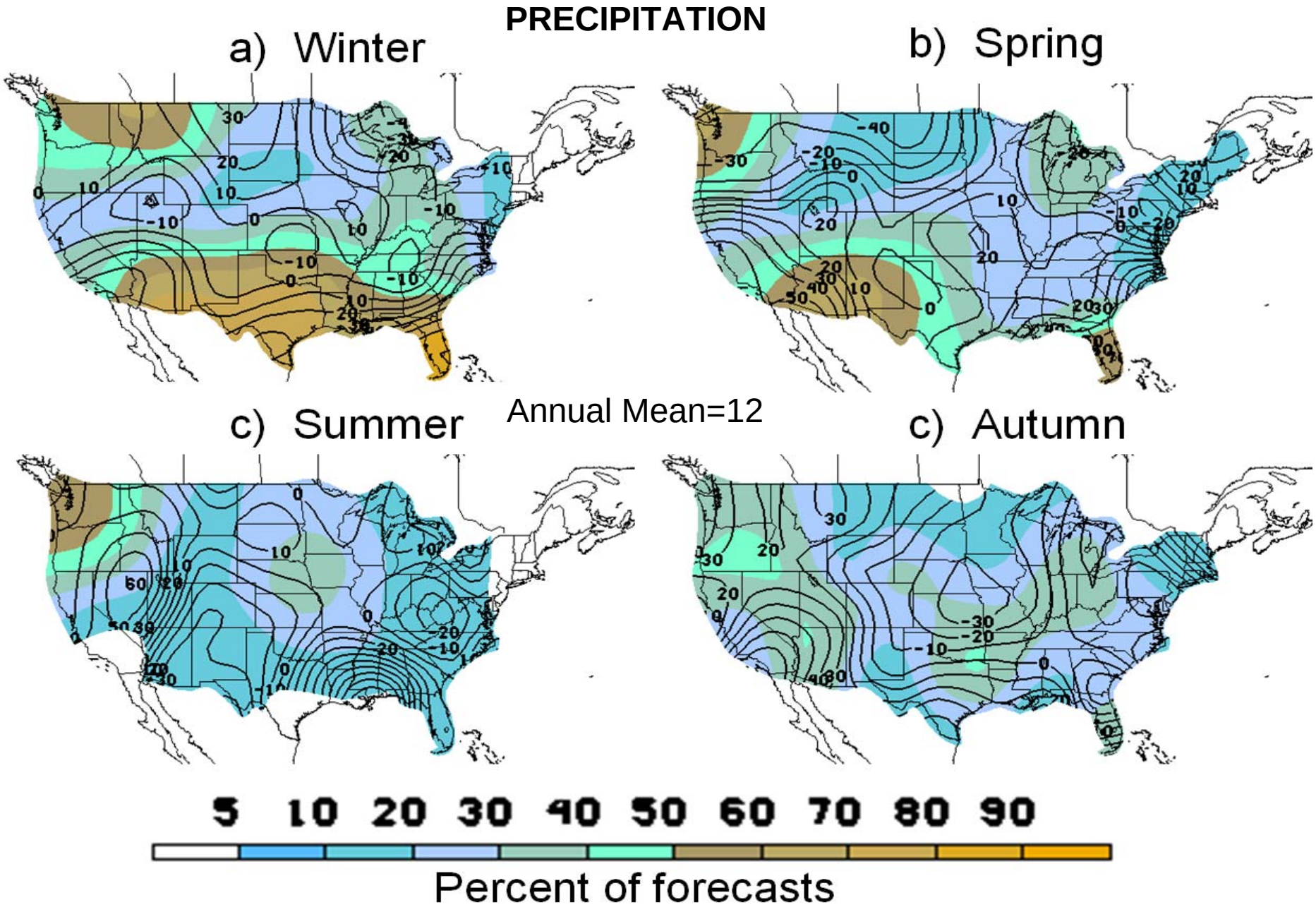
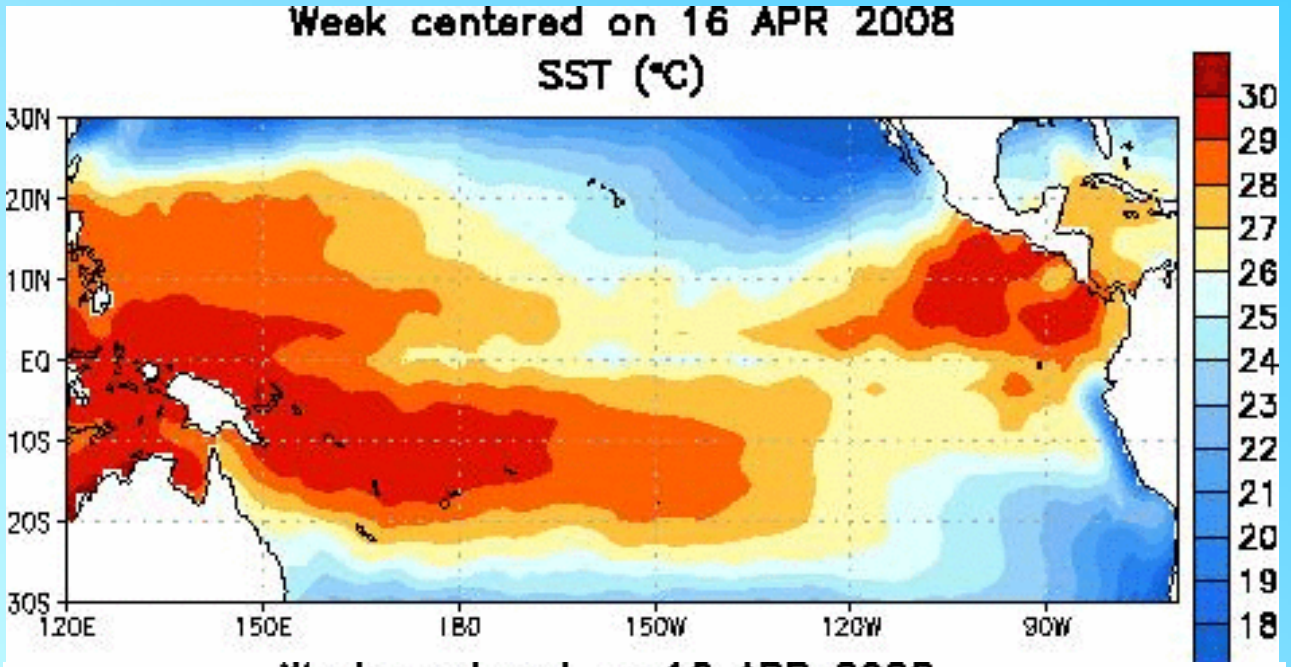
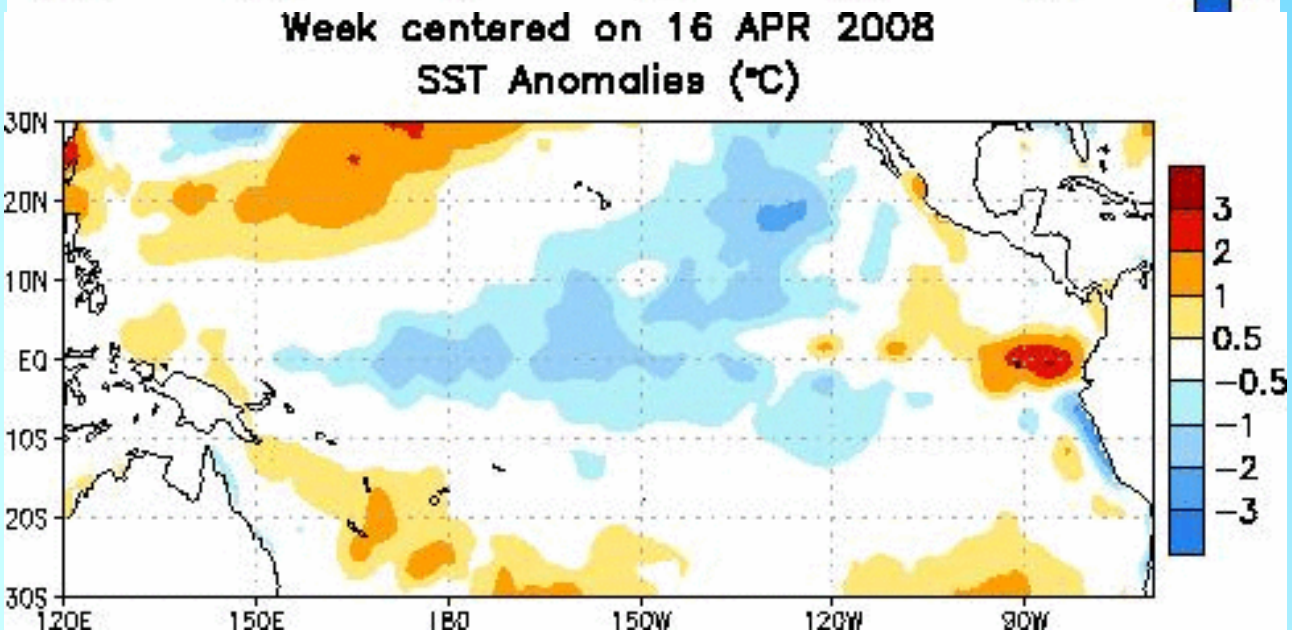


Factors Affecting the Aug-Sep-Oct 3-Month Forecast

Demise of La Nina

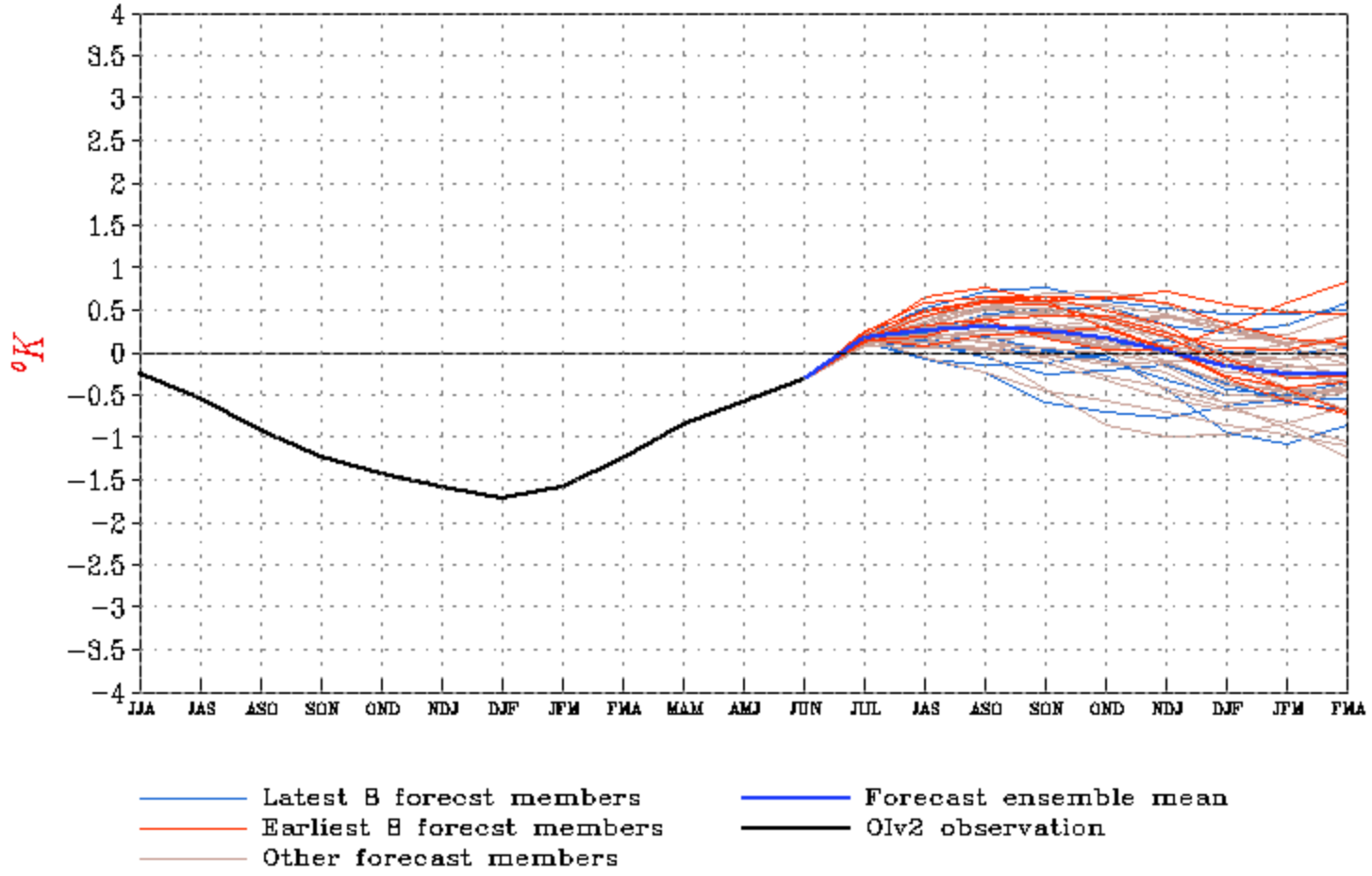




NWS/NCEP

Last update: Sun Jul 13 2008
Initial conditions: 2Jul2008–11Jul2008

Forecast *Nino3.4* SST anomalies from CFS



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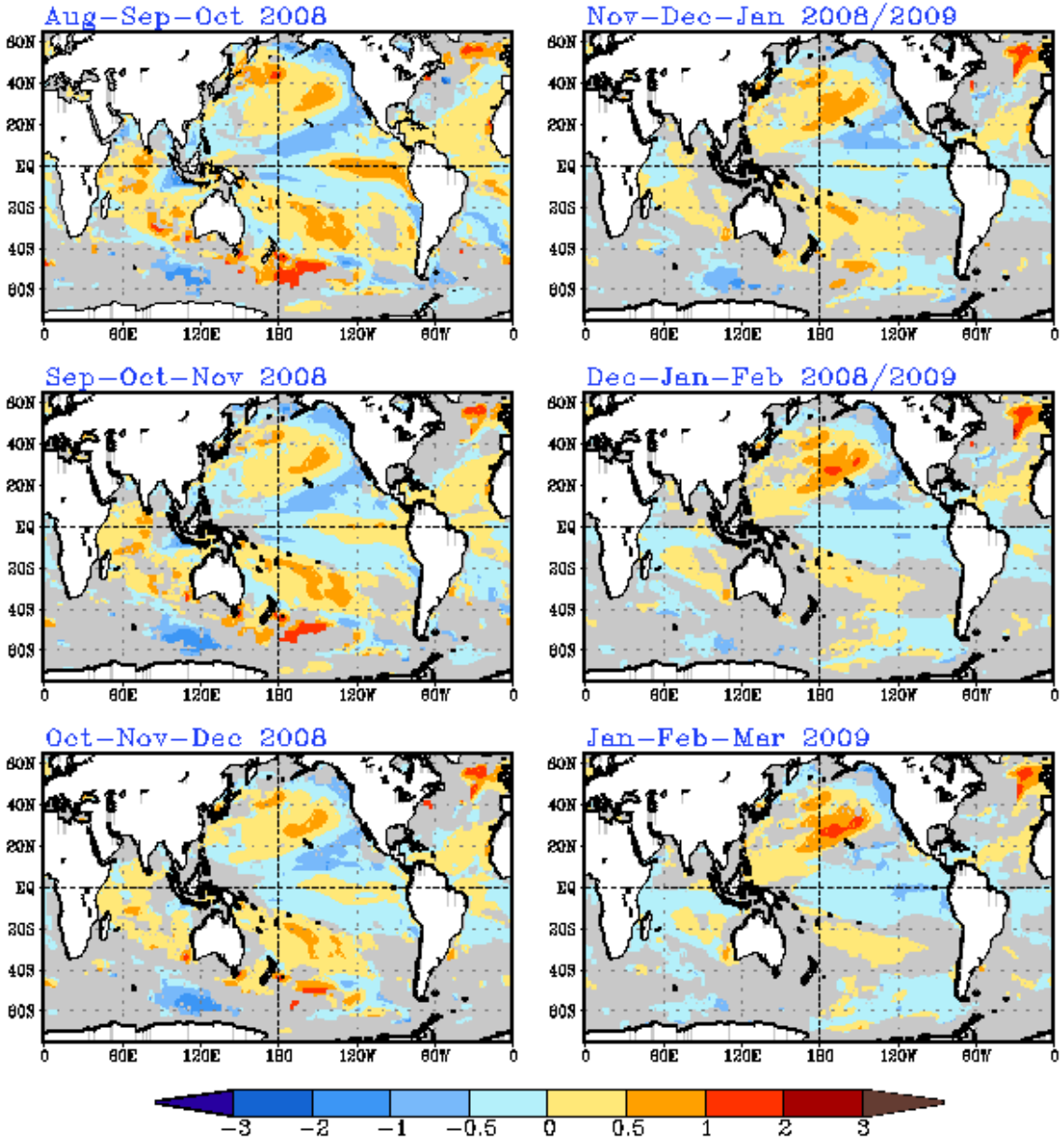
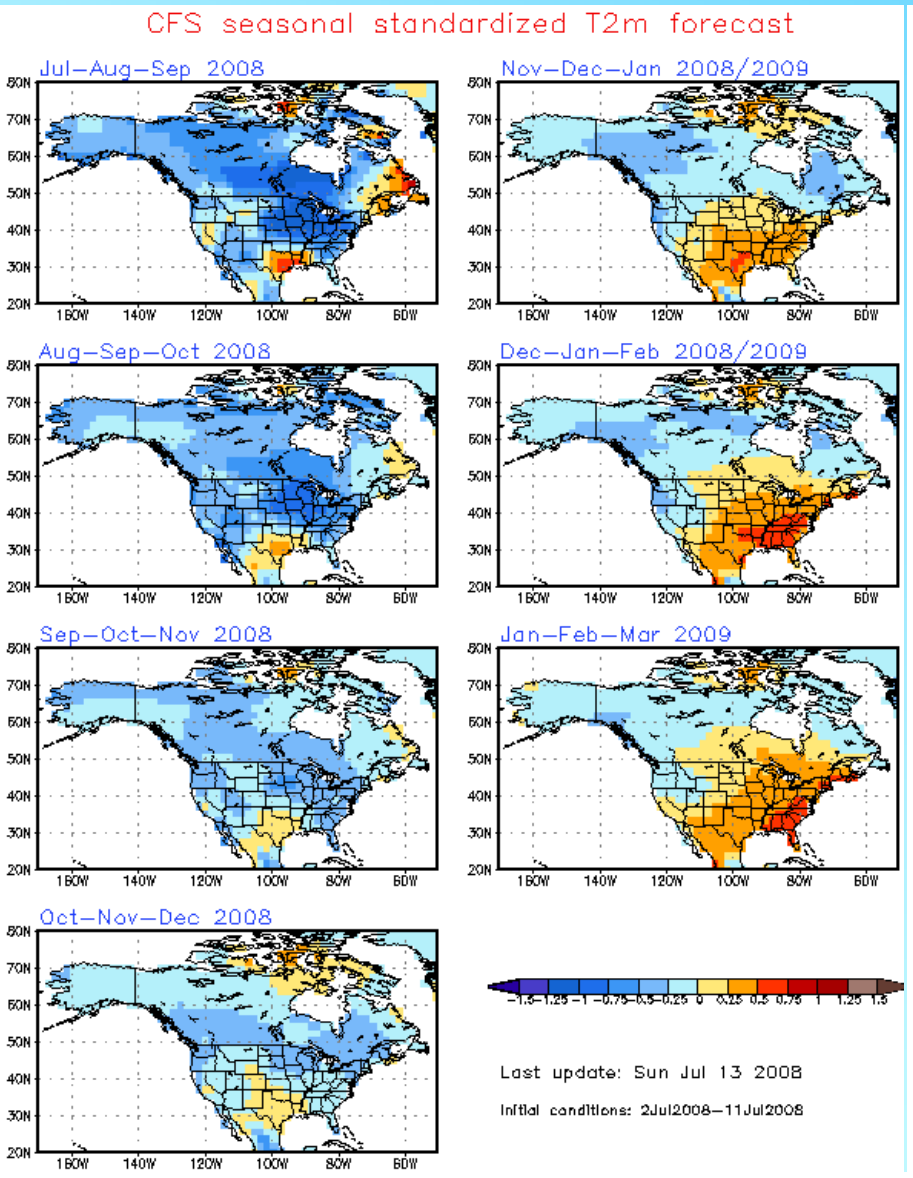
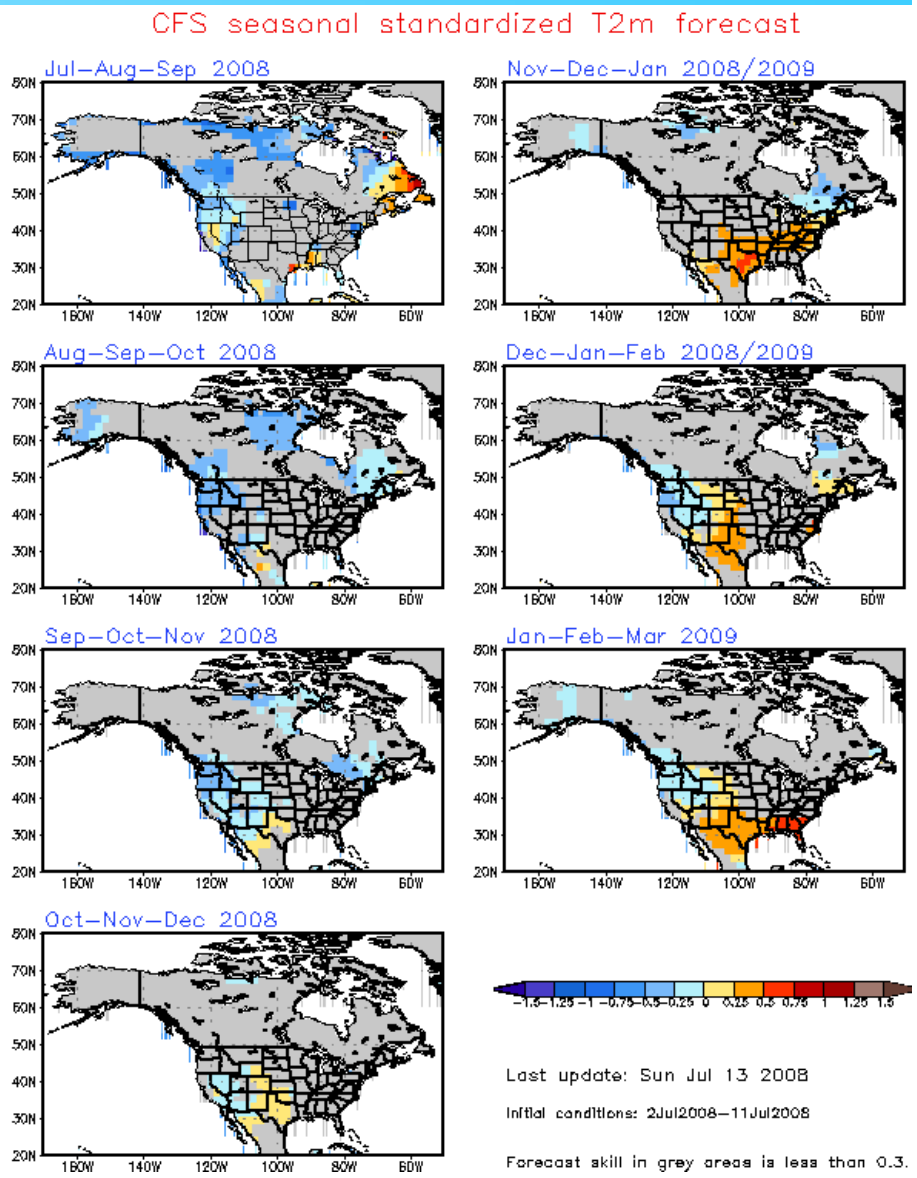
CFS seasonal SST forecast (K)



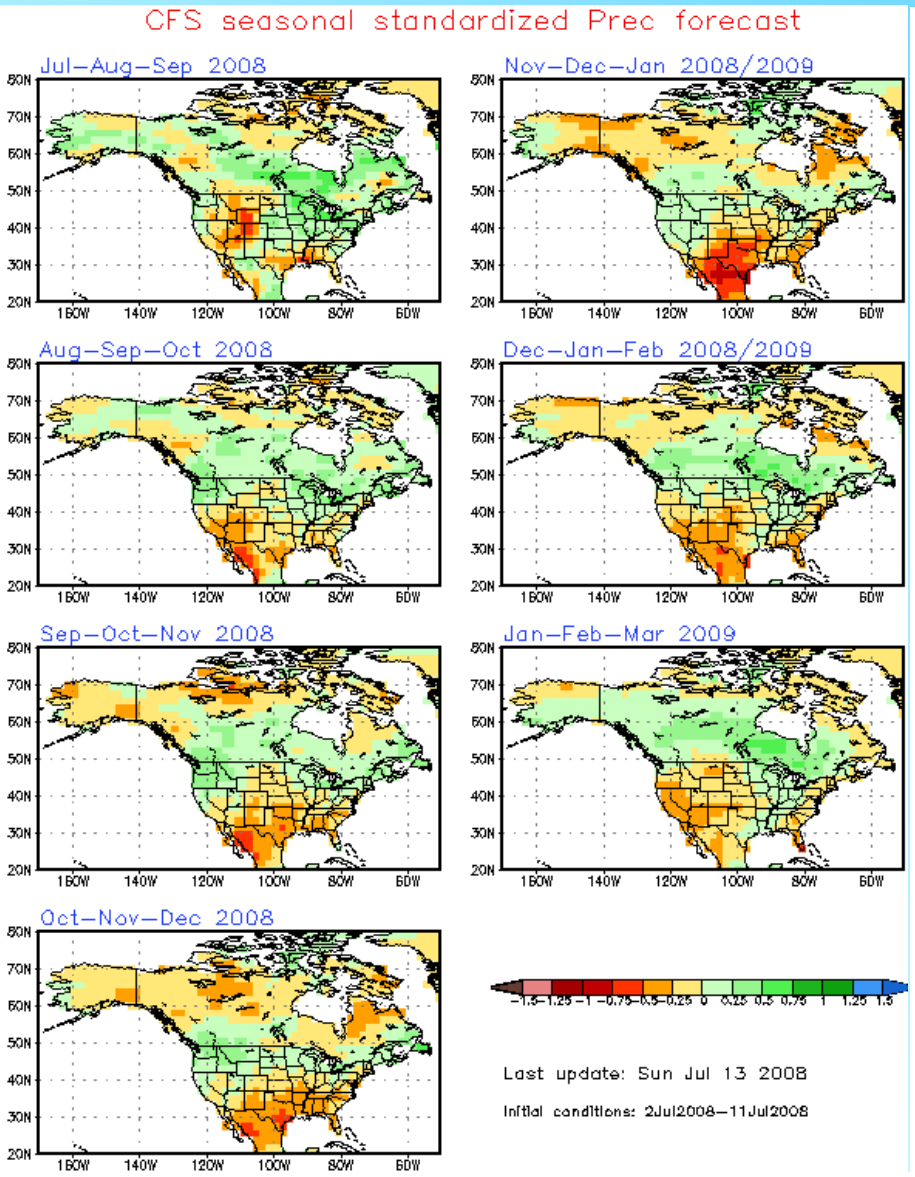
Forecast skill in grey areas is less than 0.3.

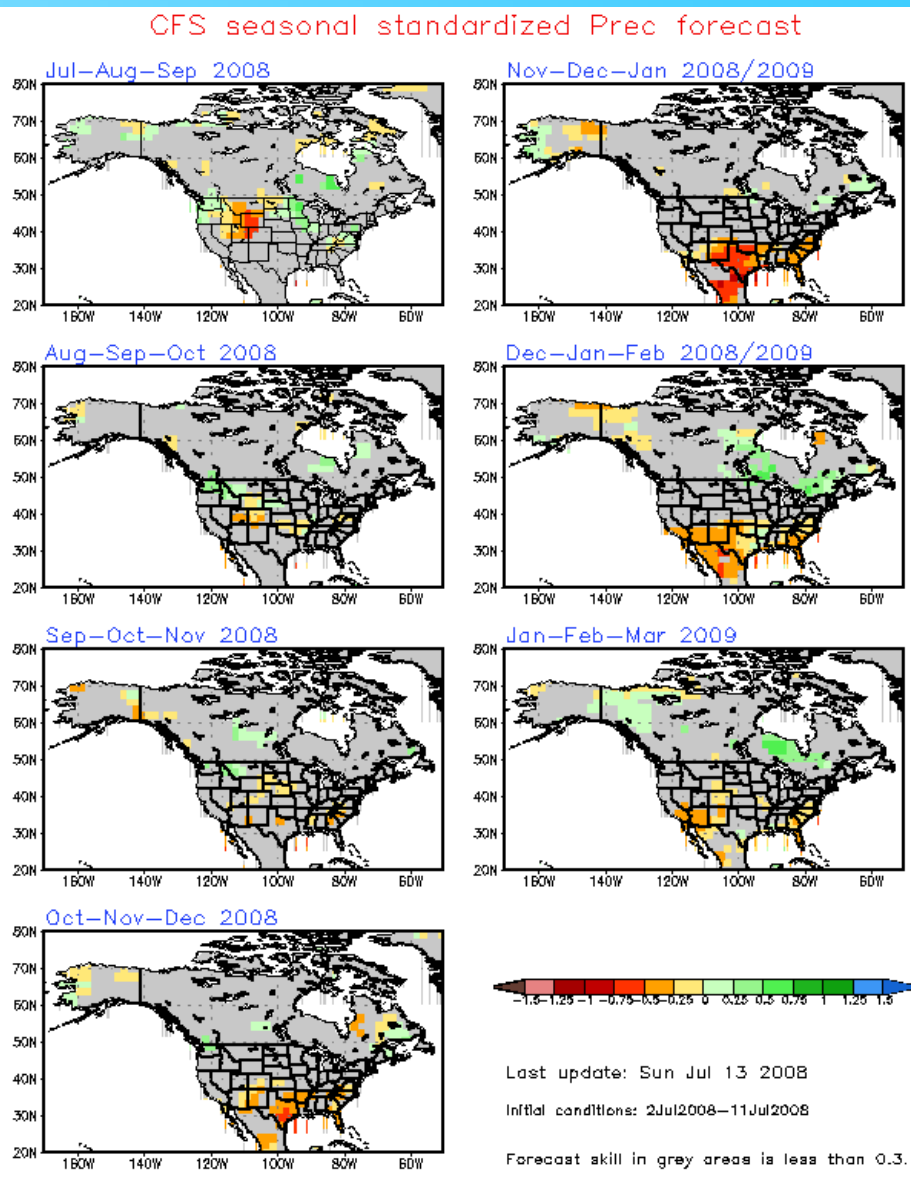
Standardized Temperature Anomalies In Comparison with Their Skill-Masked Counterparts



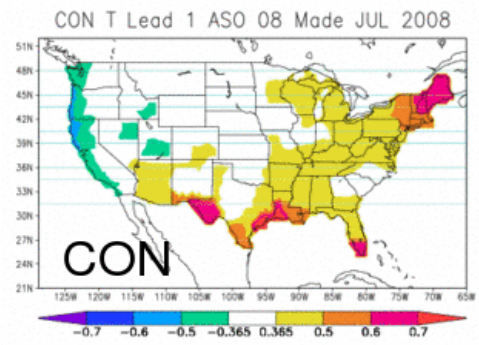


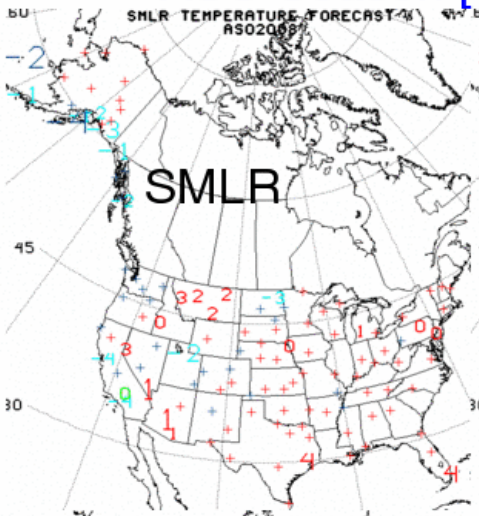
Standardized Precipitation Anomalies In Comparison with Their Skill-Masked Counterparts

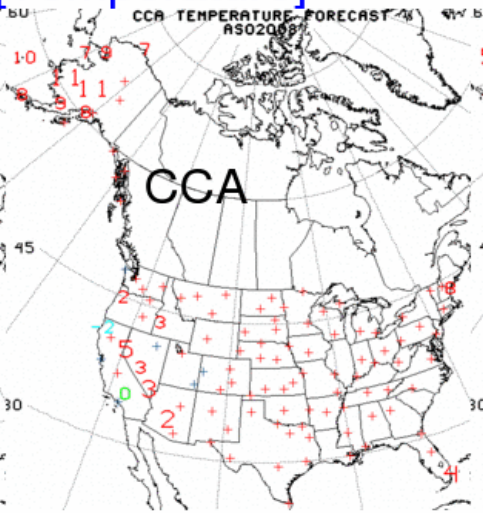


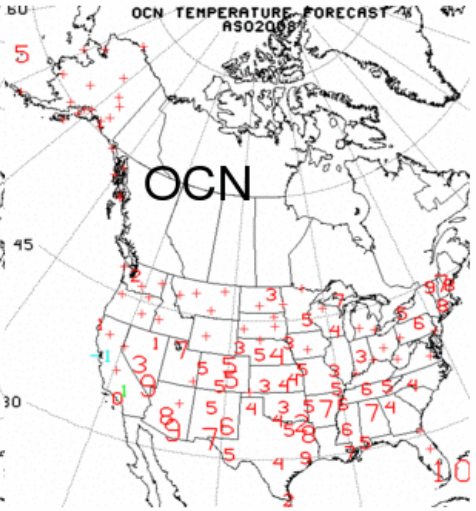


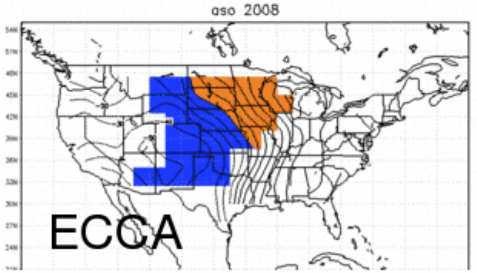
ASO Season [Temperature]

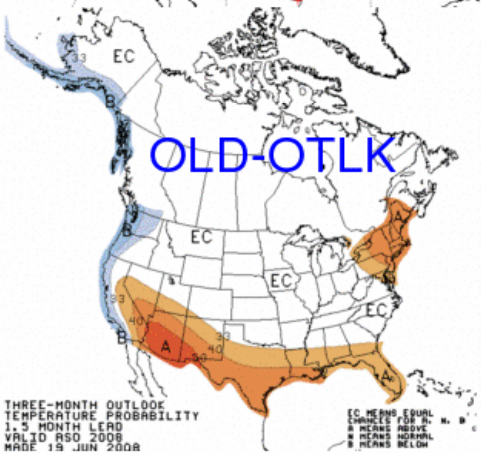






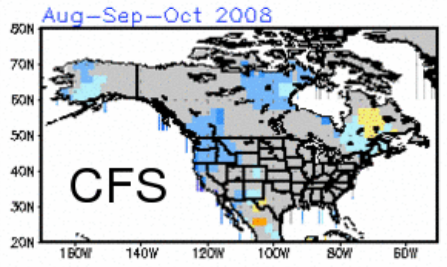


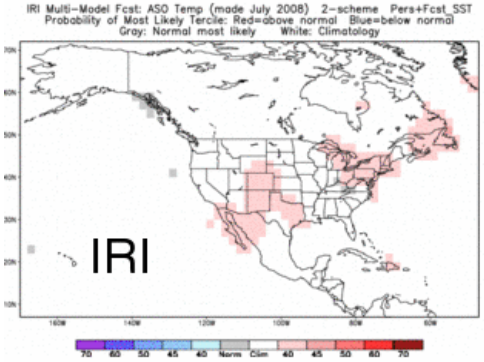


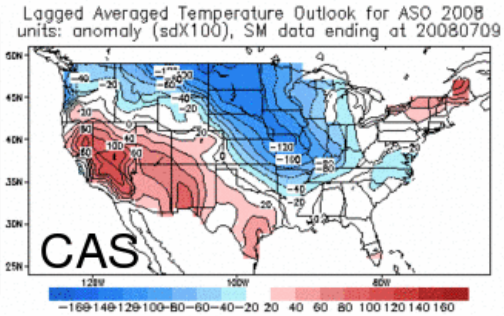


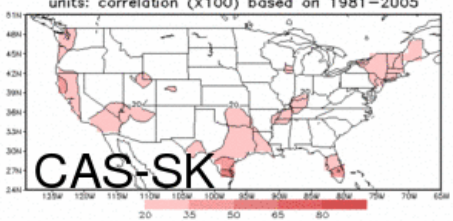
NEW-OTLK

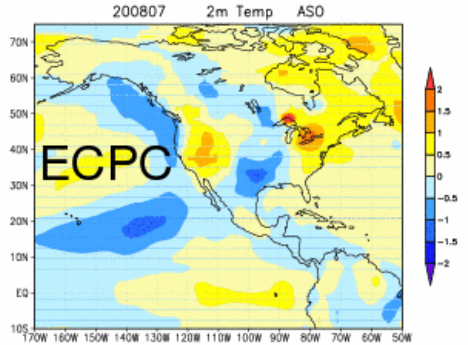
IMAGE NOT AVAILABLE











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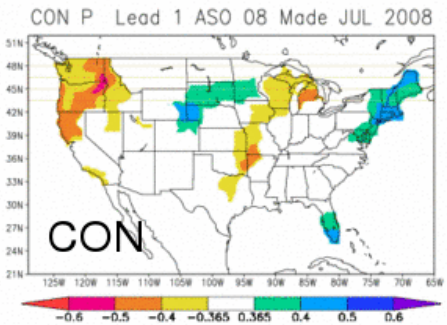

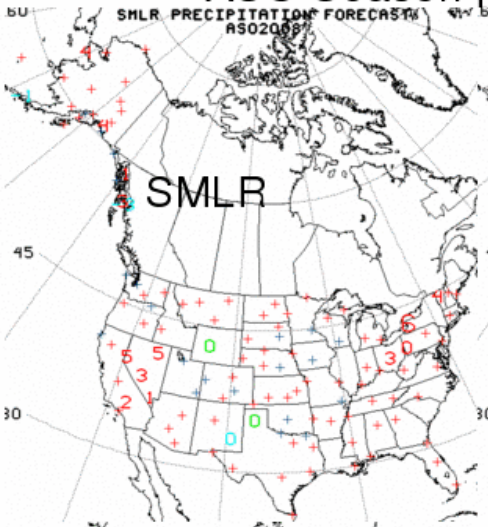

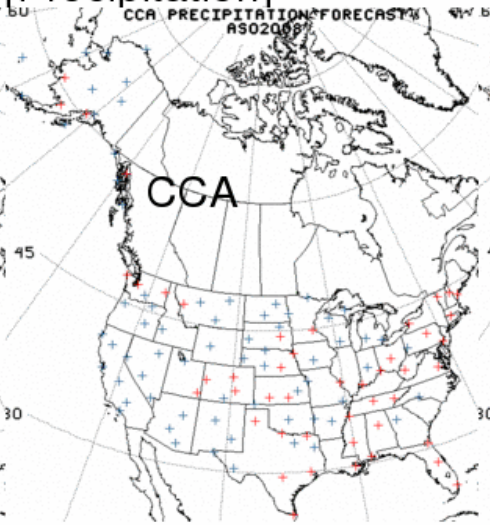

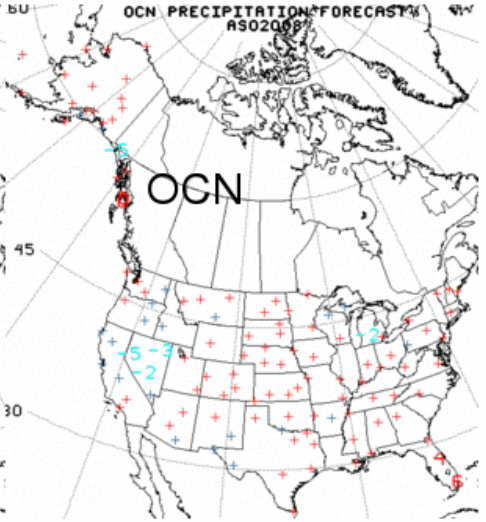

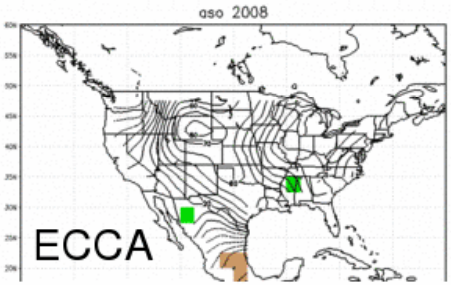

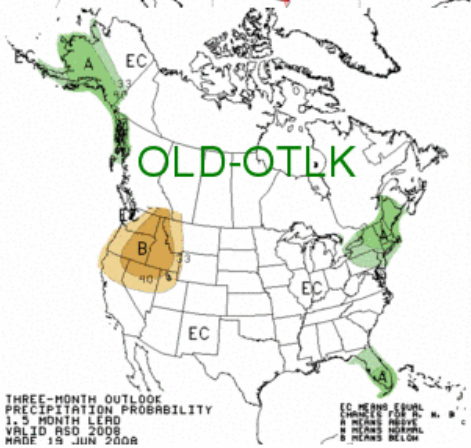

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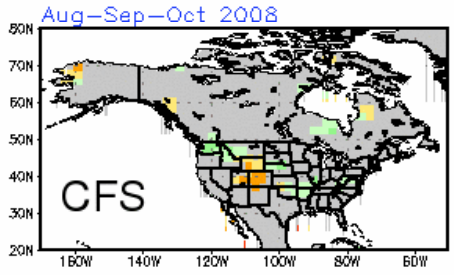

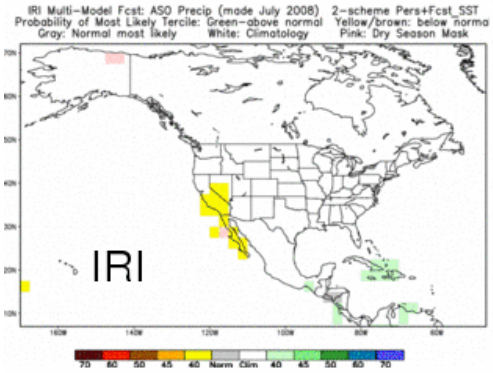

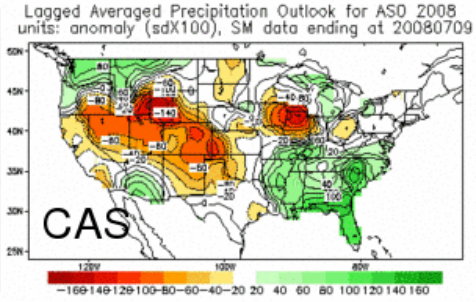

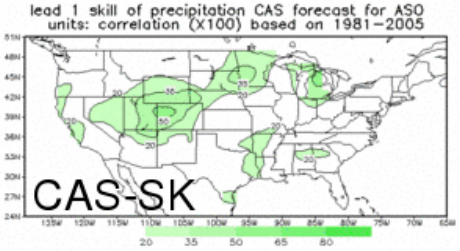

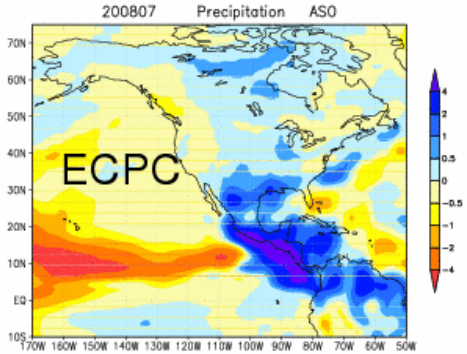

Conclusion

- 3-month forecasts are based on trend, El Nino/La Nina, soil moisture, land-ocean contrast, other…
- Forecasts are made using most objective consolidation of model forecasts.
- Verification feeds-back to the process.
- 3 classes (A, B, N) cover the range of possible forecast outcomes.
- Forecast maps show the probability of the most likely class.
- Skill compares official forecast accuracy to that of climatology.
- Skill is highest in winter/summer, in the West/South
- Recently, we have greatly improved the skill of the forecasts.
- Input from Users helps us improve forecast utility to users.