



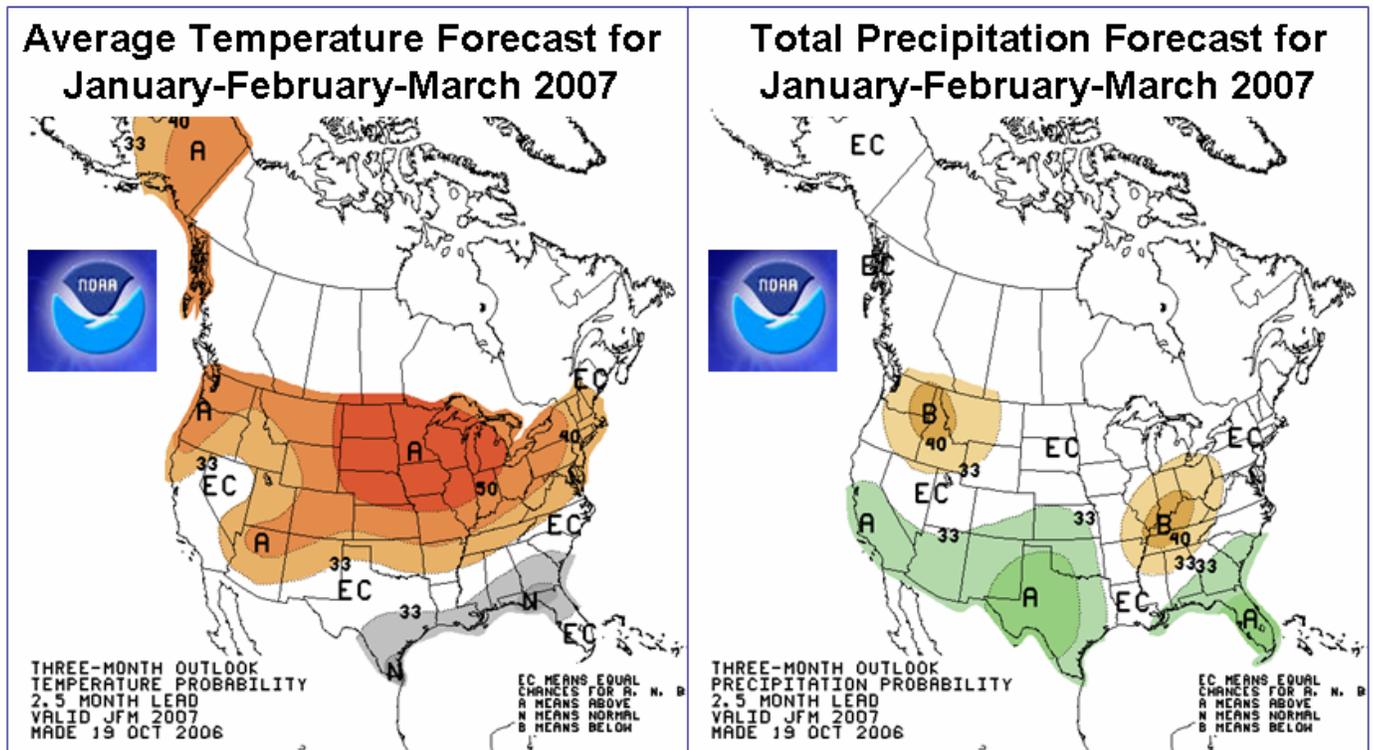
## Climate and Watershed Science Fact Sheet

Grazinglands Research Laboratory, El Reno, Oklahoma

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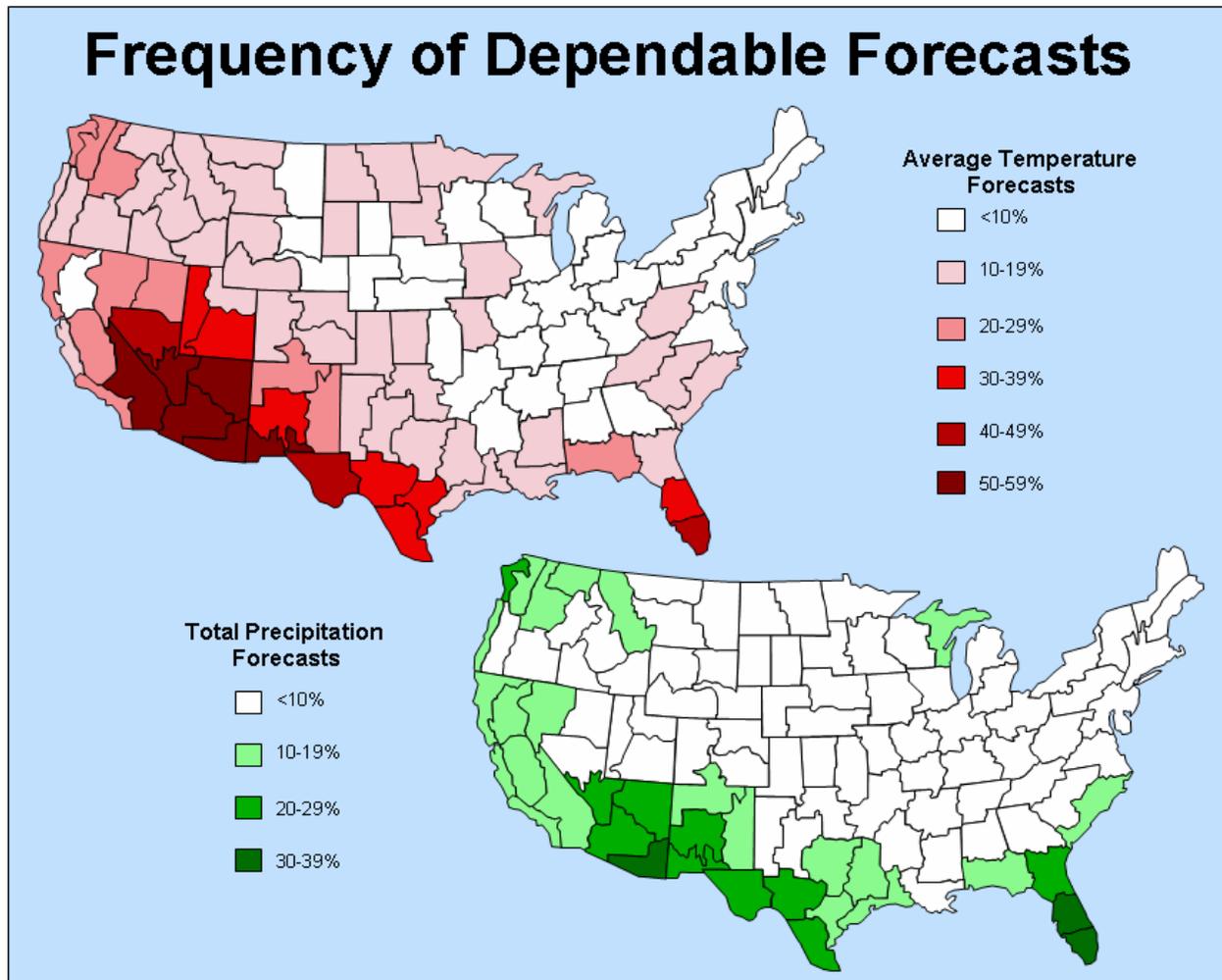
# Seasonal Climate Forecasts in Agricultural Applications – Where are the Best Opportunities Right Now?

Variability in weather and climate leads to large natural risks in agricultural production and management of natural resources. Any reliable forecast of weather and climate has the potential to reduce weather and climate related risks for producers and managers. The National Oceanic and Atmospheric Administration (NOAA) has been issuing seasonal climate forecasts (average air temperature and total precipitation) for 3-month periods out to a full year ahead for more than 10 years. The forecasts are probabilistic – they state the odds for specific average air temperature or total precipitation values to occur, rather than making a prediction that a specific value of average air temperature or total precipitation will occur.



The forecasts have been reported to have some skill. However, it is not clear where or when the forecasts are dependable, or if the dependable forecasts have any utility in real-world management decisions. Research is being conducted at the ARS Grazinglands Research Laboratory at Fort Reno, Oklahoma, to determine the potential utility of the NOAA climate forecasts for agricultural producers or water resource managers.

Potential utility for practical applications will depend on several forecast properties. First, forecasts need to be significantly different from average for managers to consider adjusting their current management practices to include climate forecast information. Second, forecasts need to be offered frequently enough to justify their use. Third, forecasts need to correctly predict the shift in odds for specific average air temperature and total precipitation to occur. Researchers at the ARS Grazinglands Research Laboratory developed measures for these forecast properties, and examined 8 years of three month climate forecasts issued for 1997 through early 2005 for the contiguous United States. The results are shown in the figures below, where the percentages are the frequency of forecasts that provided dependable information beyond standard climatology.



In summary, the best opportunities for use of the NOAA seasonal climate forecasts are in regions with high percentage of dependable forecasts. Even for high dependability in a particular region, investigations must be conducted to determine if the forecast information is actually offered during the right seasons for a particular crop or water resource management decision, and whether the forecast shifts in odds are large enough to make a financial difference in the outcome. This research is ongoing at the ARS Grazinglands Research Laboratory. Additional information pertaining to this research is available at: <http://ars.usda.gov/Main/docs.htm?docid=11617>

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