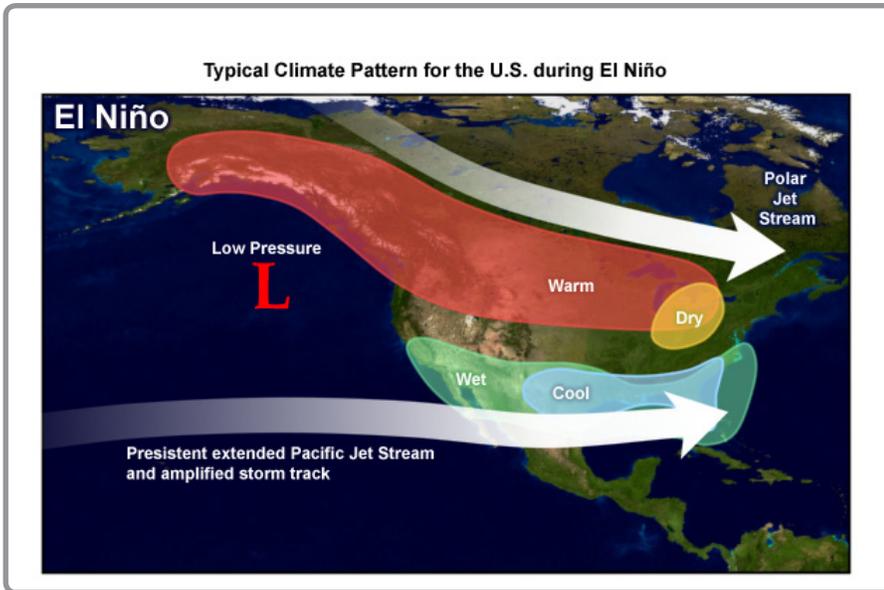


## Typical El Niño Winter Pattern

## El Niño Winter Tendencies



El Niño is a particular pattern in the Pacific Ocean that affects weather downstream to the United States. It has its most notable impacts in the winter, when wind patterns in the atmosphere are strongest. When El Niño is present, it provides some predictable effects to weather patterns. While no two El Niño events are alike, the typical winter weather pattern (left) brings the polar jet stream farther north than usual, across Canada, while the Pacific jet stream remains in the southern U.S. As a result, the upper Missouri River basin can be warmer than normal, with the potential for less frequent heavy snow than usual. Confidence in these patterns is higher with stronger El Niño events.

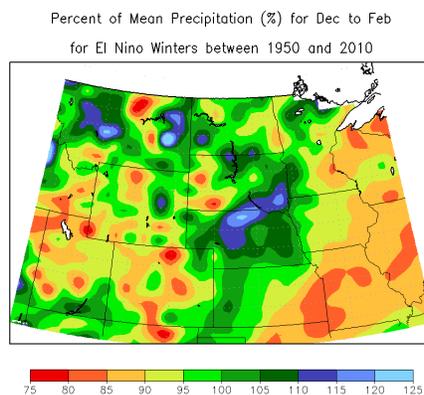
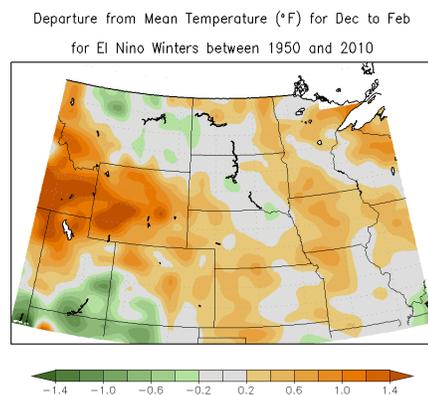
Typical El Niño jet stream patterns across the U.S. include a stronger than usual storm track across the southern U.S., leaving the northern U.S. removed from the average storm track. Image courtesy of NOAA.

## El Niño Outlook and Climate Connections

### Winter Temperature and Precipitation

Departure from Average Temperature (°F) in Winter During Past El Niños

Percent of Average Precipitation (%) in Winter During Past El Niños



Departures from average temperature (left) and percent of average precipitation (right) in December through February during past El Niño years. Image courtesy of the Midwest Regional Climate Center.

### El Niño Likely

Highest Potential for Weak to Moderate El Niño

Chance for El Niño Development and Potential Intensity, Winter 2014-15

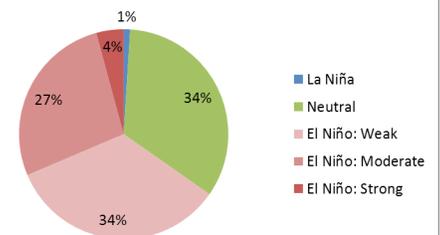


Chart based on summaries and forecast model data from the NOAA/NWS Climate Prediction Center and the International Research Institute for Climate and Society.

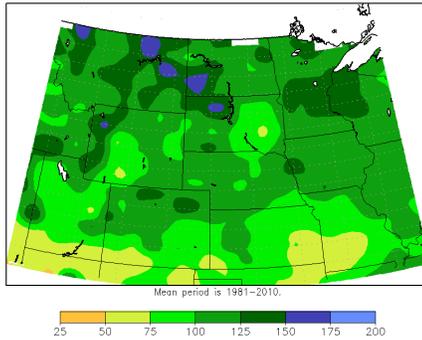
The winter outlook from the NOAA/NWS Climate Prediction Center mainly is consistent with typical El Niño patterns across the central U.S., shown above, with a slightly increased chance for above-normal temperatures from the upper Missouri River basin. There also is a slightly increased chance for below-normal precipitation in Montana and Wyoming. During past El Niños, wet conditions have been observed across parts of the Central Plains and into the upper Missouri River basin.

Odds still favor an El Niño forming by mid to late fall, with a 60-70% chance of development. There is a 30-40% chance for neutral conditions to continue through this winter, with a near-zero chance for La Niña to develop.

# Ongoing Conditions and Possible Impacts

## Precedent Conditions

Accumulated Precipitation: Percent of Mean  
January 1, 2014 to August 31, 2014

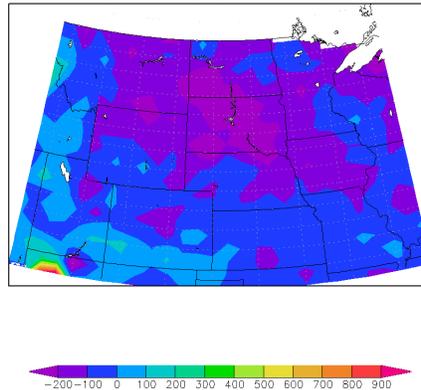


Precipitation percent of normal for January 1 through August 31, courtesy of High Plains Regional Climate Center.

Moisture conditions through the summer of 2014 have been near to above average across the upper Missouri River Basin, alleviating drought conditions in the mid to lower Missouri River valley. Areas of near to below average precipitation linger in eastern South Dakota and in Kansas and Missouri.

## Growing Season Lagging

MGDD Departure, 5/1/2014 to 9/14/2014



Growing degree day departure from average for May 1 through September 14, courtesy of Midwestern Regional Climate Center.

The 2014 growing season had a late start due to a cold spring, and it continues to lag in the Missouri Basin region. Even average conditions through the rest of the growing season would hamper some crops from reaching maturity. El Niño is not associated with the potential for early or late first freeze in the fall.

## Missouri River Levels



Gavins Point Dam. Image courtesy of the U.S. Army Corps of Engineers.

Due to a wet summer, the Missouri River is running higher than usual for the time of year. Navigation season will be extended into the fall to move water out of the reservoirs and make space. Some indicators suggest a tilt toward lower than usual mountain snowpack in the Fort Peck drainage area during El Niño, but the signals are weak.

## El Niño Limitations and Myths

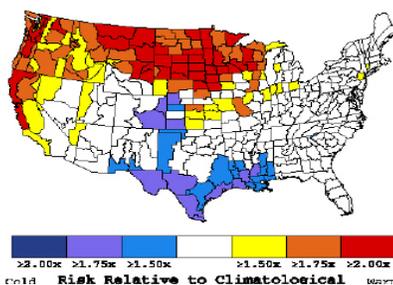
El Niño impacts can be limited by many factors, including:

- It may not develop.
- It may be weak, with little or no discernible influence on weather patterns.
- It may be masked by other weather and climate signals.
- Single extreme events can “buck the trend” of the averages for the rest of the season, with one or two high-impact events overshadowing the average conditions.

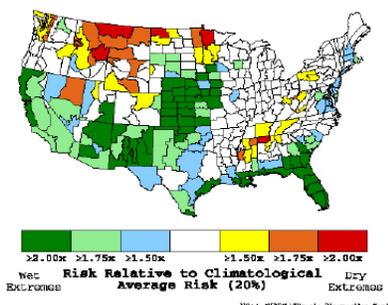
El Niño can affect some temperature and precipitation signals in the region, but it is not known to affect:

- First freeze date in the fall (either early or late).
- Last freeze date in the spring (either early or late).
- Potential for ice storms or blizzards.
- Track or intensity of any single weather system.

DJF Temperature Extremes During El Niño  
Risk of Extreme Warm or Cold Years



DJF Precipitation Extremes During El Niño  
Risk of Extreme Wet or Dry Years



Risks of extreme temperatures and precipitation during moderate to strong El Niño events. Images courtesy of NOAA Earth Systems Research Laboratory.

## Partners and Links

- Great Lakes Environmental Research Laboratory  
[www.glerl.noaa.gov](http://www.glerl.noaa.gov)
- Great Lakes Integrated Sciences + Assessments  
[glisa.umich.edu](http://glisa.umich.edu)
- High Plains Regional Climate Center  
[www.hprcc.unl.edu](http://www.hprcc.unl.edu)
- Int'l Research Institute for Climate and Society  
[iri.columbia.edu/our-expertise/climate/forecasts/ens](http://iri.columbia.edu/our-expertise/climate/forecasts/ens)
- Midwestern Regional Climate Center  
[mrcc.isws.illinois.edu](http://mrcc.isws.illinois.edu)
- National Drought Mitigation Center  
[www.drought.unl.edu](http://www.drought.unl.edu)
- National Integrated Drought Information System (NIDIS)  
[www.drought.gov](http://www.drought.gov)
- National Oceanic and Atmospheric Administration  
[www.noaa.gov](http://www.noaa.gov)
- National Weather Service - Central Region  
[www.crh.noaa.gov/crh](http://www.crh.noaa.gov/crh)
- National Climatic Data Center  
[www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)
- Climate Prediction Center  
[www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)
- National Operational Hydrologic Remote Sensing Center  
[www.nohrsc.noaa.gov](http://www.nohrsc.noaa.gov)
- State Climatologists  
[www.stateclimate.org](http://www.stateclimate.org)
- South Dakota State University Extension  
[igrow.org](http://igrow.org)
- U.S. Department of Agriculture  
[www.usda.gov](http://www.usda.gov)
- NRCS National Water & Climate Center  
[www.wcc.nrcs.usda.gov](http://www.wcc.nrcs.usda.gov)
- Regional Climate Hubs  
[www.usda.gov/oce/climate\\_change/regional\\_hubs.htm](http://www.usda.gov/oce/climate_change/regional_hubs.htm)
- Useful to Usable (U2U)  
<https://drinet.hubzero.org/groups/u2u>
- Western Water Association  
[www.colorado.edu](http://www.colorado.edu)

