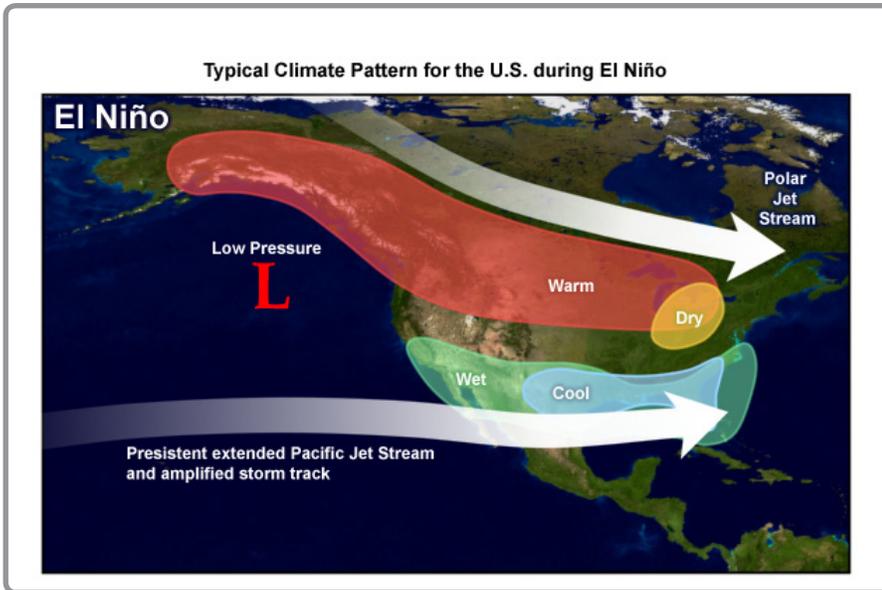


## Typical El Niño Winter Pattern

## 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 Midwest to Great Lakes area can be warmer than normal, with drier-than-normal conditions across the Great Lakes toward the Ohio River Valley, and with less snow than usual in the upper Midwest. Confidence in these patterns is higher with stronger El Niño events.

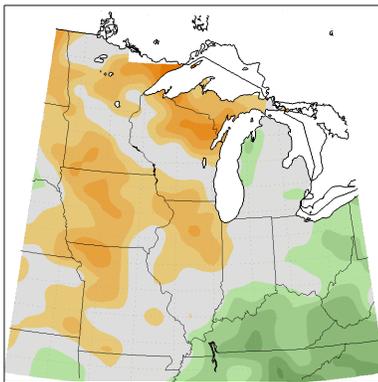
Typical El Niño jet stream patterns across the U.S. include a stronger than usual storm track across the southern U.S., leaving the northern U.S. removed from the average storm track. Image courtesy of NOAA.

## El Niño Outlook and Climate Connections

### Winter Temperature and Precipitation

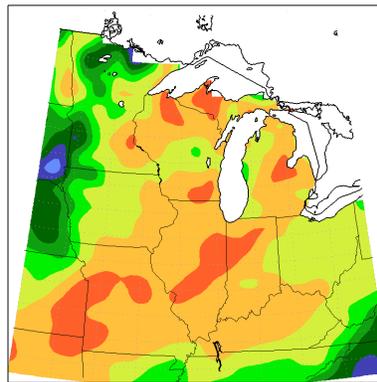
Departure from Average Temperature (°F) in Winter During Past El Niños

Departure from Mean Temperature (°F) for Dec to Feb for El Niño Winters between 1950 and 2010



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

Percent of Mean Precipitation (%) for Dec to Feb for El Niño Winters between 1950 and 2010



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

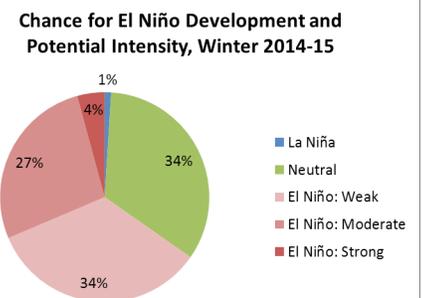


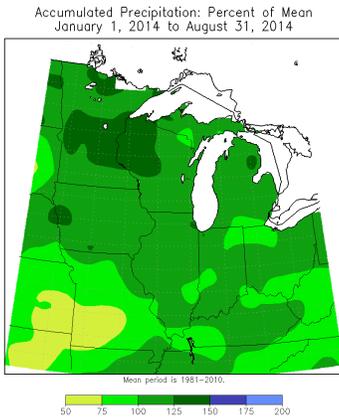
Chart based on summaries and forecast model data from the NOAA/NWS Climate Prediction Center and the International Research Institute for Climate and Society.

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 Midwest into the western Great Lakes. There also is a slightly increased chance for below-normal precipitation in the Great Lakes to Ohio River Valley.

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

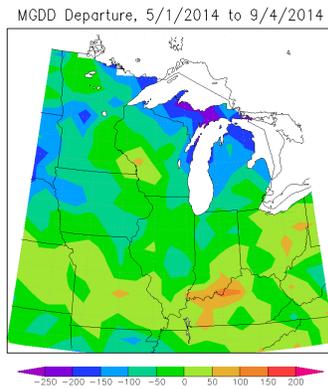
## Precedent Conditions



Precipitation percent of average for January 1 through August 31, courtesy of Midwestern Regional Climate Center.

Moisture conditions through the summer of 2014 have been near to above average across the upper Midwest, and near to below average closer to the Ozarks. If drier than average conditions do materialize this winter, the Ozarks to the Ohio River Valley will be an area to watch for potential impacts.

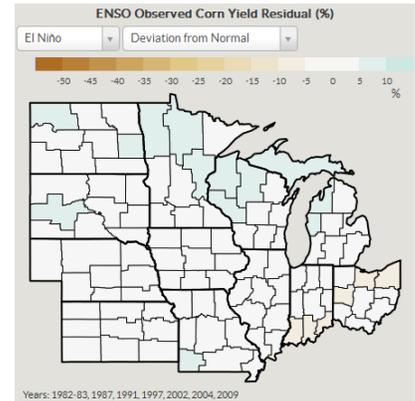
## Growing Season Lagging



Growing degree day departure from average for May 1 through September 4, courtesy of Midwestern Regional Climate Center.

The 2014 growing season had a late start due to a cold, wet, and snowy spring, and it continues to lag in the Midwest. 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.

## Corn Production during El Niño Years



Influence of El Niño on corn yield during the subsequent growing season. Image courtesy of Useful 2 Usable.

El Niño years are associated with near to slightly above average corn yields from the northern Plains to the Great Lakes, with near to slightly below average yields in the Ohio River valley. No El Niño impact would be expected to the 2014 season, but an El Niño in the winter of 2014-15 could affect yields in 2015.

## El Niño Limitations and Myths

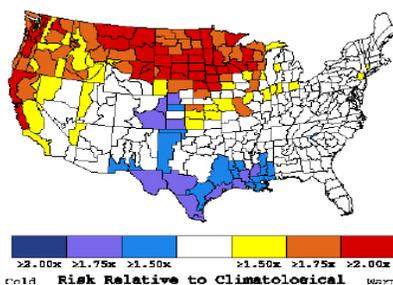
El Niño impacts can be limited by many factors, including:

- 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.

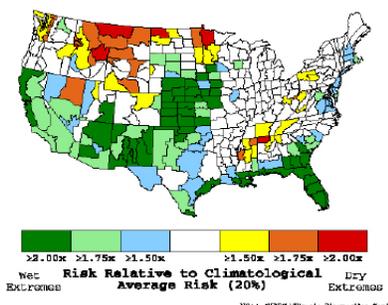
El Niño can affect some temperature and precipitation signals in the region, but it is not known to affect:

- 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/ens0](http://iri.columbia.edu/our-expertise/climate/forecasts/ens0)
- 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)