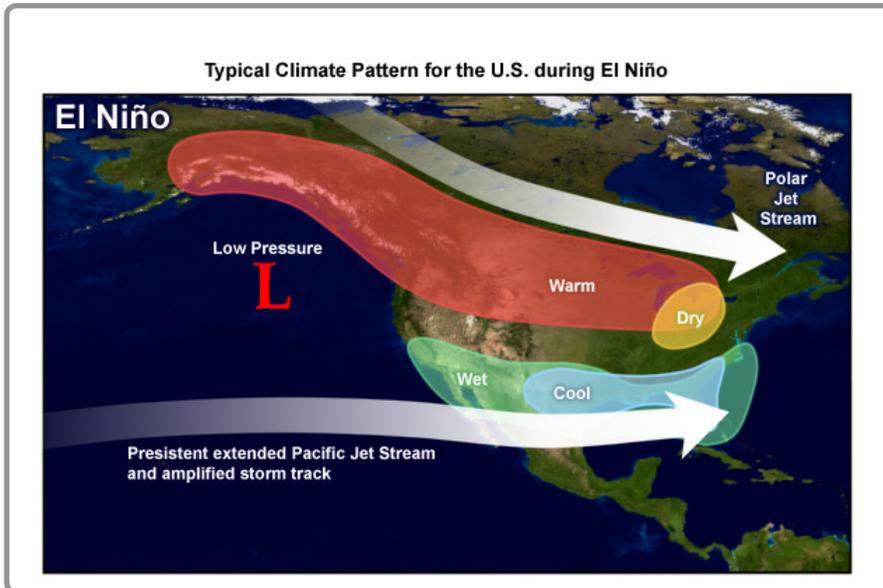


Typical El Niño Winter Pattern

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 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 and reduced ice cover. 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

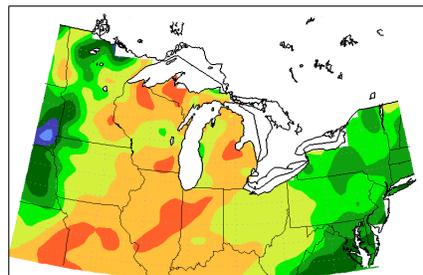
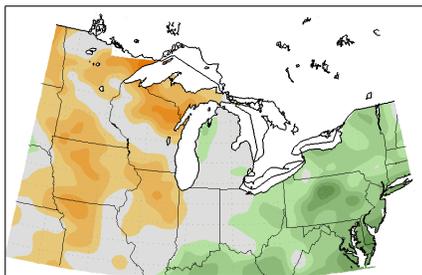
Winter Temperature and Precipitation

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

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

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

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



Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

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Departures from average temperature (left) and percent of average precipitation (right) in December through February during 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

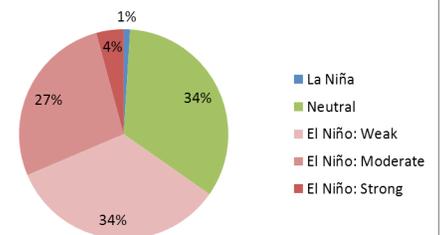


Chart based on summaries and forecast model data from the NOAA/NWS Climate Prediction Center and the International Research Institute for Climate and Society.

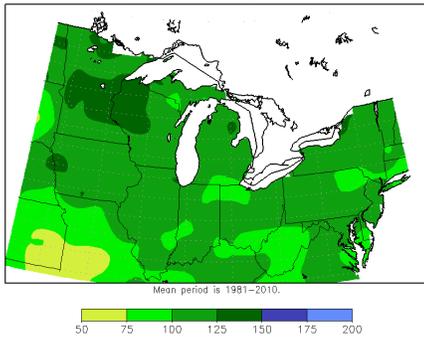
The winter outlook from the NOAA/NWS Climate Prediction Center mainly is consistent with typical El Niño patterns across the central U.S., shown above, with a slightly increased chance for above-normal temperatures into the western Great Lakes. There also is a slightly increased chance for below-normal 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

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

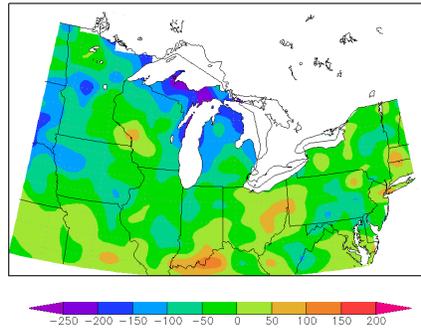


Precipitation percent of average for January 1 through August 31, courtesy of Midwestern Regional Climate Center.

Moisture conditions through the summer of 2014 have been near average across the Great Lakes. If drier than average conditions do materialize this winter, the southern Great Lakes to the Ohio River Valley will be an area to watch for potential impacts.

Growing Season Lagging

MGDD Departure, 5/1/2014 to 9/4/2014



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 Great Lakes 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.

Great Lakes Ice Cover



Image of Great Lakes ice cover in March 2009, courtesy of NOAA Great Lakes Environmental Research Laboratory

El Niño years are associated with an increased chance for Great Lakes ice cover to be below normal, with a stronger tendency during stronger El Niño events. This is due to the polar jet stream remaining north of the Great Lakes, on average, through the winter, bringing warmer temperatures and reduced snowfall. Because the year-to-year variability in ice cover is so high, the additional nudge provided by an El Niño event can be overwhelmed by other weather and climate patterns.

El Niño Limitations and Myths

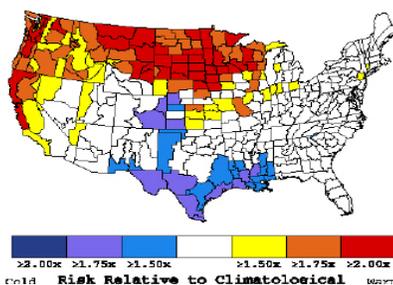
El Niño impacts can be limited by many factors, including:

- 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.

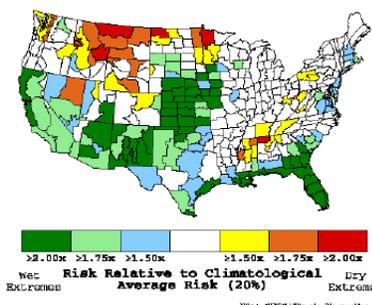
El Niño can affect some temperature and precipitation signals in the region, but it is not known to affect:

- 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.
- Great Lakes evaporation

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
- Great Lakes Integrated Sciences + Assessments
glisa.umich.edu
- High Plains Regional Climate Center
www.hprcc.unl.edu
- Int'l Research Institute for Climate and Society
iri.columbia.edu/our-expertise/climate/forecasts/enso
- Midwestern Regional Climate Center
mrcc.isws.illinois.edu
- National Drought Mitigation Center
www.drought.unl.edu
- National Integrated Drought Information System (NIDIS)
www.drought.gov
- National Oceanic and Atmospheric Administration
www.noaa.gov
- National Weather Service - Central Region
www.crh.noaa.gov/crh
- National Climatic Data Center
www.ncdc.noaa.gov
- Climate Prediction Center
www.cpc.ncep.noaa.gov
- National Operational Hydrologic Remote Sensing Center
www.nohrsc.noaa.gov
- State Climatologists
www.stateclimate.org
- South Dakota State University Extension
igrow.org
- U.S. Department of Agriculture
www.usda.gov
- NRCS National Water & Climate Center
www.wcc.nrcs.usda.gov
- Regional Climate Hubs
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

