



# Winter 2020-21 Outlook

## What can we expect the rest of this winter?

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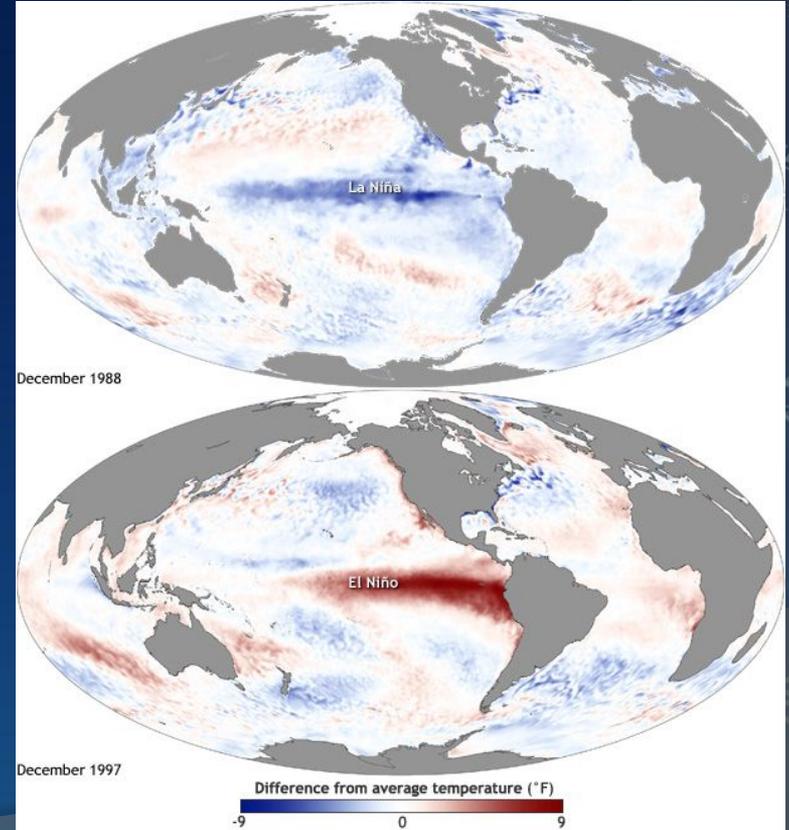
**NWS Chicago, IL**  
[weather.gov/Chicago](https://weather.gov/Chicago)  
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# Roadmap

- **La Niña Conditions in Place:** How could this affect our winter weather?
- **Typical Winter Temperatures and Snowfall**
- **Where have we been & where are we going?** Warm Nov. & CPC Outlooks
- **Precipitation and Snowfall Data**
- **Conclusion:** NWS Chicago's Winter Outlook Thoughts!
- **Bonus!** Lake Michigan remains very high → elevated lakeshore flood risk
- **Time for Questions!**

# La Niña Likely to Influence Our Winter Season

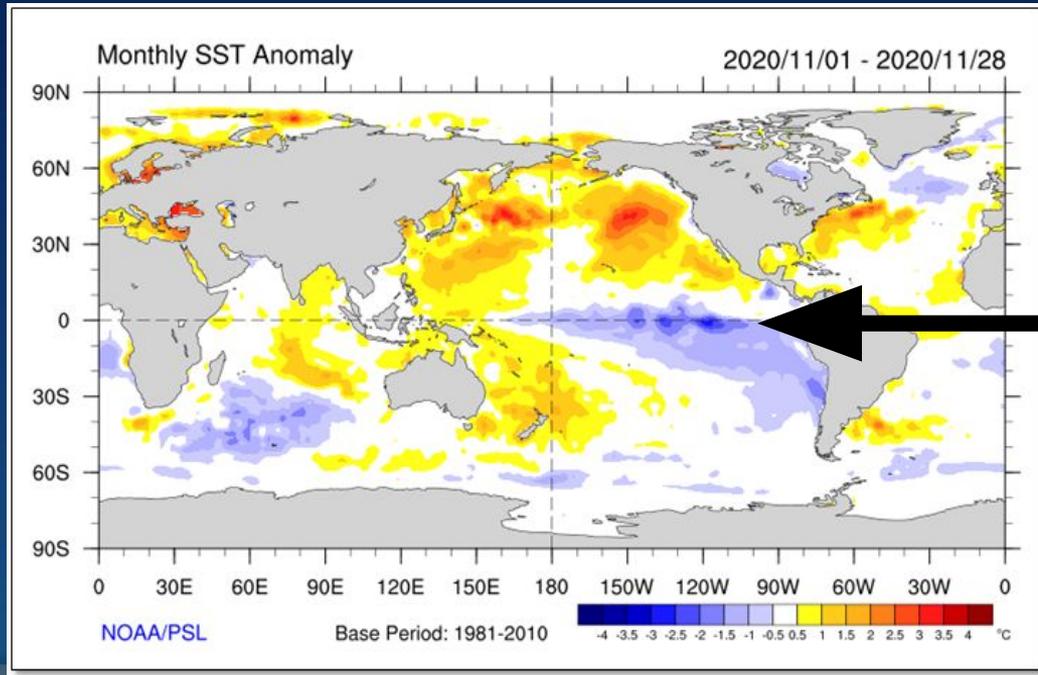
- **El Niño** and La Niña are regularly recurring water temperature patterns near the Equator in the Pacific Ocean which affect weather patterns globally, including in North America (NOAM)
- They may shift the typical track of weather systems, influencing temperature and precipitation
- Strongest link in NOAM winter



# La Niña Likely to Influence Our Winter Season

Global SST Departures (°C) November 1st-November 28th

- ❑ Equatorial SSTs were below average in the central and eastern Pacific Ocean

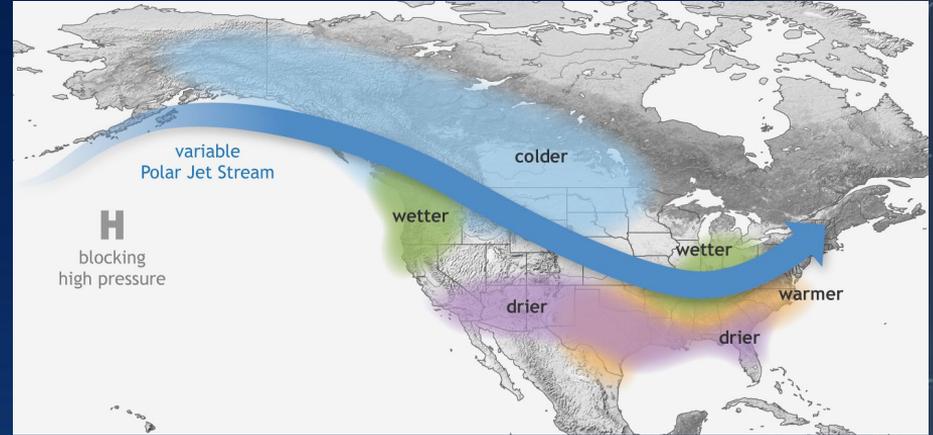


**La Niña  
Signal**

# La Niña Likely to Influence Our Winter Season

## What does this mean for us?

- Increased “storminess”
  - More precipitation
  - Not always more snow
- No strong signal for temperature
  - Large temp swings/variability
  - Some recent indicators are pointing to more mild than cold
- These are typical impacts, but every winter is unique!

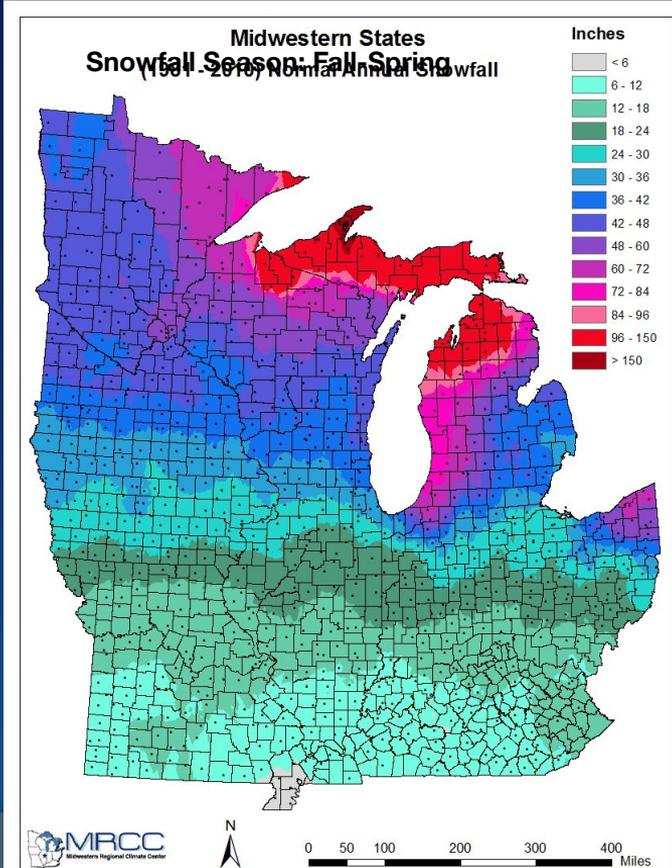


Year	Strength	DJF Temps	Precip Dep	Snow Dep
2017-2018	Weak	+0.5°F	+1.00"	-0.2"
2016-2017	Weak	+4.2°F	+0.39"	-10.2"
2011-2012	Weak	+6.4°F	+0.38"	-16.5"
2010-2011	Moderate	-3.3°F	+1.02"	+21.6"
2008-2009	Weak	-4.0°F	+4.55"	+16.4"
2007-2008	Strong	-1.6°F	+3.18	+24.0"

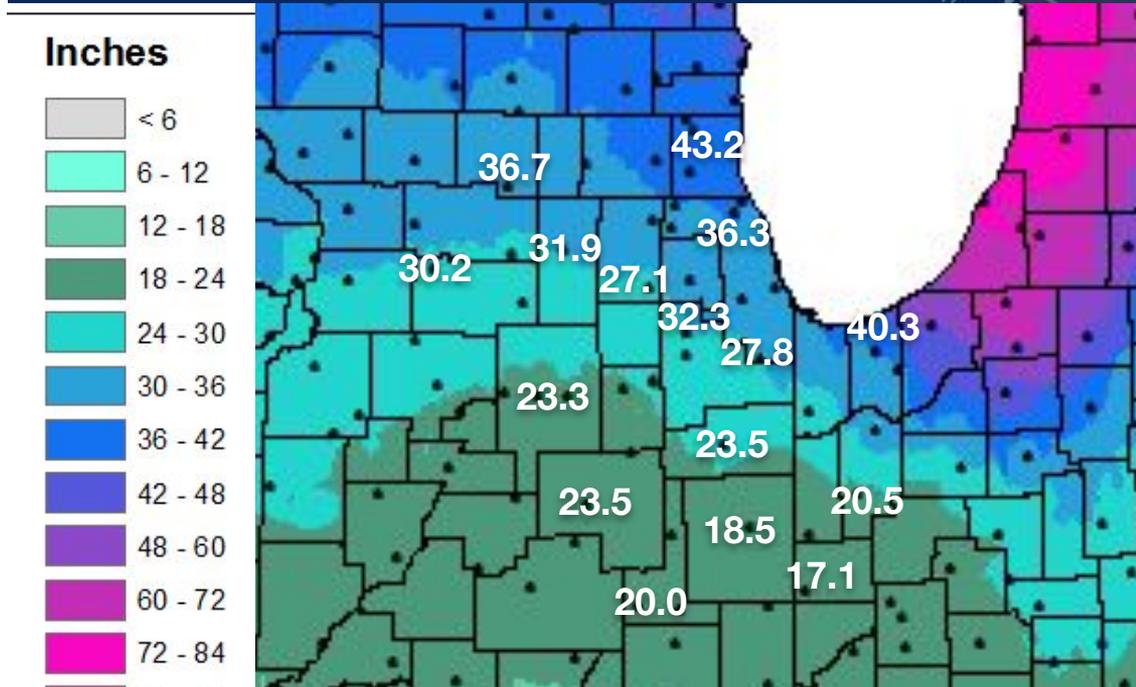
# Notable Events in Recent La Niña Winters

- Early Jan. 1999 Blizzard: 2nd largest Chicago snowstorm in mild winter
- 2007-08: Much snowier than average; huge temperature swings
  - Early January: EF-3 tornado; major flooding in central IL
- 2011 “Groundhog Day Blizzard”: 3rd largest Chicago snowstorm
- 2011-12: Warm & little snow; unprecedented March heat wave
- 2016-17: Snowy December; springlike Jan-Feb; 2/28 tornado outbreak
- 2017-18: New Year COLD; record snow stretch 2/3-11; late Feb flooding

# What's our Typical Winter Weather Like?

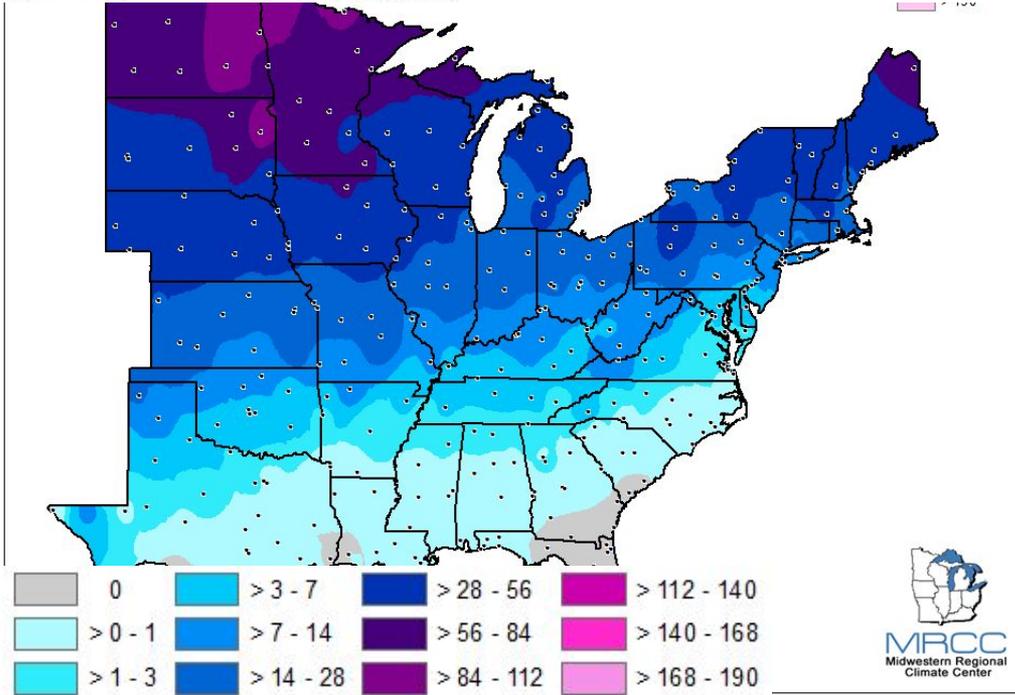


Chicago	Rockford	IN Dunes	Mundelein	Pontiac
36.3"	36.7"	40.3"	43.2"	23.5



# What's our Typical Winter Weather Like?

Average # of Days with  $\geq 1$  Hour at Wind Chill  $\leq 0^{\circ}\text{F}$   
that occurred during Any Month



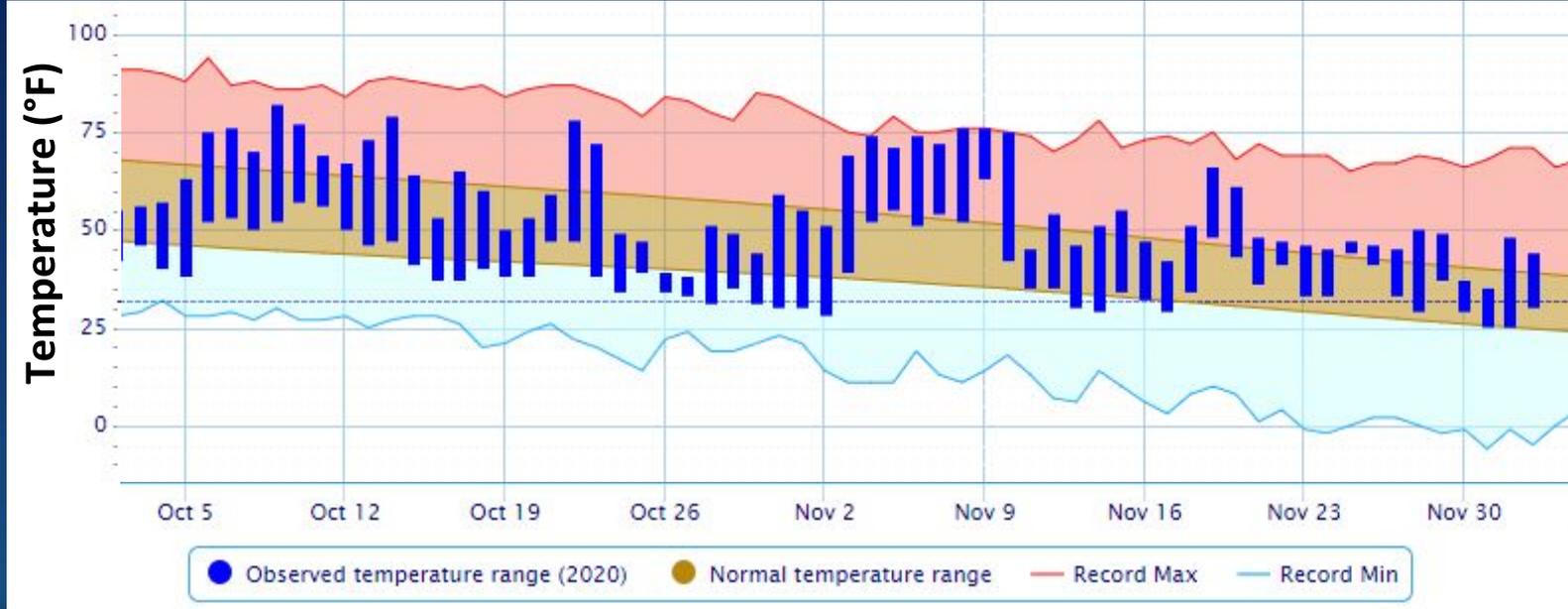
	Chicago	Rockford
<b>Highs</b> 32F or colder	45	52
<b>Highs</b> 20F or colder	12	15
<b>Lows</b> 10F or colder	24	32
<b>Lows</b> 0F or colder	8	13

# Warm and Dry November 2020

- 4th warmest on Record in Chicago (47.4°) and Rockford (45.6°).

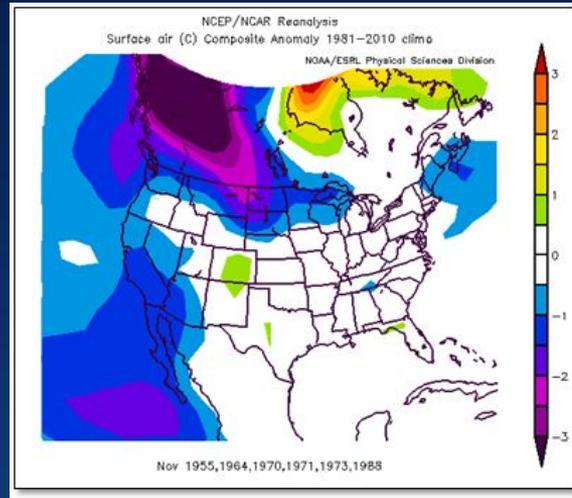
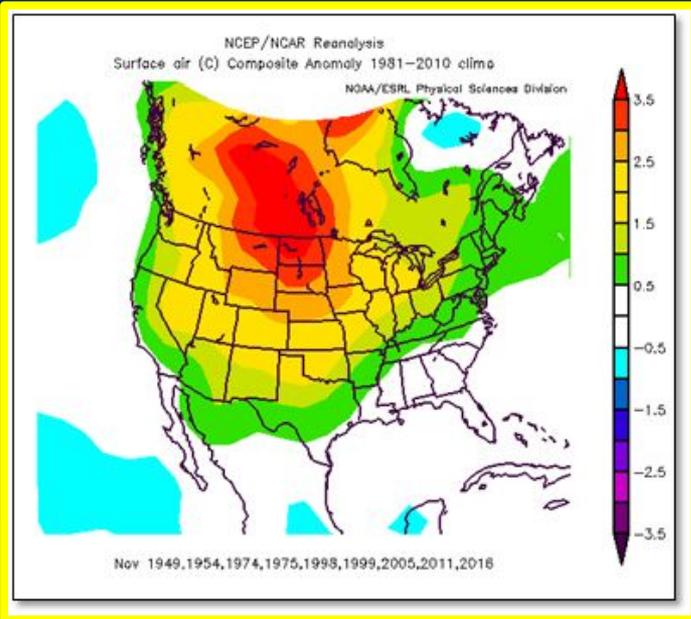
## Normal November Mean Temperature

Chicago: 40.3° (+7.1° in Nov. 2020)    Rockford: 38.9° (+6.7° in Nov. 2020)

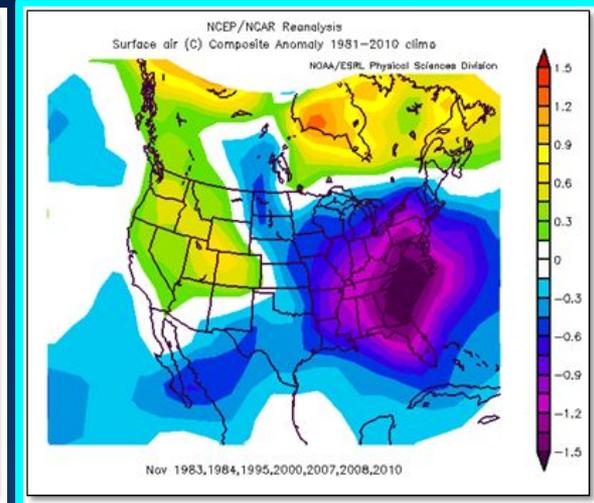


# Can November Help Tell Us How the Winter May Play Out?

- In La Niñas, Nov. temp. departures tended to correlate with winter temp. departures.



Near Normal La Niña  
(n=6)



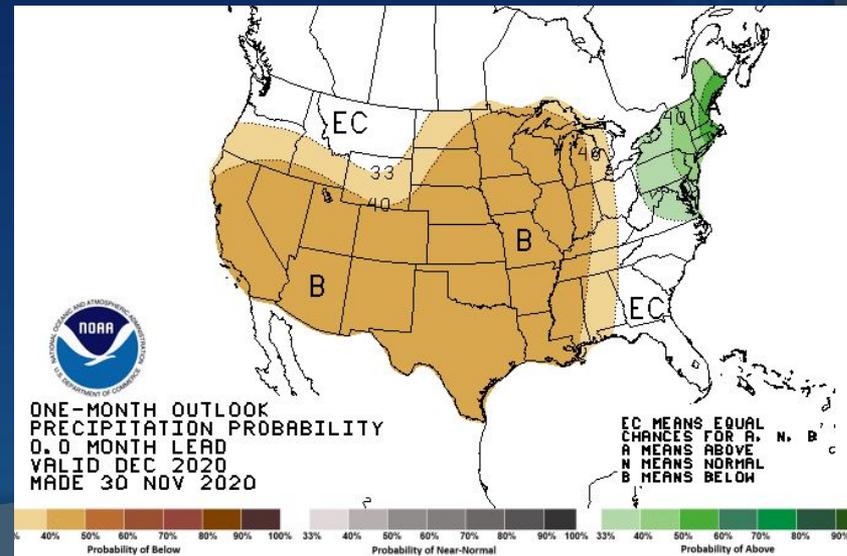
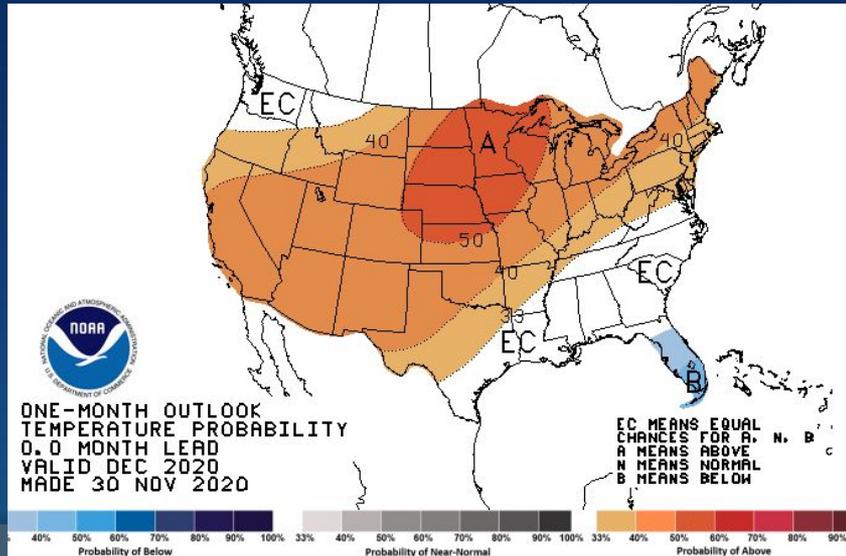
Coldest La Niña  
(n=7)

**Average November Temp. Anomaly  
(Departure from Normal in °C) of 9  
warmest La Niña Winters**

# December Outlook

- Above normal temperatures below normal precipitation favored, but:
  - Signs indicating a shift to at least a short period of colder and possibly more active weather around the middle part of the month.
  - A more traditional La Niña pattern towards the end of the month → increased precip threat.

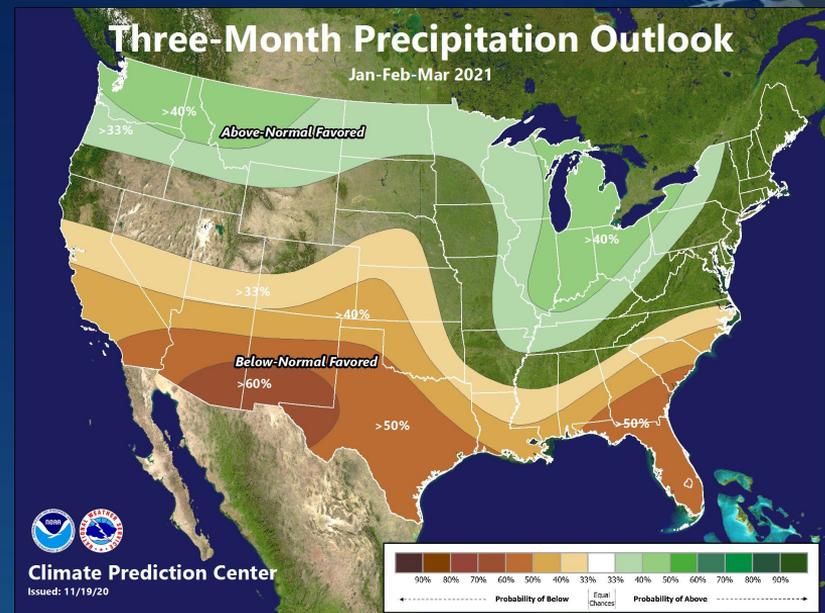
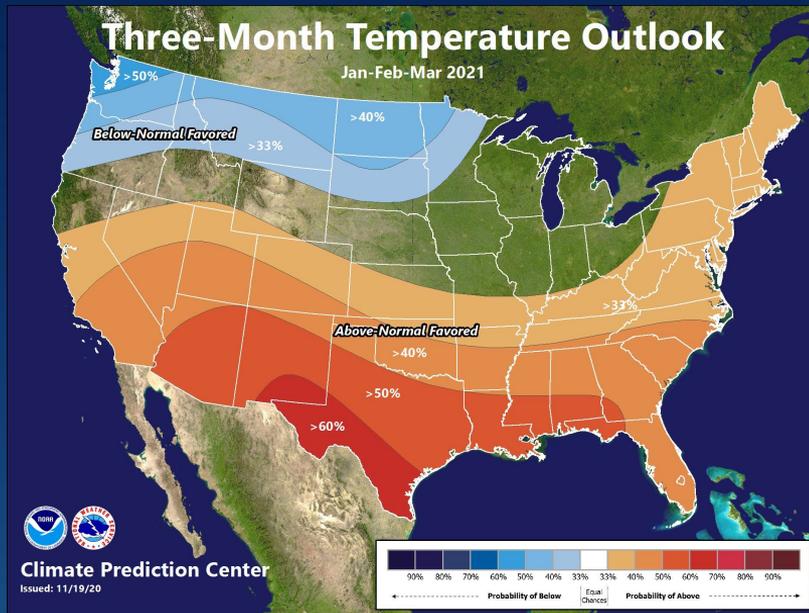
## Climate Prediction Center (CPC) December 2020 Outlook



# January through March Outlook

- Favors above average precipitation across our area due to an expected active weather pattern.
- Variable temperatures likely, with some potential for warmer conditions to outweigh cold periods.

## Climate Prediction Center (CPC) Jan-Mar 2021 Outlook



No strong temperature signal locally, but...

Above normal precip. favored  
\*Not a snowfall forecast\*

# Does Above Average Precip. Support More Snow?

Not necessarily! But, historically, more winter precip → more snow

- Wettest 25% of all winters tended to be snowier than normal
- Drier winters trended towards below average snow.

**Bottom Line:** While an above average precipitation forecast does not always lead to more snow, it increases the odds of having above average snow. Predominant temperature pattern is a big wild card.

# A Note on Seasonal Snowfall

- Chicago's snowfall record goes back to 1884
- 1981-2010 seasonal (fall through spring) normal snowfall is 36.3"



In Chicago area, odds favor roughly between 25" & 45" seasonal snowfall.

Snowfall dependent on storm tracks, how many typical light-moderate events, and if 1 or more larger events occur.

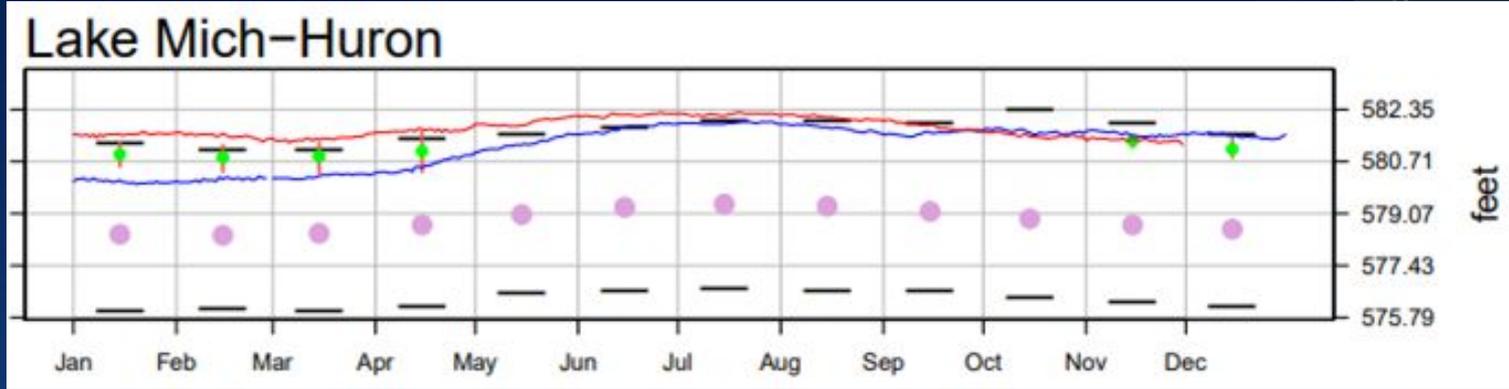
A mild winter will tend to favor below normal snow, but sometimes all it takes is one event!

# Conclusion

## NWS Chicago Outlook for Winter 2020-21 *Northern/Central IL and Northwest Indiana*

- Temperatures: Variable, but signs that warmth *\*could\** outweigh cold
  - Confidence: low-medium in predominant regime
- Precipitation: Above normal
  - Confidence: medium-high
- Snowfall: Near normal
  - Confidence: low

# Lake MI Water Level Remains Very High



2019

2020

Forecast

Record High/Low

High antecedent lake levels increase the threat of and impacts from lakeshore flooding

# Lakeshore Flooding Impacts During High Water Levels

February 8, 1987

Lake Level: 580.9'

Storm Surge: 2.5' to 583.4'

Waves: up to ~20' (estimated)



October 31, 2014

Lake Level: 579.2'

Storm Surge: 2.4' to 581.7'

Waves: up to 22' (obs., south buoy)



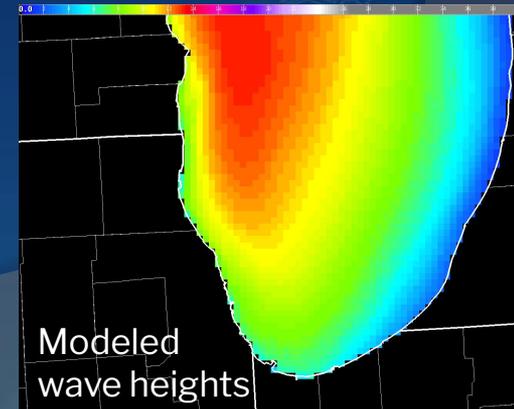
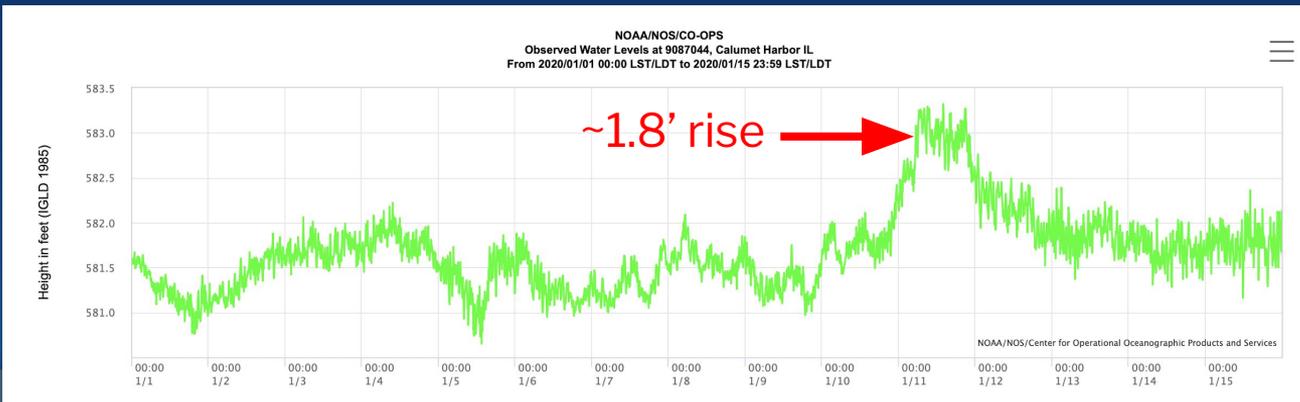
# Lakeshore Flooding Impacts During High Water Levels

January 10-11, 2020

Lake Level: 581.5'

Storm Surge: 1.8' to 583.3'

Waves - est. up to ~20 ft





# Thank You for Reading!

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