

Winter 2020/21 Summary

Going into the winter of 2020/21, most forecasting services were predicting various degrees of La Niña conditions. La Niña typically brings wetter and cooler than average conditions across the Pacific Northwest and northern Plains, while drier and warmer than average conditions typically prevail in the South. Long-range forecasts were calling for warmer-than-normal winter overall.

In the end, the only month colder than normal turned out to be February, and it caused temperatures to plummet lower than normal and much lower in the South.

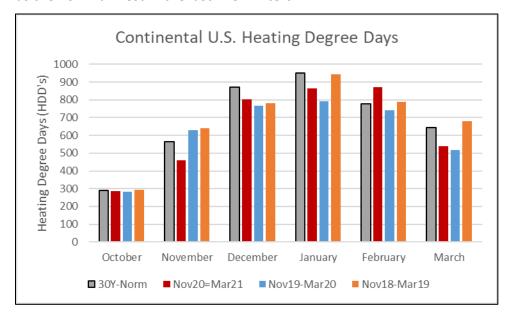
The winter's La Niña conditions were unusual primarily because for most of the season, the coolest water in the Pacific was south of the equator, not evenly split on either side of it.

With warmer conditions north of the equator, the subtropical jet stream more closely resembled what we usually see during an El Niño, or ENSO warm-phase event, with moisture-rich storm systems frequently moving in from the Gulf of Mexico.

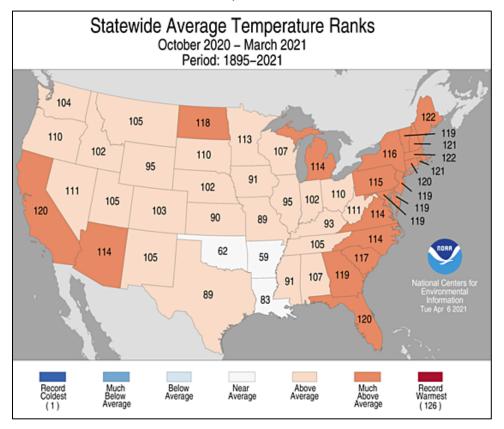
To that end, NOAA's ENSO Blog compared the large-scale patterns among 13 strong La Nina events, and 2020-21 was so dissimilar to the rest that they concluded "you can argue that the Northern Hemisphere atmosphere looked a little more like El Niño than La Niña!" and so it was a very warm winter overall.

As a result, a more amplified jet steam brought down persistent Arctic air for about a three week period in February. This three week period was cold enough to almost completely wipe out the above normal temperatures recorded in Dec-Jan-Feb.

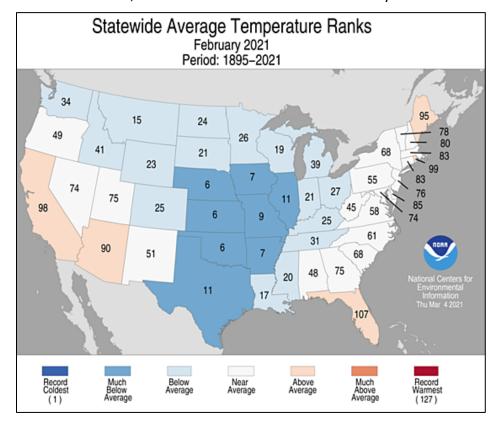
As measured by heating degree days (HDD) on a gas-population weighted basis, the continental U.S. finished the winter 6.7% warmer than the 30-year normal and 2.2% warmer than the previous winter. This ranks the winter of 2020/21 as the 10^{th} warmest in the last 125 winters.



Below is the map showing the temperature rankings by state for Oct20-Mar21 compared to 125 years of record keeping. For clarity, the numbers listed on each state represent a scale of 1 to 125, where 125 is the warmest period of the 125 winters and 1 is the coldest in 125 years.



Locally here in the midcontinent area, it was similar to the rest of the country with warm weather.



Below is HDD data for various cities across the U.S.

Percent Warmer /	Omaha, NE				Des Moines, IA				Minneapolis, MN			
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Dec-20 1,086 1,209 -10,17% Dec-20 1,098 1,209 -3,00% Dec-20 1,228 1,404 -12,28% Dec-21 1,505 1,003 31,27% Feb-21 1,506 1,005 30,00% Feb-21 1,407 1,008 2,47% Feb-21 1,008 1,008 4,00% Feb-21 1,008 1,00% Feb-21 1,008 1,008 4,00% Feb-21 1,008 1,008 4,00% Feb-21 1,008 1,008 4,00% Feb-21 1,00% Feb-21												
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Total to Date												
Percent Warmer / Colder Normal HDD Normal HDD Normal Normal HDD Normal HDD HDD						_						
Percent Warmer / Colder Horizon Colder Cold	Total to Date	4,766	5,104	-6.62%	Total to Date	4,915	5,143	-4.43%	Total to Date	5,576	6,108	-8.71%
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Feb-21	Dec-20	983	1,086	-9.48%	Dec-20	870	1,040	-16.35%	Dec-20	990	1,155	-14.29%
Feb-21	Jan-21	956	1,063	-10.07%	Jan-21	953	1,122	-15.06%	Jan-21	1,104	1,279	-13.68%
Mar-21	Feb-21	1,104	908	21.59%	Feb-21	1,161	881	31.78%	Feb-21	1,247	1,044	19.44%
Total to Date	Mar-21	785	763	2.88%	Mar-21		646		Mar-21	638	841	-24.14%
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Total to Date 3,172 2,995 5.91% Total to Date 3,704 3,931 -5.77% Total to Date 4,306 4,900 -12.12%	Feb-21	961	597	60.97%	Feb-21	1,084	780	38.97%	Feb-21	1,181	1,027	15.00%
Dubuque, IA Dubuque, IA Dubuque, IA Percent Warmer / Colder than HDD Normal HDD Normal HDD H	Mar-21	338	409	-17.36%	Mar-21	436	577	-24.44%	Mar-21	617	850	-27.41%
Percent Warmer / Colder than Month HDD	Total to Date	3,172	2,995	5.91%	Total to Date	3,704	3,931	-5.77%	Total to Date	4,306	4,900	-12.12%
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Feb-21												
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Jan-21 1,027 1,193 -13.91% Jan-21 959 995 -3.62% Jan-21 931 1,004 -7.27% Feb-21 1,113 966 15.22% Feb-21 952 788 20.81% Feb-21 857 833 2.88% Mar-21 497 751 -33.82% Mar-21 501 605 -17.19% Mar-21 589 700 -15.86%	Dec-20	915	1,074	-14.80%	Dec-20	906	901	0.55%	Dec-20	791	831	-4.81%
Feb-21 1,113 966 15.22% Feb-21 952 788 20.81% Feb-21 857 833 2.88% Mar-21 497 751 -33.82% Mar-21 501 605 -17.19% Mar-21 589 700 -15.86%	Jan-21			-13.91%			995	-3.62%			1,004	-7.27%
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