April 14, 2021

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.

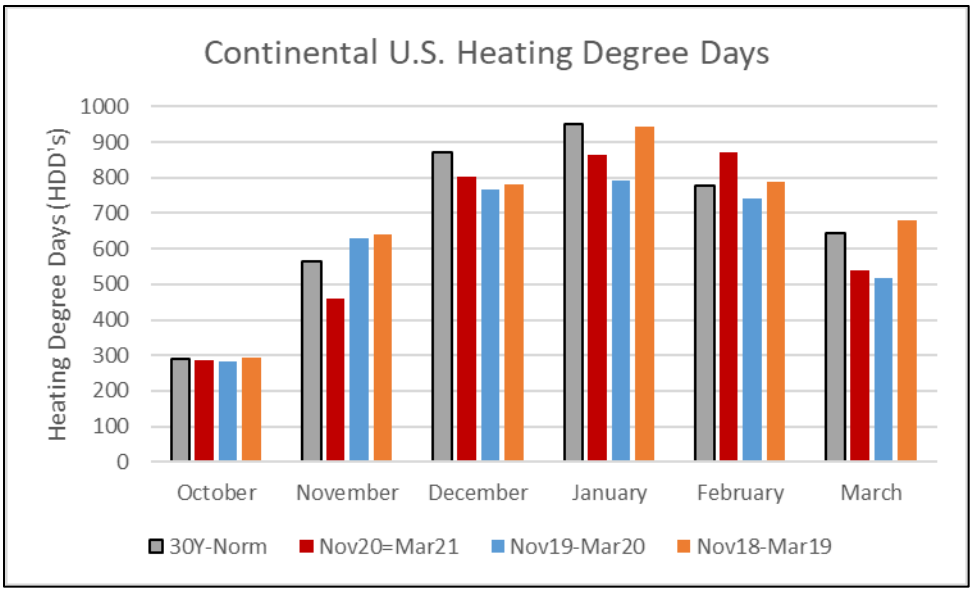
The winter's La Niña conditions were unusual primarily because for most of the season, the coolest water in the Pacific was south of the equator, not evenly split on either side of it.

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.

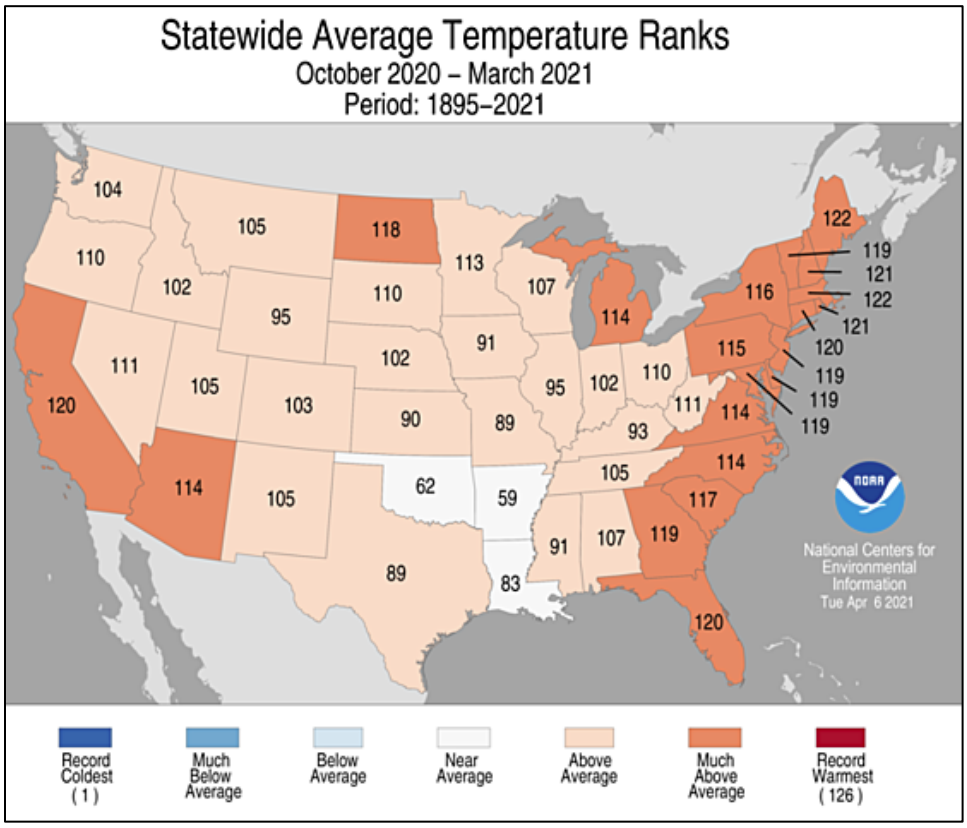
To that end, NOAA's ENSO Blog compared the large-scale patterns among 13 strong La Nina events, and 2020-21 was so dissimilar to the rest that they concluded "you can argue that the Northern Hemisphere atmosphere looked a little more like El Niño than La Niña!" and so it was a very warm winter overall.

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.

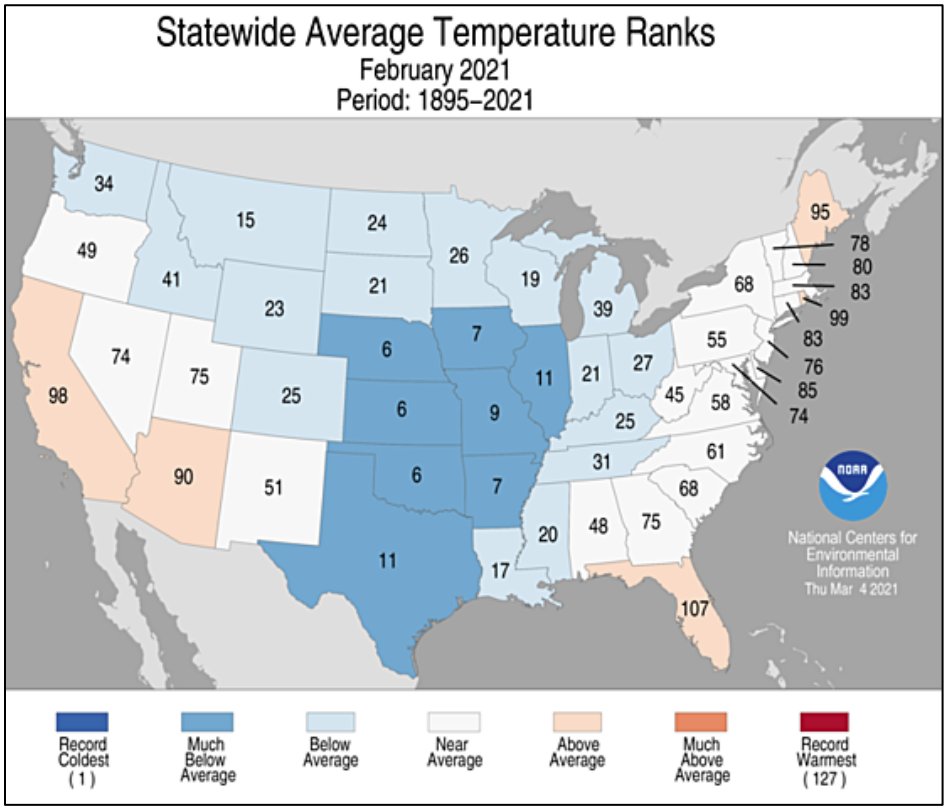
As measured by heating degree days (HDD) on a gas-population weighted basis, the continental U.S. finished the winter 6.7% warmer than the 30-year normal and 2.2% warmer than the previous winter. This ranks the winter of 2020/21 as the 10th warmest in the last 125 winters.



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.

Omaha, NE			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	623	785	-20.64%
Dec-20	1,086	1,209	-10.17%
Jan-21	1,124	1,286	-12.60%
Feb-21	1,356	1,033	31.27%
Mar-21	577	791	-27.05%
Total to Date	**4,766**	**5,104**	**-6.62%**

Des Moines, IA			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	622	774	-19.64%
Dec-20	1,099	1,209	-9.10%
Jan-21	1,190	1,313	-9.37%
Feb-21	1,388	1,051	32.06%
Mar-21	616	796	-22.61%
Total to Date	**4,915**	**5,143**	**-4.43%**

Minneapolis, MN			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	788	939	-16.08%
Dec-20	1,226	1,404	-12.68%
Jan-21	1,324	1,531	-13.52%
Feb-21	1,487	1,236	20.31%
Mar-21	751	998	-24.75%
Total to Date	**5,576**	**6,108**	**-8.71%**

Denver, CO			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	632	801	-21.10%
Dec-20	983	1,086	-9.48%
Jan-21	956	1,063	-10.07%
Feb-21	1,104	908	21.59%
Mar-21	785	763	2.88%
Total to Date	**4,460**	**4,621**	**-3.48%**

Kansas City, MO			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	472	642	-26.48%
Dec-20	870	1,040	-16.35%
Jan-21	953	1,122	-15.06%
Feb-21	1,161	881	31.78%
Mar-21	454	646	-29.72%
Total to Date	**3,910**	**4,331**	**-9.72%**

Chicago, IL			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	527	741	-28.88%
Dec-20	990	1,155	-14.29%
Jan-21	1,104	1,279	-13.68%
Feb-21	1,247	1,044	19.44%
Mar-21	638	841	-24.14%
Total to Date	**4,506**	**5,060**	**-10.95%**

Oklahoma City, OK			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	344	435	-20.92%
Dec-20	734	756	-2.91%
Jan-21	795	798	-0.38%
Feb-21	961	597	60.97%
Mar-21	338	409	-17.36%
Total to Date	**3,172**	**2,995**	**5.91%**

Wichita, KS			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	449	590	-23.90%
Dec-20	834	967	-13.75%
Jan-21	901	1,017	-11.41%
Feb-21	1,084	780	38.97%
Mar-21	436	577	-24.44%
Total to Date	**3,704**	**3,931**	**-5.77%**

Toledo, OH			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	529	707	-25.18%
Dec-20	929	1,092	-14.93%
Jan-21	1,050	1,224	-14.22%
Feb-21	1,181	1,027	15.00%
Mar-21	617	850	-27.41%
Total to Date	**4,306**	**4,900**	**-12.12%**

Duluth, MN			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	948	1,088	-12.87%
Dec-20	1,394	1,556	-10.41%
Jan-21	1,453	1,699	-14.48%
Feb-21	1,612	1,399	15.23%
Mar-21	979	1,210	-19.09%
Total to Date	**6,386**	**6,952**	**-8.14%**

Dubuque, IA			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	688	851	-19.15%
Dec-20	1,192	1,310	-9.01%
Jan-21	1,328	1,427	-6.94%
Feb-21	1,504	1,156	30.10%
Mar-21	775	918	-15.58%
Total to Date	**5,487**	**5,662**	**-3.09%**

Lincoln, NE			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	633	782	-19.05%
Dec-20	1,073	1,184	-9.38%
Jan-21	1,111	1,252	-11.26%
Feb-21	1,391	1,006	38.27%
Mar-21	562	773	-27.30%
Total to Date	**4,770**	**4,997**	**-4.54%**

Lafayette, IN			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	497	667	-25.49%
Dec-20	915	1,074	-14.80%
Jan-21	1,027	1,193	-13.91%
Feb-21	1,113	966	15.22%
Mar-21	497	751	-33.82%
Total to Date	**4,049**	**4,651**	**-12.94%**

Lexington, KY			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	493	561	-12.12%
Dec-20	906	901	0.55%
Jan-21	959	995	-3.62%
Feb-21	952	788	20.81%
Mar-21	501	605	-17.19%
Total to Date	**3,811**	**3,850**	**-1.01%**

New York City, NY			
Month	Actual HDD	Normal HDD	Percent Warmer / Colder than Normal
Nov-20	361	520	-30.58%
Dec-20	791	831	-4.81%
Jan-21	931	1,004	-7.27%
Feb-21	857	833	2.88%
Mar-21	589	700	-15.86%
Total to Date	**3,529**	**3,888**	**-9.23%**