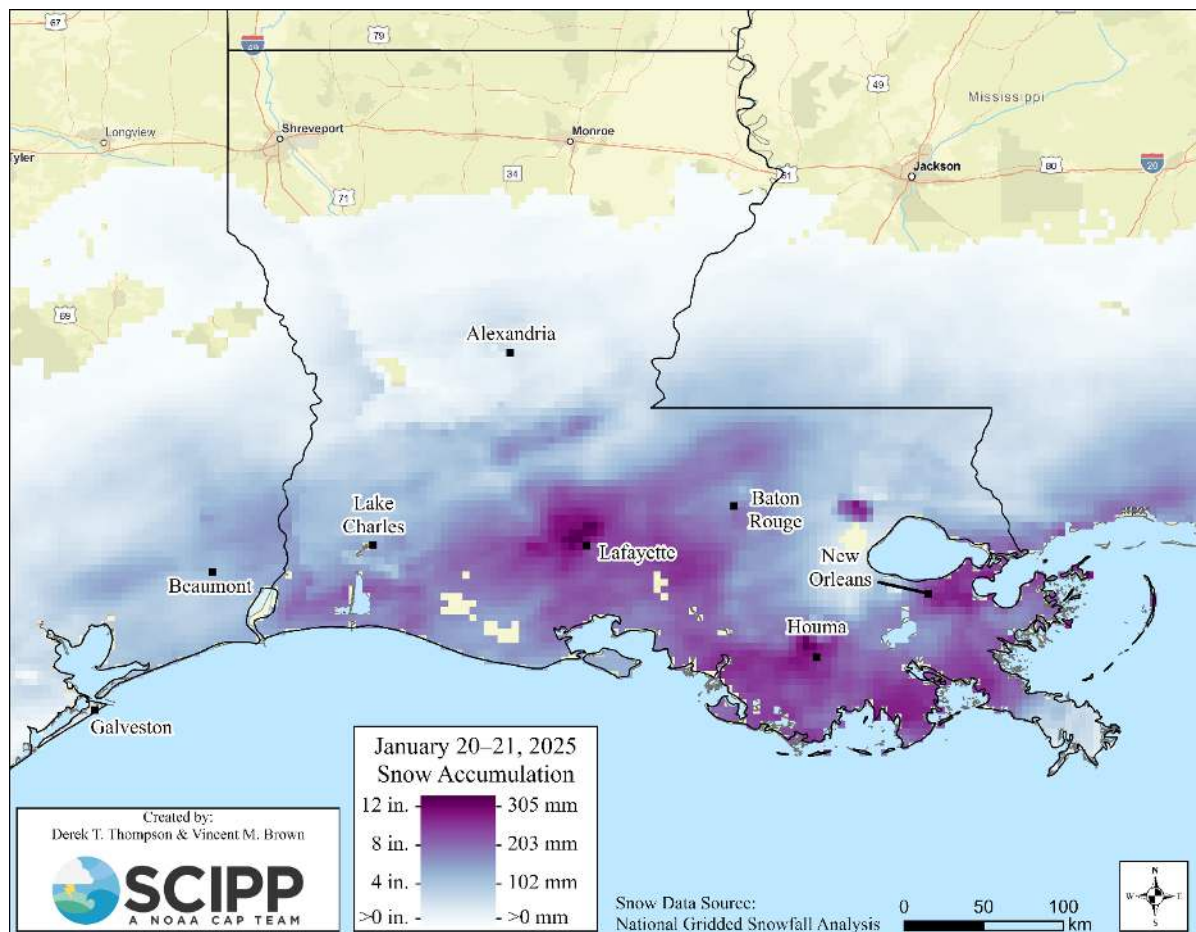


## Preliminary Summary of Snowfall Depths and Minimum Temperatures from the January 21–22, 2025 Gulf Coast Winter Storm

Prepared by:

Derek T. Thompson and Dr. Vincent M. Brown

Southern Climate Impacts Planning Program, Louisiana State University



**Figure 1.** 48-hour snowfall estimates ending 2025-01-22 12 UTC from the National Gridded Snowfall Analysis, a National Weather Service – National Operational Hydrologic Remote Sensing Center product ([https://www.noahrs.noaa.gov/snowfall\\_v2/](https://www.noahrs.noaa.gov/snowfall_v2/)).

Starting late Monday, January 20th, and early Tuesday, January 21st, a low-pressure system in the western Gulf of Mexico migrated east-northeast, bringing moisture inland where it encountered a bitterly cold airmass in place due to a southward dip in the jet stream, potentially related to a strong but stretched polar vortex. The amount of liquid precipitation that fell across coastal Texas and Louisiana was only about 0.30–1.10 inches, but because of the low temperatures, a large swath of the region observed snowfall totals of 4–8 inches (see Figure 1), with isolated areas experiencing upwards of 12 inches.

One of the more impressive aspects of the storm was the spatial extent of snowfall. Using the National Gridded Snowfall Analysis from the National Weather Service, we calculated the geometric area of various snowfall depths observed for 48-hour accumulations ending 2025-01-22 12 UTC across Louisiana and Texas (Table 1). Areas in Mississippi are not included.

**Table 1.** Estimated spatial analysis of snowfall depths across Louisiana and Texas using the National Gridded Snowfall Analysis from the National Weather Service National Operation Hydrologic Remote Sensing Center ([https://www.nohrsc.noaa.gov/snowfall\\_v2/](https://www.nohrsc.noaa.gov/snowfall_v2/))

<b>Snow Depth</b>	<b>Area</b>
Total Area with measurable snowfall	292,404 sq. km
≥ 1 inch (25.4 mm)	115,620 sq. km
≥ 2 inches (50.8 mm)	81,223 sq. km
≥ 3 inches (76.2 mm)	65,766 sq. km
≥ 4 inches (101.6 mm)	52,284 sq. km
≥ 5 inches (127 mm)	41,398 sq. km
≥ 6 inches (152.4 mm)	32,404 sq. km
≥ 7 inches (177.8 mm)	22,654 sq. km
≥ 8 inches (203.2 mm)	14,046 sq. km
≥ 9 inches (228.6 mm)	6,299 sq. km
≥ 10 inches (254 mm)	1,738 sq. km
≥ 11 inches (279.4 mm)	357 sq. km
≥ 12 inches (304.8 mm)	102 sq. km

Estimates show that an area of 81,223  $km^2$  experienced 2 inches or more of snowfall, an area slightly smaller than the size of South Carolina. Approximately 32,404  $km^2$ , an area larger than the state of Maryland, experienced 6 inches or more of snow. Finally, an area of about 1,738  $km^2$  observed at least 10 inches of snow, an area roughly the size of Houston, TX. Future work will put these 48-hour snowfall depths in a historical context across the Gulf Coast.

Point snowfall totals were also impressive across the storm domain. At the New Orleans International Airport, 8 inches of snow was observed, breaking the previous record set in 1963 of 2.7 inches. At the Lafayette Regional Airport, 9 inches was observed, making it the second-highest total on record (the previous record was 14 inches set in 1895). At the Baton Rouge

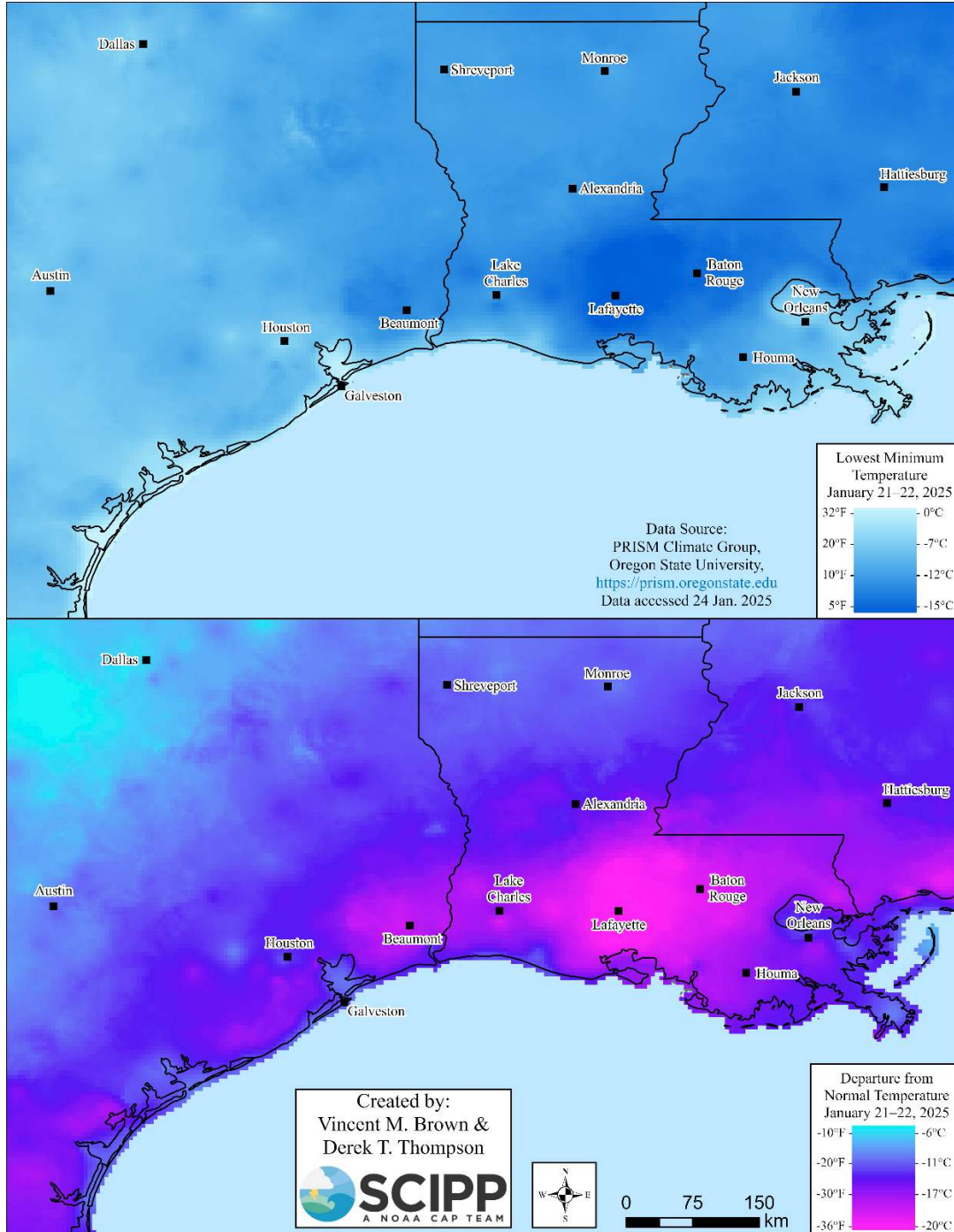
Metro. Airport, 7.6 inches of snow was reported, breaking the previous record of 6.5 inches set in 1895. Lake Charles Regional Airport observed 5.5 inches, breaking the previous single-day record of 4 inches set in 1973 (although a previous site, Lake Charles Chennault, observed 22 inches in 1895). Other notable single-day snowfall totals across the region include 1 inch at Galveston Scholes Field, TX (2nd largest), 3 inches at Houston Hobby Airport, TX (3rd largest), and 1.2 inches at Houston Intercontinental Airport, TX (6th largest).

Table 2 shows other notable snowfall totals observed across Louisiana and Texas as of January 23rd. A CoCoRaHS observer in Grand Coteau, LA (just north of Lafayette, LA) reported 13.4 inches of snow, while 11.5 inches was observed in Chalmette, LA (just outside of New Orleans, LA). In Baton Rouge, LA, 9 inches of snow was reported.

**Table 2.** Selected single-day snowfall totals across Louisiana and Texas.

<b>Station Name</b>	<b>County/Parish</b>	<b>State</b>	<b>Snow Total (in.)</b>
Grand Coteau	St. Landry Parish	LA	13.4
1 SE Chalmette	St. Bernard Parish	LA	11.5
Rayne 1.0 W	Acadia Parish	LA	11.4
1 WSW Larose	Lafourche Parish	LA	10.1
2 E Metairie	Jefferson Parish	LA	10
2 W Des Allemands	St. Charles Parish	LA	10
1 NW New Orleans	Orleans Parish	LA	9.5
1 SW Reserve	St. John the Baptist Parish	LA	9.5
Oak Hills Place	East Baton Rouge Parish	LA	9
1 NE Belle Chasse	Plaquemines Parish	LA	9
Thibodaux 4 SE	Lafourche Parish	LA	8.7
2 SE La Porte	Harris County	TX	6
Beaumont 0.8 NNE	Jefferson County	TX	5.4
8 NNE Anahuac	Chambers County	TX	5
2 S Dayton	Liberty County	TX	5

## Minimum Temperature Summary



**Figure 2.** Preliminary lowest minimum temperature (21–22 Jan. 2025) and departure from normal minimum temperature (1991–2020) using PRISM Climate Group, Oregon State University, <https://prism.oregonstate.edu>, data created 24 Jan 2025, accessed 24 Jan 2025.

The January 21–22, 2025, winter storm brought abnormally low surface temperatures to the Gulf Coast (Figure 2). We calculated the lowest minimum temperature (°F) from 21–22 Jan.

2025 and its departure from the climatological normal (1991–2020) using preliminary data from PRISM (PRISM Climate Group, 2025). In New Orleans, LA, minimum temperatures were 19–23°F, roughly 20–24°F below normal for 21–22 January. Across Baton Rouge, LA, the lowest minimum temperatures were around 4–8°F, roughly 28–32°F below normal for 21–22 January. Lafayette experienced minimum temperatures of 3–6°F, which were 33–36°F below normal. A location just to the south-southeast of Lafayette, LA (near New Iberia, LA) experienced a departure from normal minimum temperature of ~36.6°F, the greatest in the storm domain. Other notable low minimum temperatures occurred near Lake Charles, LA (10–15°F, 22–27°F below normal), and near Beaumont, TX (8–12°F, 13–17°F below normal). Interestingly, Shreveport, LA, observed minimum temperatures around 12–16°F (9–13°F below normal), which were warmer than those in southern Louisiana (e.g., Lafayette, LA). Minimum temperatures in southern Louisiana were lower than those observed in northern Louisiana on Wednesday, 22 January 2025, due to the snow cover, despite being at a lower latitude.

While the estimated gridded data provide a spatial representation (areal average) of the low temperatures, point locations often exhibit more extreme values due to their highly localized nature. Table 3 lists selected minimum temperature values across the affected domain from 21–23 Jan. 2025. Some notable low temperatures include 1°F at a station in Grosse Tete, LA (Iberville Parish), 2°F at a station in Central, LA (East Baton Rouge Parish), and 2°F at the University of Louisiana at Lafayette’s Cade Farm in Lafayette Parish, LA. The coldest minimum temperatures during the event were centered around Lafayette, LA and points to the south-southeast.

**Table 3.** Lowest recorded minimum temperature (°F) for sites in selected counties/parishes across the storm domain from 21–23 Jan. 2025.

<b>Station</b>	<b>County/Parish</b>	<b>State</b>	<b>Temperature</b>
0.9 SE Grosse Tete	Iberville	LA	1°F
Central	East Baton Rouge	LA	2°F
ULL Cade Farm Lafayette 13 SE	Lafayette	LA	2°F
4 SSE Cade	St. Martin	LA	2°F
Opelousas	St. Landry	LA	2°F
3.1 NE Lottie	Point Coupee	LA	3°F
Mire	Acadia	LA	3°F
Abbeville CC Mem	Vermillion	LA	3°F
Erwinville Com. Center	West Baton Rouge	LA	4°F
Moss Bluff 2 NNW	Calcasieu	LA	4°F
3 NNE Lydia	Iberia	LA	6°F
0.8 W Reeves	Allen	LA	6°F
Folsom	St. Tammany	LA	7°F
Amite	Tangipahoa	LA	7°F
1.7 S Jennings	Jefferson Davis	LA	7°F
Gonzales	Ascension	LA	8°F
Thibodaux	Terrebonne	LA	8°F
Mount Hermon	Washington	LA	8°F
Marksville	Avoyelles	LA	8°F
Beaumont	Jefferson	TX	8°F
1.0 E Orange	Orange	TX	8°F
2.3 SE Cheneyville	Rapides	LA	8°F
Thibodaux	Lafourche	LA	9°F
St. Francisville	West Feliciana	LA	9°F
5.3 S Deweyville	Newton	TX	10°F
Donaldsonville 3 SW	Assumption	LA	10°F
Livingston	Livingston	LA	11°F
Vacherie	St. James	LA	11°F
Laplace	St. John the Baptist	LA	12°F
Belle Chasse	Plaquemines	LA	13°F
Lumberton	Hardin	TX	13°F
Gretna	Jefferson	LA	16°F
New Orleans Airport	Orleans	LA	16°F
Chalmette	St. Bernard	LA	17°F
Killona Vol. Fire Dept.	St. Charles	LA	17°F

Another aspect of this storm was the duration of freezing ( $\leq 32^{\circ}\text{F}$ ) temperatures. We gathered raw/preliminary hourly temperature records (METAR) for six airports across Louisiana and Texas to determine how long the sites experienced consecutive hours at or below freezing (Table 4). While it is possible that temperatures could have risen above freezing between hours, since hourly observations are instantaneous, we use the hourly data as presented. Future work will investigate consecutive days with a minimum temperature at or below freezing.

**Table 4.** Selected hourly stations for consecutive hourly periods at or below freezing across the storm domain. The ‘Jan 20–23’ column contains the length of the consecutive hourly period at or below freezing for the event described here, while the ‘Record’ column contains the longest hourly period at or below freezing recorded at the station. The ‘Median’ column represents the median (50<sup>th</sup> percentile) duration of all consecutive hourly events at or below freezing during the station’s ‘Period of Record’ (final column).

Station Name	County/Parish	State	Jan. 20–23	Percentile	Record	Median	Period of Record
Lake Charles Regional AP	Calcasieu	LA	37 hrs.	> 98th	70 hrs. (1962)	4 hrs.	1962–present
Baton Rouge Metro. AP	East Baton Rouge	LA	34 hrs.	> 98th	72 hrs. (1983)	5 hrs.	1950–present
New Orleans Intl. AP	Jefferson	LA	32 hrs.	> 97th	65 hrs. (1962)	3 hrs.	1950–present
Shreveport Regional AP	Caddo	LA	17 hrs.	> 93th	138 hrs. (1983)	5 hrs.	1950–present
Port Arthur SE TX Regional AP	Jefferson	TX	16 hrs.	> 93th	64 hrs. (1962)	4 hrs.	1950–present
Corpus Christi Intl. AP	Nueces	TX	13 hrs.	> 84th	66 hrs. (1951)	3.5 hrs.	1950–present

The longest consecutive hourly period at or below freezing during the event occurred at Lake Charles Regional Airport, LA, with 37 hrs. Considering all consecutive hourly periods at or below freezing for this station since 1962, 37 hrs. is in the top 2% of events. The record for this site was 70 consecutive hours at or below freezing in 1962. At the Baton Rouge Metro. Airport, LA, there were 34 consecutive hours at or below freezing, ranking the event in the top 2%. The record for Baton Rouge Metro. Airport was 72 consecutive hours. set in 1983, with 1962 coming in a close second with 71 hrs.

New Orleans Intl. Airport, LA, experienced 32 consecutive hours at or below freezing from 5:00 am CST 21 Jan 2025 to 12:00 pm CST 22 Jan 2025, a top 3% event on record with data going back to 1950. The site would have experienced 52 consecutive hours, but a brief period of above-freezing temperatures (33–34°F) in the afternoon on 22 Jan 2025 disrupted the streak. The record for the New Orleans Intl. Airport occurred in 1962, with 65 consecutive hours at or below freezing. A similar phenomenon occurred at the Port Arthur SE TX Regional Airport, TX, where the longest consecutive streak was 16 hrs. but would have been 34 hrs. if not for a brief 3-hour period (2:00–4:00 pm CST 21 Jan 2025) above freezing. Corpus Christi

International Airport, TX, observed 13 consecutive hours at or below freezing, a top 16% event for that location. The record at Corpus Christi was set in 1951 with 66 consecutive hours. Finally, in northern Louisiana, at the Shreveport Regional Airport, LA, there were 17 consecutive hours at or below freezing, a top 7% event but less than the record of 138 hrs. set in 1983.

For questions, please email Dr. Vincent M. Brown ([vbrow31@lsu.edu](mailto:vbrow31@lsu.edu)) or Derek T. Thompson ([dtho143@lsu.edu](mailto:dtho143@lsu.edu)) of the Southern Climate Impacts Planning Program.