EARTH NETWORKS®

2020

OKLAHOMA LIGHTNING REPORT

ABOUT THIS REPORT

The 2020 Lightning Report was prepared by Earth Networks using the Earth Networks Total Lightning Network (ENTLN). The following report includes in-cloud, cloud-to-ground, and total lightning data for this state and the surrounding water bodies (if any) throughout 2020. Counts, densities, rankings, Dangerous Thunderstorm Alerts (DTAs), and Thunder Days in this report are from January 1, 2020 to December 31, 2020.

THE EARTH NETWORKS TOTAL LIGHTNING NETWORK (ENTLN)

The lightning data in this report is derived from the Earth Networks Total Lightning Network (ENTLN), which monitors the combination of in-cloud and cloud-to-ground lightning strikes over 100 countries. With over 1,800 sensors, the ENTLN is the most extensive and technologically advanced total lightning network in the world. ENTLN has been specifically deployed to detect real-time lightning and provide advanced warning for severe weather events that could threaten public safety and operational efficiency.

IN THIS REPORT

Table of Contents

REPORT TERMINOLOGY

To help you better understand the insights from this lightning report, we've included definitions of our frequently used report terminology below.

Lightning Pulse: This report measures lightning pulses. A pulse is a surge of electric current in lightning usually accompanied by a burst of light. Pulses are classified as In-cloud (IC) or Cloud-to-Ground (CG).

Lightning Flash: A lightning flash is a collection of pulses close in space and time that approximates the continuous ionized channels of a complete bolt of lightning.

Cloud-to-Ground Lightning (CG): Lightning that happens between opposite charges in a cloud and on the ground.

In-Cloud Lightning (IC): Lightning that occurs between opposite charges within a thunderstorm cloud.

Total Lightning Detection: The combination of all in-cloud and cloud-to-ground lightning activity.

Pulse Density: The number of lightning pulses per square mile per year.

Dangerous Thunderstorm Alerts (DTAs): Earth Networks patented advanced severe weather warnings that notify users of incoming storms up to 45 minutes before storm arrival.

Thunder Days: Any given day where lightning was detected in a certain area.

TOTAL LIGHTNING

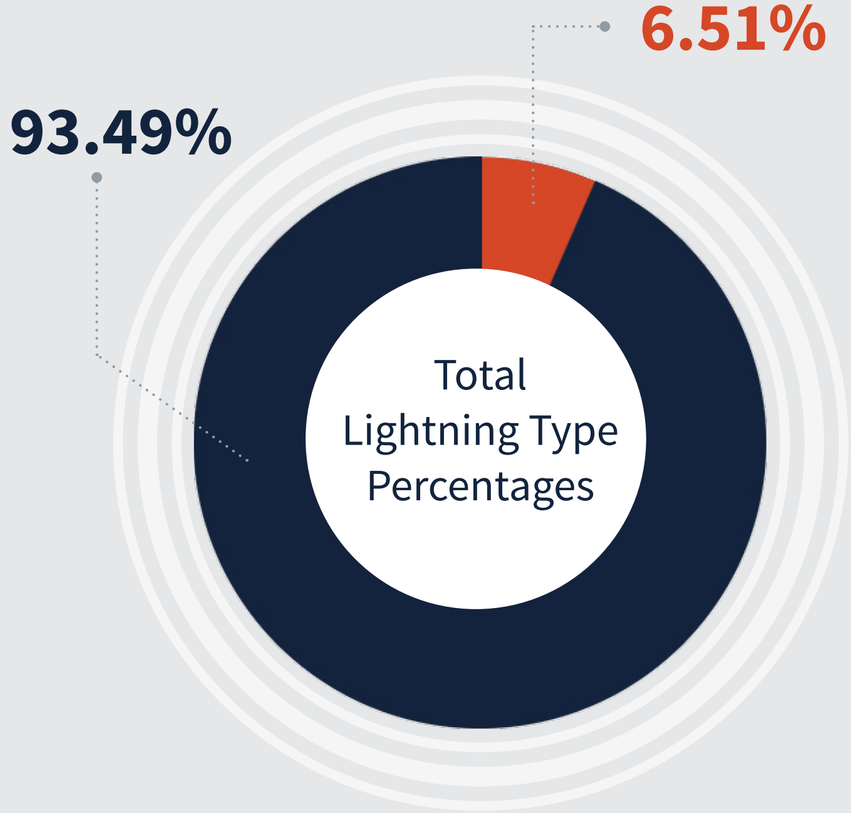
is the combination of cloud-to-ground (CG) and in-cloud (IC) lightning strikes

Cloud-to-Ground lightning:
Lightning that happens between opposite charges in a cloud and on the ground

In-Cloud lightning:
Lightning that occurs between opposite charges within a thunderstorm cloud

OKLAHOMA TOTAL LIGHTNING PULSES

26,159,420

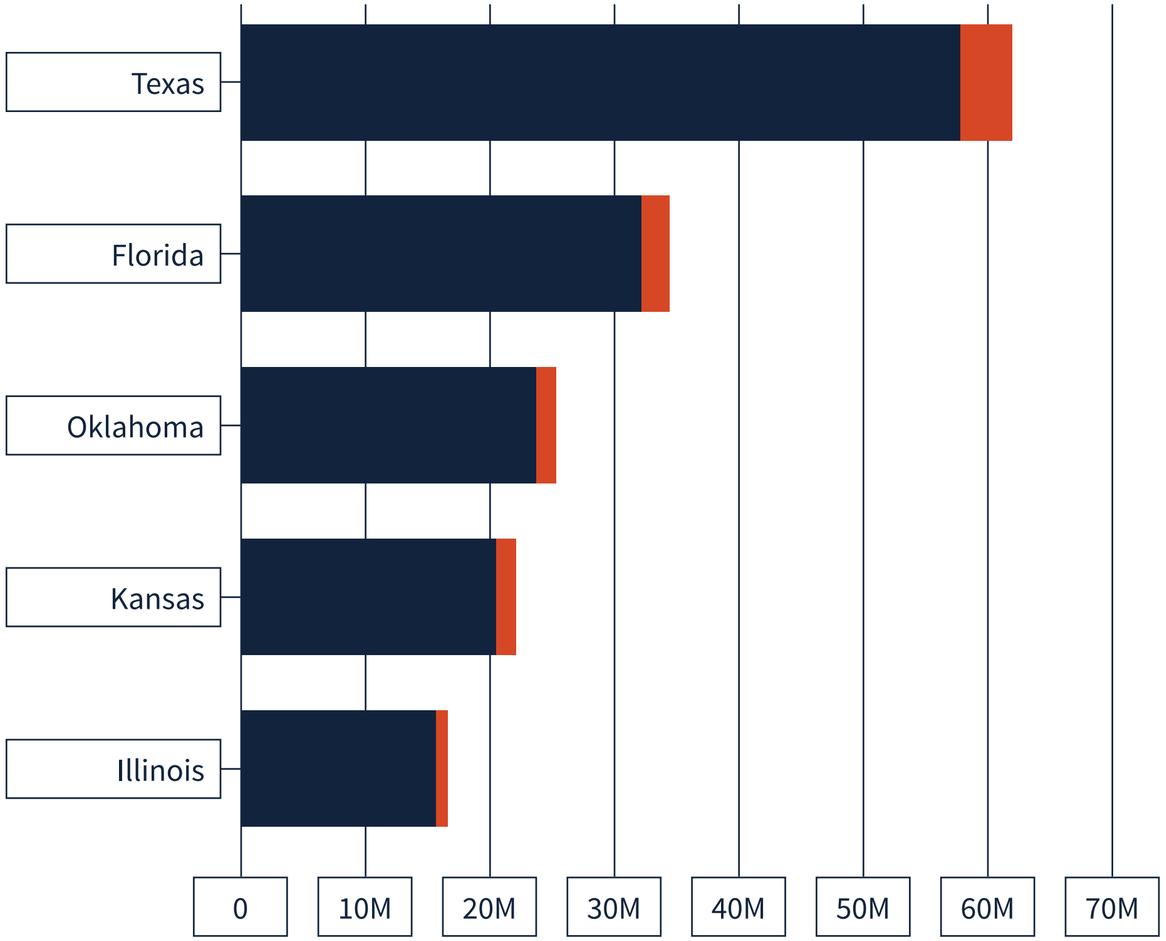


Cloud-to-ground
1,702,288

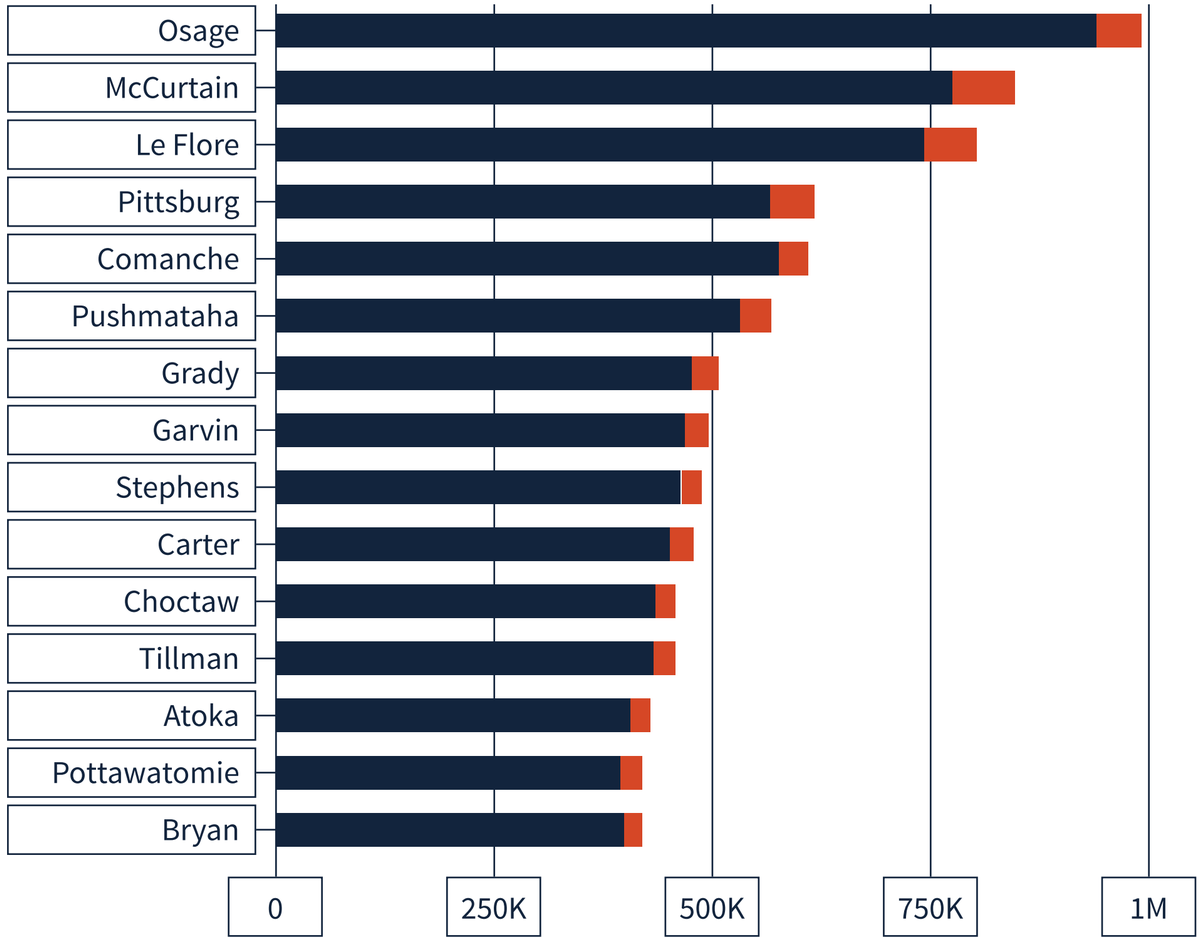
In-cloud
24,456,927

LIGHTNING COUNT RANKINGS

STATES

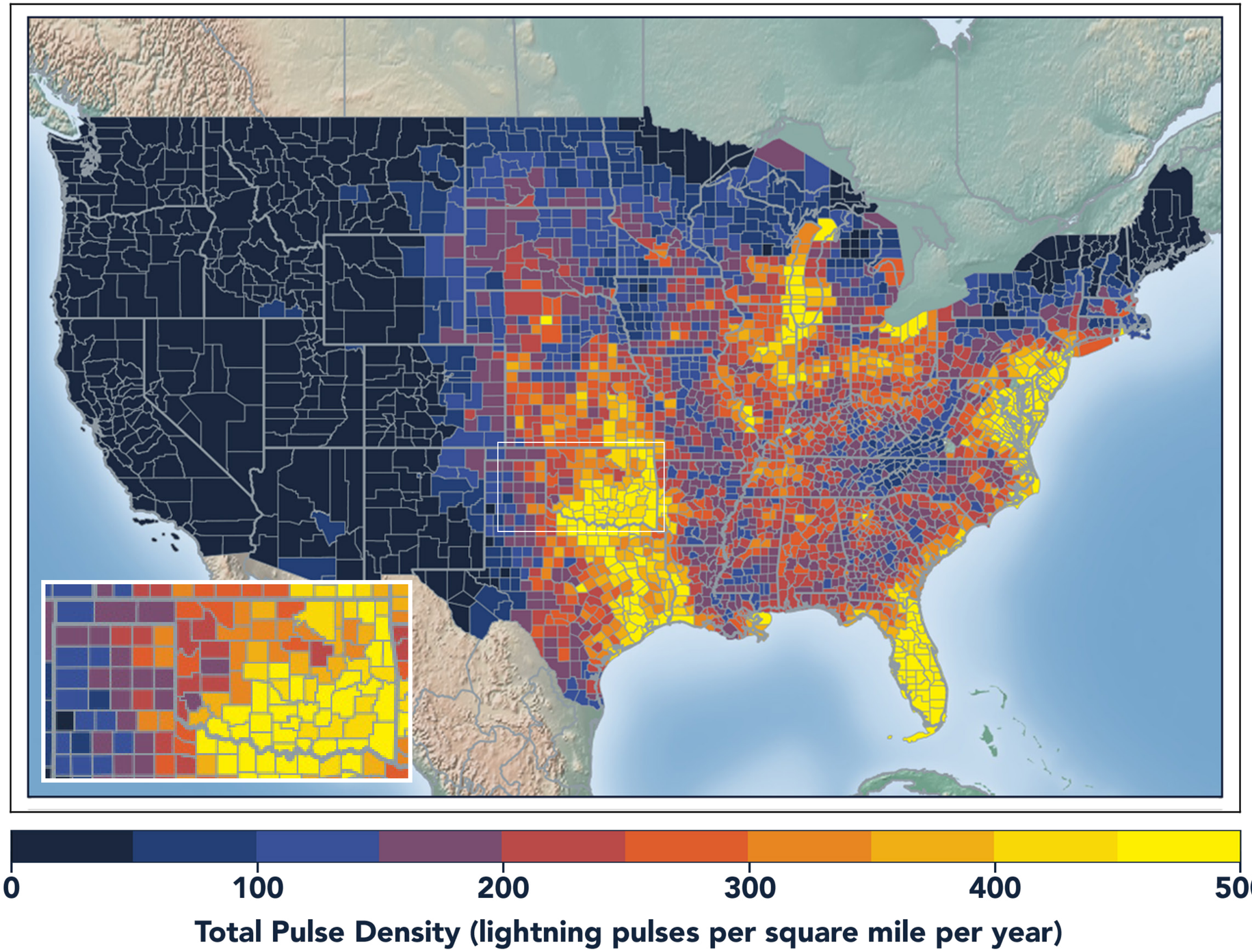


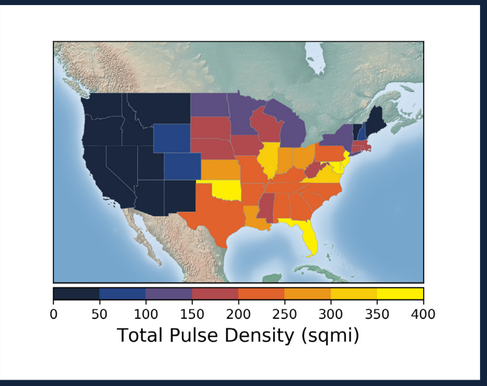
COUNTIES



Oklahoma ranked 3 in total lightning pulses for 2020.

TOTAL (CG+IC) PULSE DENSITY MAP





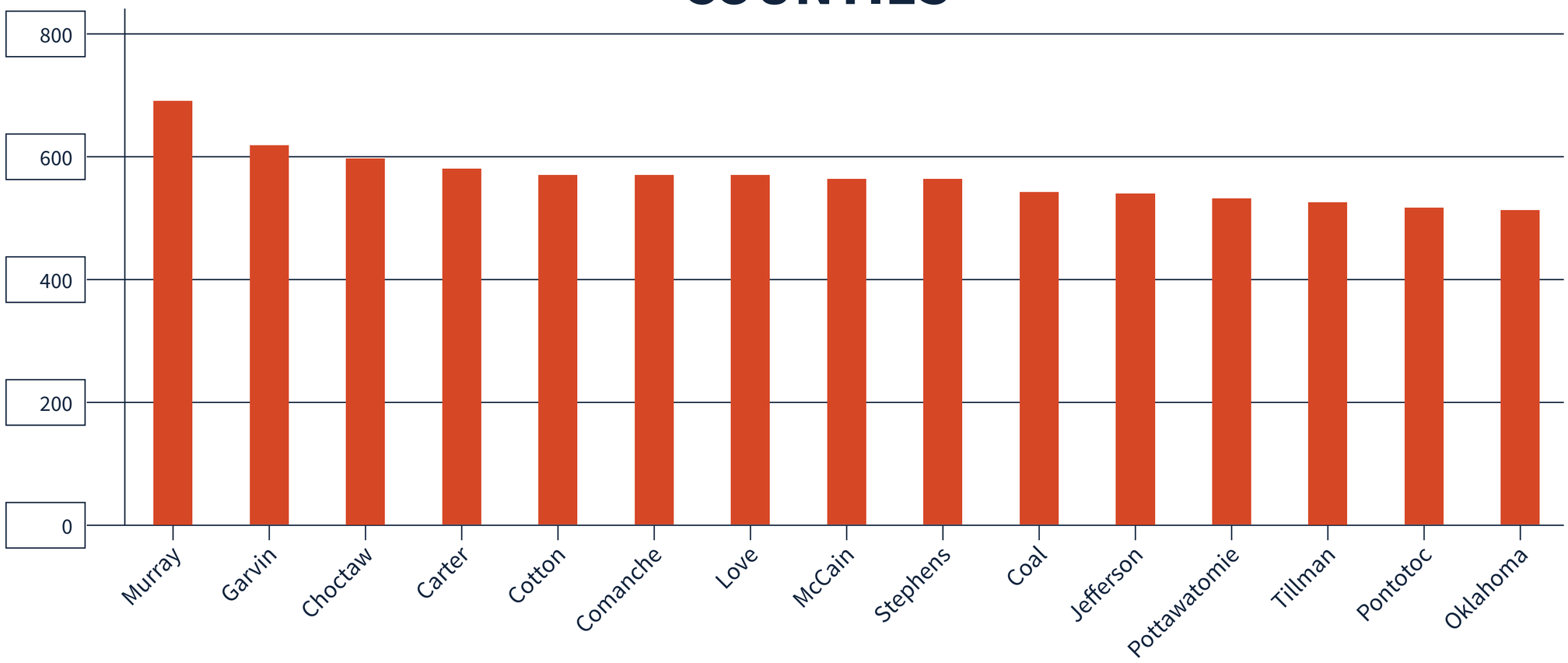
Pulse density is a better indicator of lightning activity than total lightning counts because it enables us to compare different sized areas (like states and counties) fairly.

We cluster pulses together into a flash. With every pulse we detect, we receive a more precise measure of lightning activity. At left, areas in bright yellow experienced the highest lightning pulse density per square mile in 2020.

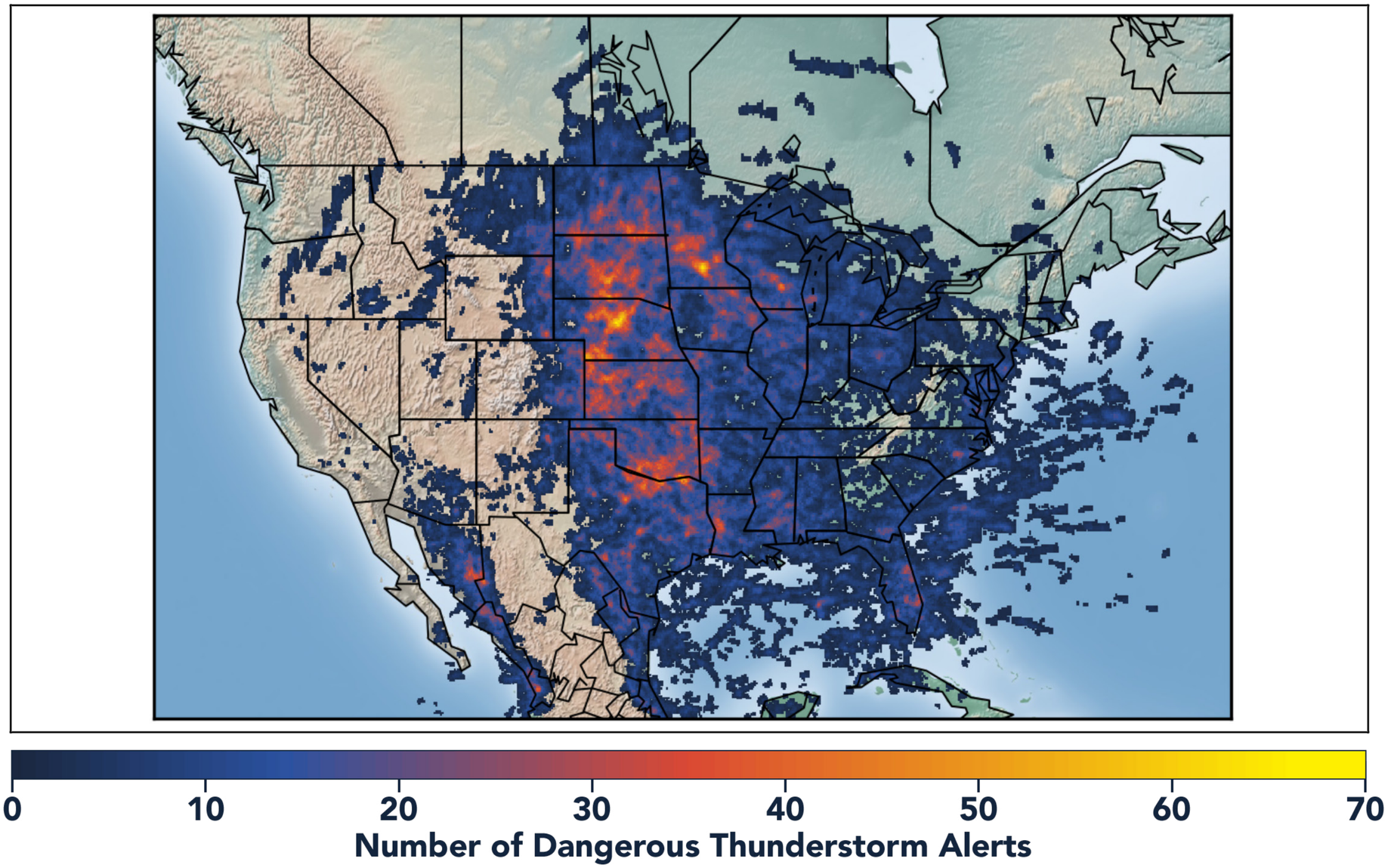
TOTAL PULSE DENSITY RANKINGS

This chart shows the top 15 counties in the state ranked by total pulse density, which is the total lightning divided by the area of the county (in square miles).

COUNTIES



DANGEROUS THUNDERSTORM ALERTS IN THE U.S.



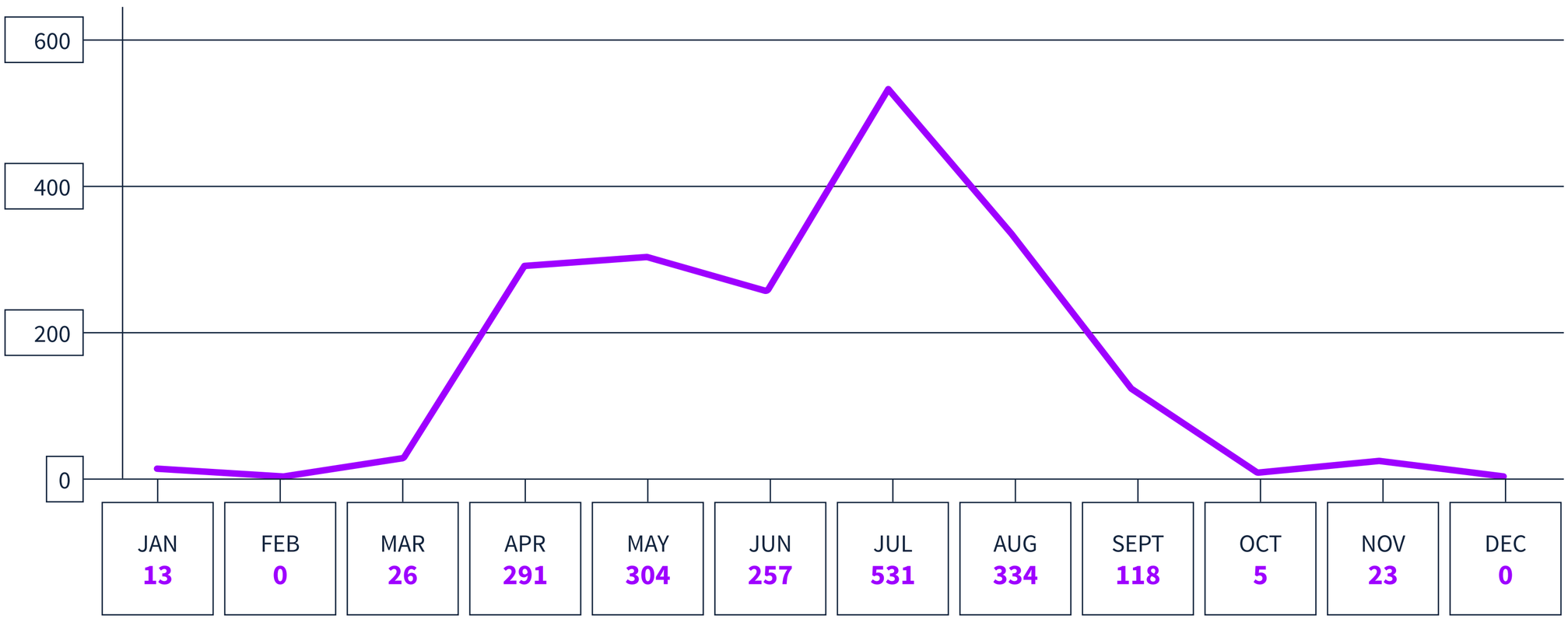
Earth Networks issued 29,401 Dangerous Thunderstorm Alerts (DTAs) in 2020. This year's map clearly shows the persistent drought conditions that have plagued the South and Southwest.

Dangerous Thunderstorm Alerts (DTAs), available exclusively to Earth Networks, provide **50% more lead time** to severe storms compared to publicly available alerts.

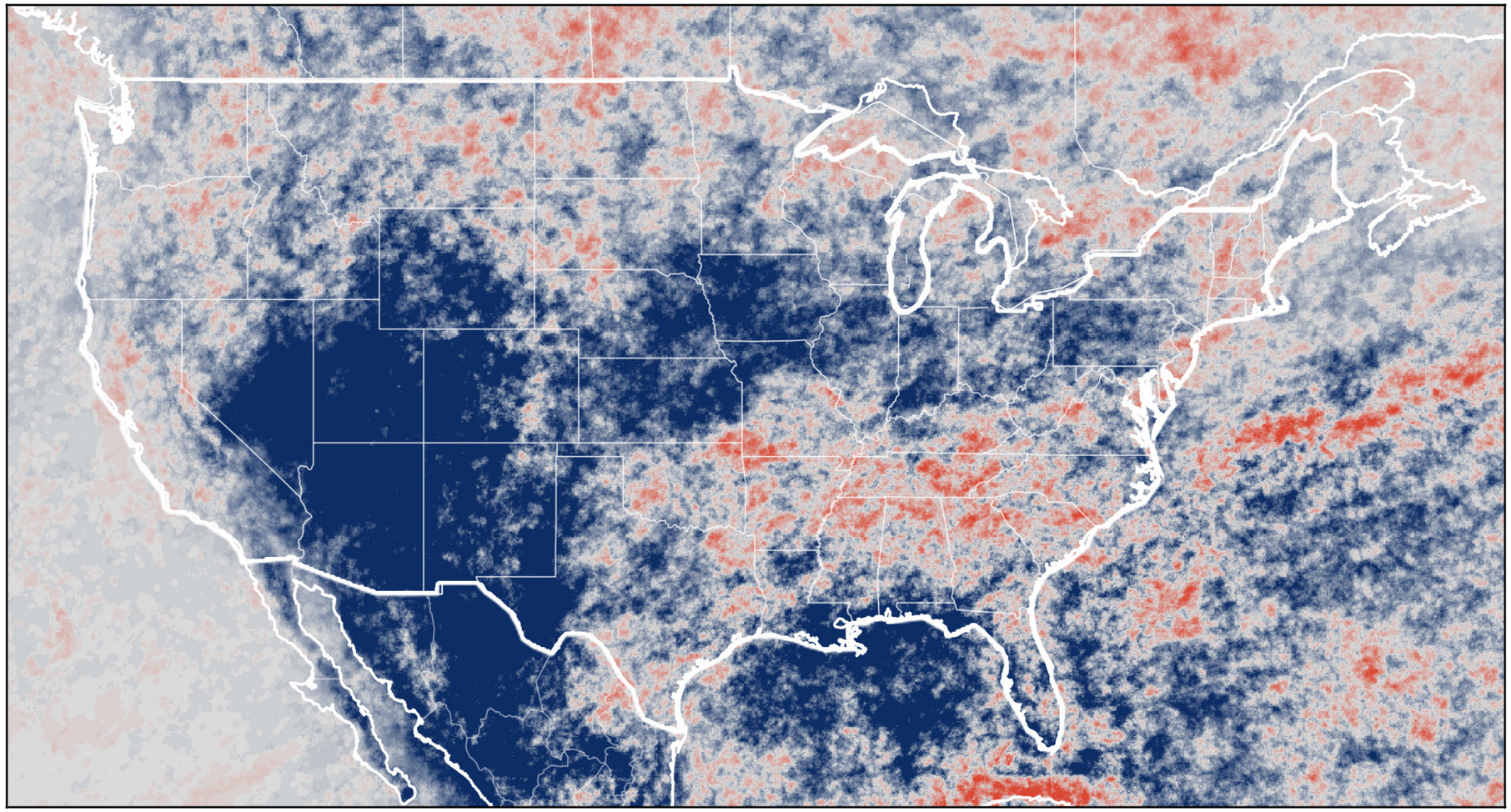
DANGEROUS THUNDERSTORM ALERTS BY MONTH

Earth Networks issued 1,902 Dangerous Thunderstorm Alerts for the state in 2020.

OKLAHOMA



TOTAL STATE THUNDER DAYS: 205



Change in Thunder Days Map

This year, the Southwest and Midwest experienced significantly less lightning than in previous years due to a persistent drought and weak monsoon. States in the Southeast experienced a substantial uptick in lightning activity this year, including Tennessee, North Carolina, South Carolina, Virginia, West Virginia, Georgia, Alabama, Mississippi, Florida, Louisiana, Arkansas, and Kentucky.

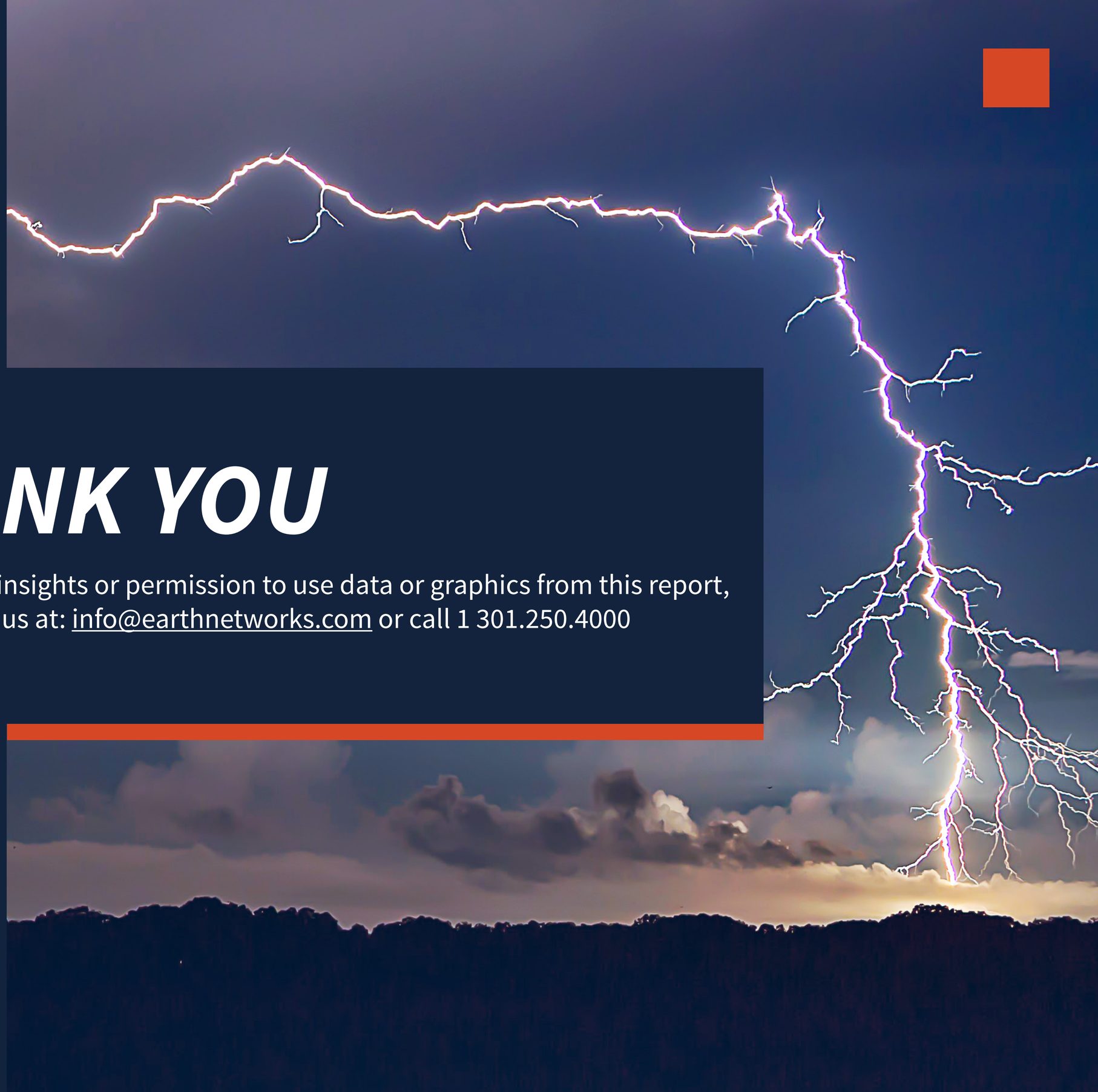
Thunder Days are the days we detected lightning over a certain area. The map shows a deviation from our 7-year average and illustrates our overall finding that lightning decreased about 15% from 2019.

EARTH NETWORKS®

www.earthnetworks.com

THANK YOU

For additional insights or permission to use data or graphics from this report, please contact us at: info@earthnetworks.com or call 1 301.250.4000



APPENDIX

This table ranks all U.S. states by total lightning pulses, including in-cloud and cloud-to-ground from highest to lowest. Total number of thunder days in each state (the total number of days in the year when lightning was detected by ENTLN) are also included. The period covered is January 1, 2020 to December 31, 2020.

STATE	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
TX	63,683,799	278
FL	35,430,198	246
OK	26,159,420	205
KS	23,125,675	179
IL	16,785,149	166
NE	14,433,875	178
MO	14,081,658	184
VA	13,234,163	176
GA	13,016,803	217
OH	12,009,955	143
SD	11,940,870	156
LA	11,787,379	230
AL	11,448,621	202
AR	11,417,155	211
NC	10,666,834	203
PA	10,024,978	151
MS	9,236,279	210
IN	9,175,986	149
IA	9,121,097	140
WI	8,812,327	145
TN	8,458,373	186
MN	8,009,792	148
KY	7,974,926	166
MI	7,769,382	159
ND	7,634,287	131
SC	7,454,219	197
CO	7,360,769	185
MD	6,666,766	124
NM	5,819,550	196
MT	5,107,593	154
WY	4,951,397	166
NY	4,943,122	152
WV	4,684,226	150
AZ	3,532,759	151
NJ	3,465,297	96
UT	1,951,574	162
ID	1,518,171	172
MA	1,267,046	80
NV	1,237,862	146
DE	1,168,918	89
CA	956,187	151
OR	915,855	132
CT	802,252	70
NH	618,242	70
WA	402,333	117
ME	358,334	81
VT	354,695	75
RI	190,992	42
DC	44,204	47

APPENDIX

This table ranks all U.S. states by total lightning pulses, including in-cloud and cloud-to-ground from highest to lowest. Total number of thunder days in each state (the total number of days in the year when lightning was detected by ENTLN) are also included. The period covered is January 1, 2020 to December 31, 2020.

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
Osage County	991,376	93
McCurtain County	846,562	103
Le Flore County	805,769	96
Pittsburg County	619,219	90
Comanche County	609,193	72
Pushmataha County	568,370	88
Grady County	509,353	76
Garvin County	496,793	74
Stephens County	489,324	67
Carter County	478,940	71
Choctaw County	459,586	78
Tillman County	459,470	70
Atoka County	428,967	80
Pottawatomie County	420,829	77
Bryan County	420,395	82
Jefferson County	409,603	57
Caddo County	400,120	83
Canadian County	394,221	69
Grant County	393,570	69
Kiowa County	384,801	81
Craig County	381,720	87
Woods County	379,867	70
Texas County	375,142	77
Pontotoc County	371,802	76
Hughes County	364,976	76
Oklahoma County	363,599	71
Cotton County	361,003	62
Garfield County	347,470	71
Delaware County	342,374	85
Cherokee County	341,326	81
Lincoln County	340,492	68
Muskogee County	335,484	85
Kingfisher County	332,487	75
McClain County	321,597	74
Beaver County	319,040	89
Major County	317,924	73
McIntosh County	312,057	73
Blaine County	306,935	75
Ellis County	302,269	76

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
Harper County	299,069	66
Latimer County	295,334	85
Love County	292,636	61
Sequoyah County	292,189	82
Jackson County	288,946	71
Murray County	288,195	63
Roger Mills County	285,477	75
Alfalfa County	284,740	72
Coal County	281,357	65
Woodward County	278,693	74
Johnston County	276,881	70
Haskell County	274,214	79
Kay County	269,445	74
Adair County	267,674	72
Seminole County	259,945	68
Mayes County	254,820	76
Cimarron County	254,212	74
Logan County	253,171	69
Okmulgee County	248,198	72
Washita County	241,927	82
Noble County	241,523	66
Nowata County	241,065	80
Creek County	236,872	65
Cleveland County	234,957	68
Rogers County	234,259	77
Okfuskee County	228,770	66
Dewey County	214,793	69
Tulsa County	214,110	72
Beckham County	205,097	73
Ottawa County	196,837	77
Marshall County	190,047	64
Payne County	188,387	60
Custer County	186,953	76
Wagoner County	180,288	74
Pawnee County	178,880	65
Washington County	149,280	70
Greer County	123,905	73
Harmon County	107,655	63