



2020

TENNESSEE 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

- 03** Report Terminology
- 04** Lightning Counts
- 06** Lightning Density
- 08** Dangerous Thunderstorm Alerts
- 09** Thunder Days
- 10** Contact

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:

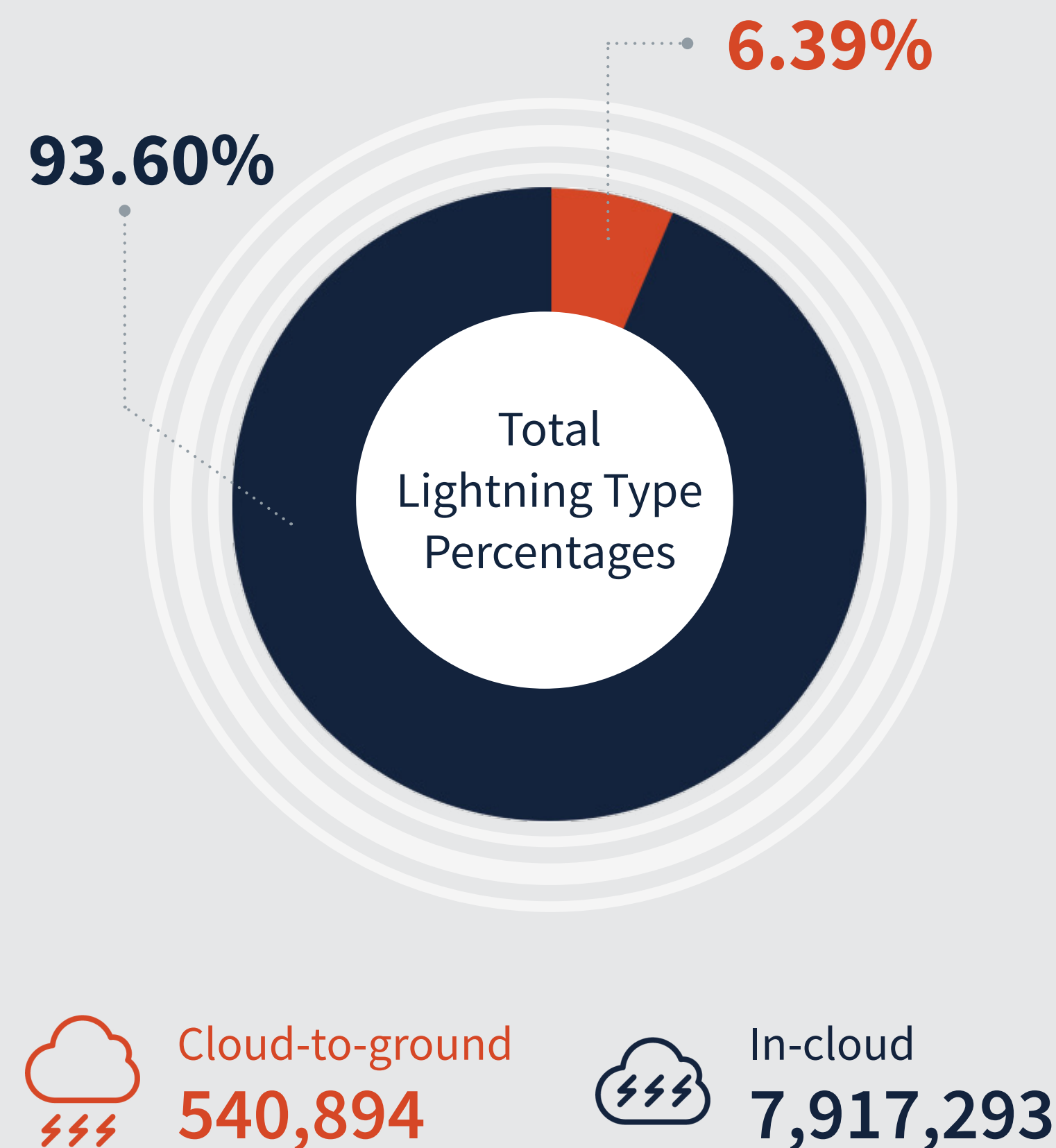
Lightning that happens between opposite charges in a cloud and on the ground

In-Cloud lightning:

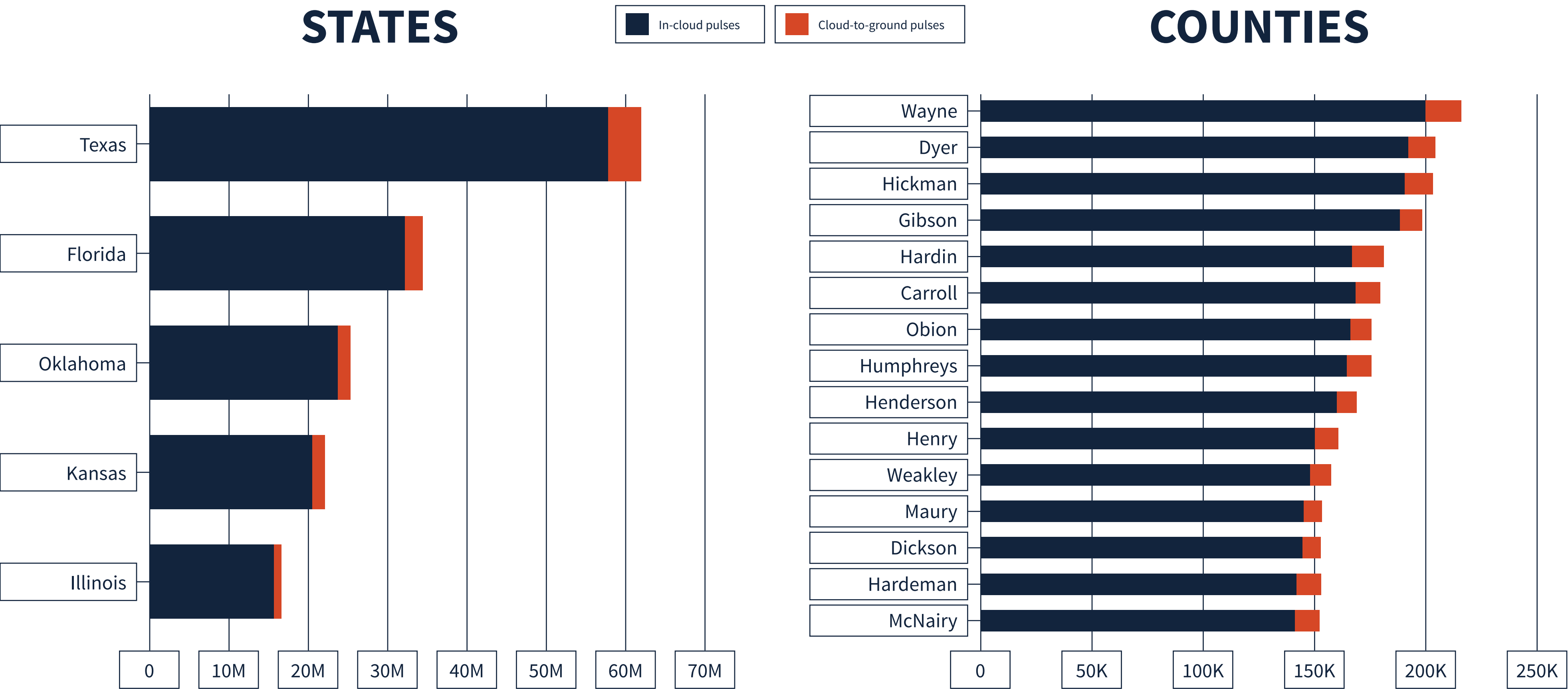
Lightning that occurs between opposite charges within a thunderstorm cloud

TENNESSEE TOTAL LIGHTNING PULSES

8,458,373

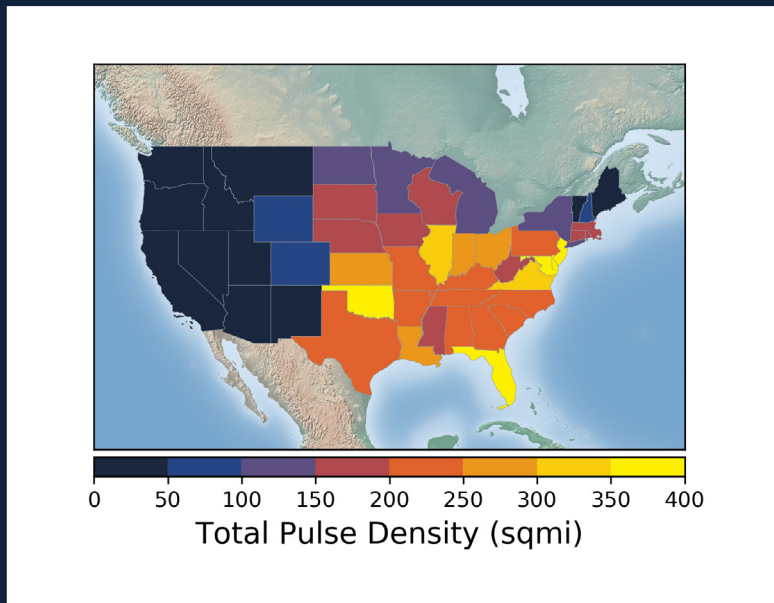
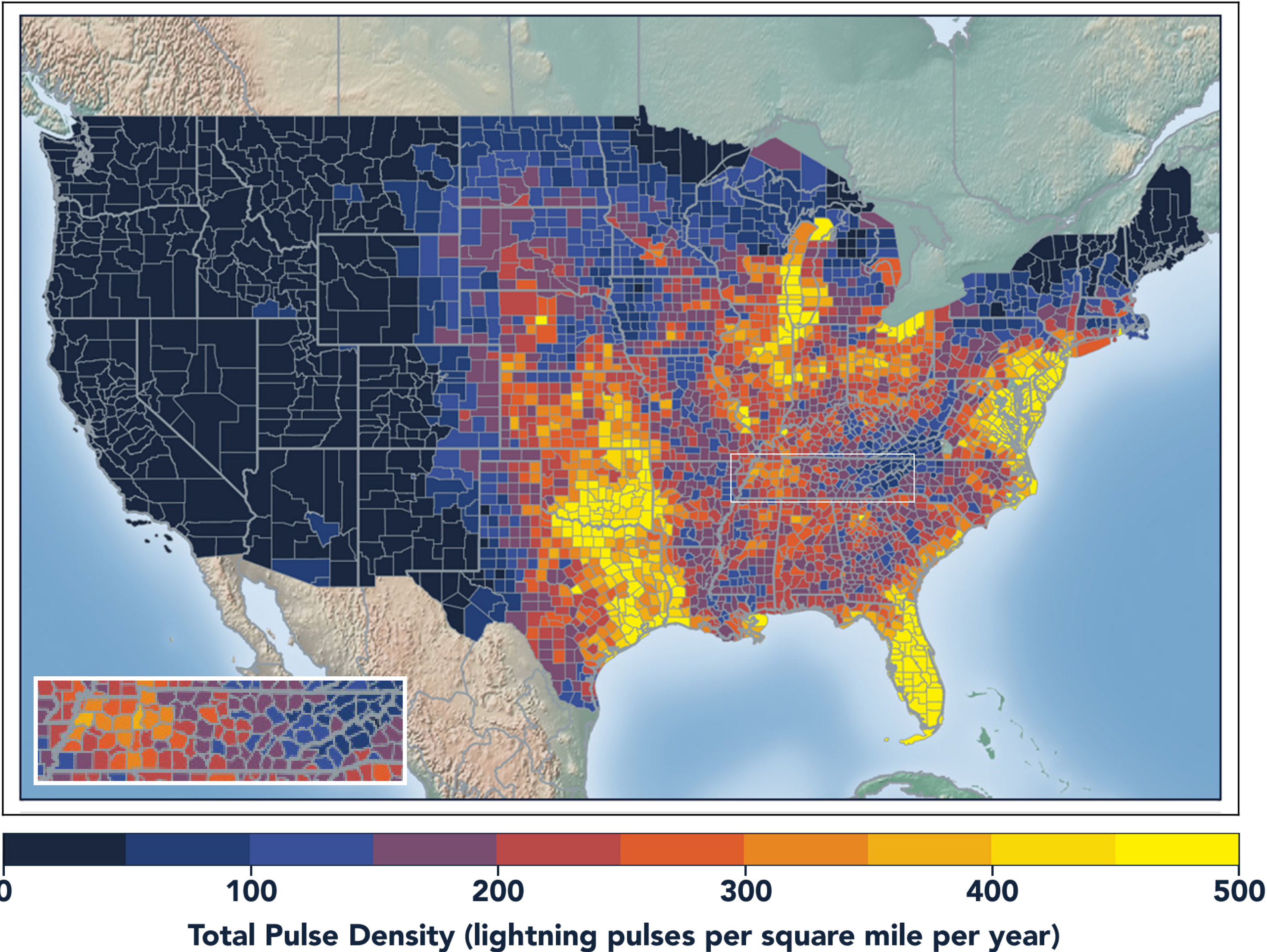


LIGHTNING COUNT RANKINGS



Tennessee ranked 21 in total lightning pulses for 2020.

TOTAL (CG+IC) PULSE DENSITY MAP

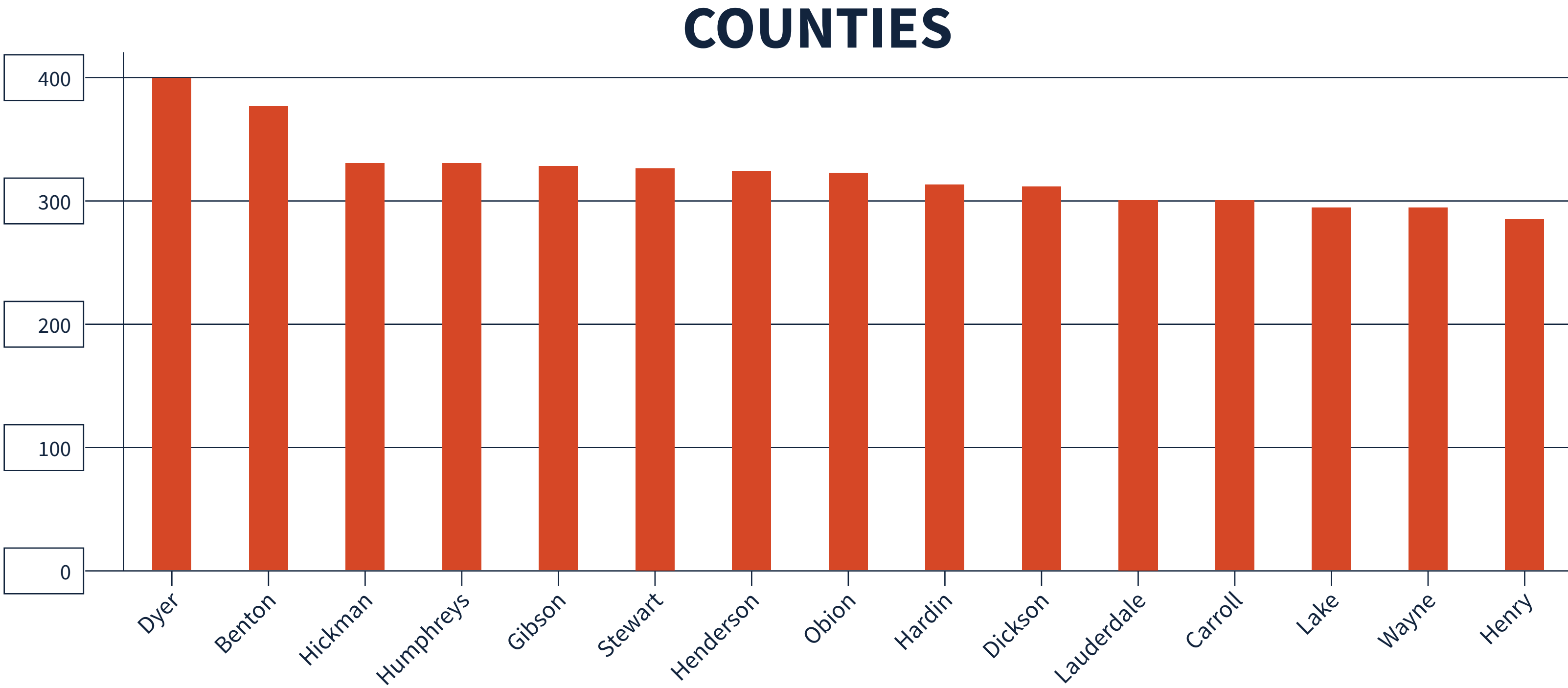


Pulse density is a better indicator of lightning activity than total lightning counts because it enables us to compare different sized areas (like states and counties) fairly.

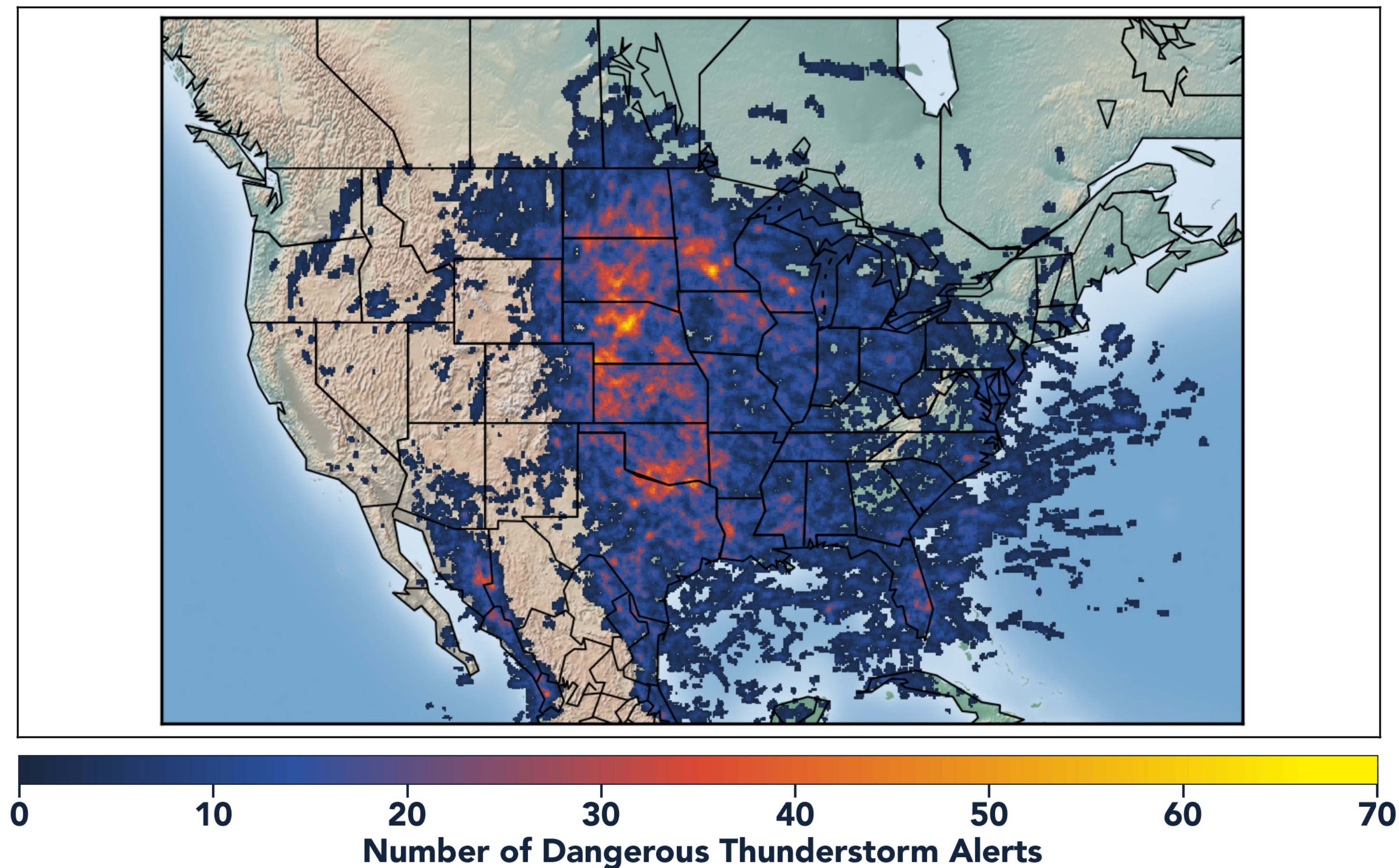
We cluster pulses together into a flash. With every pulse we detect, we receive a more precise measure of lightning activity. At left, areas in bright yellow experienced the highest lightning pulse density per square mile in 2020.

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).



DANGEROUS THUNDERSTORM ALERTS IN THE U.S.

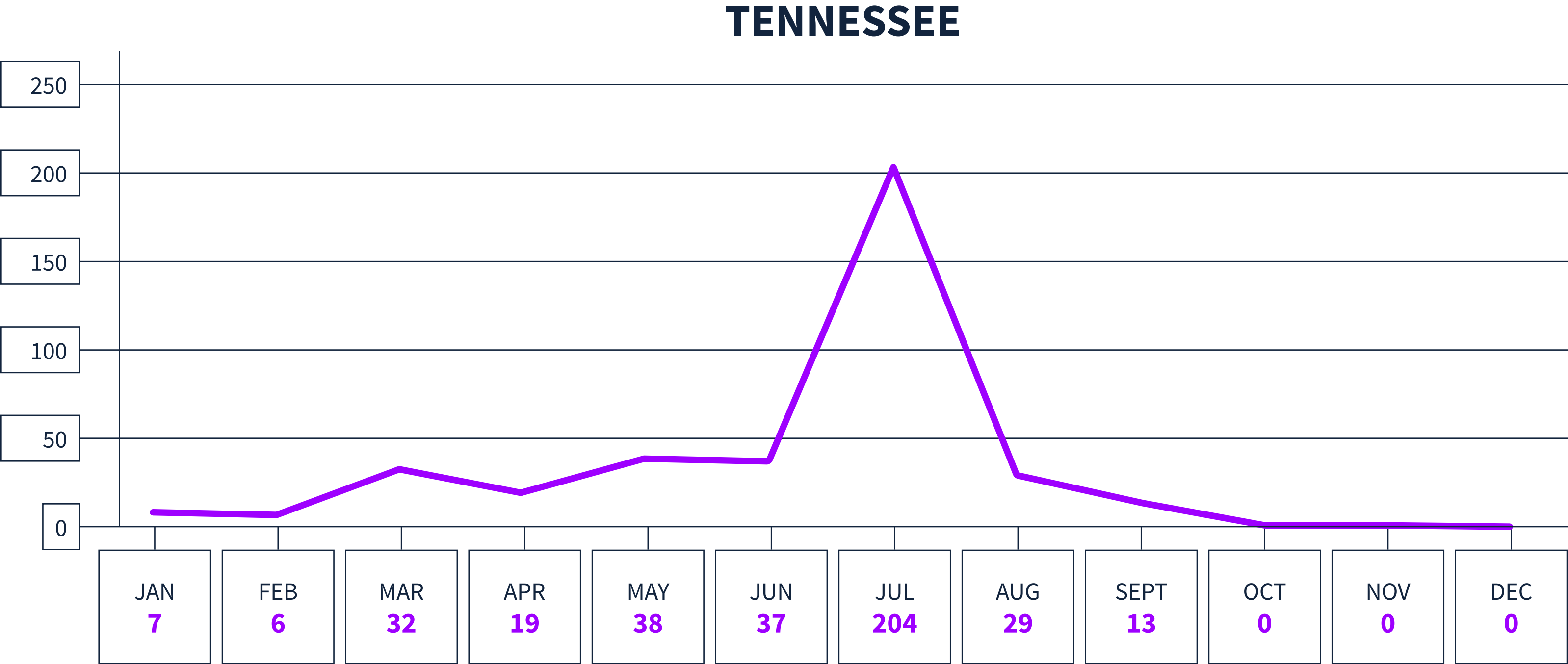


Earth Networks issued 29,401 Dangerous Thunderstorm Alerts (DTAs) in 2020. This year's map clearly shows the persistent drought conditions that have plagued the South and Southwest.

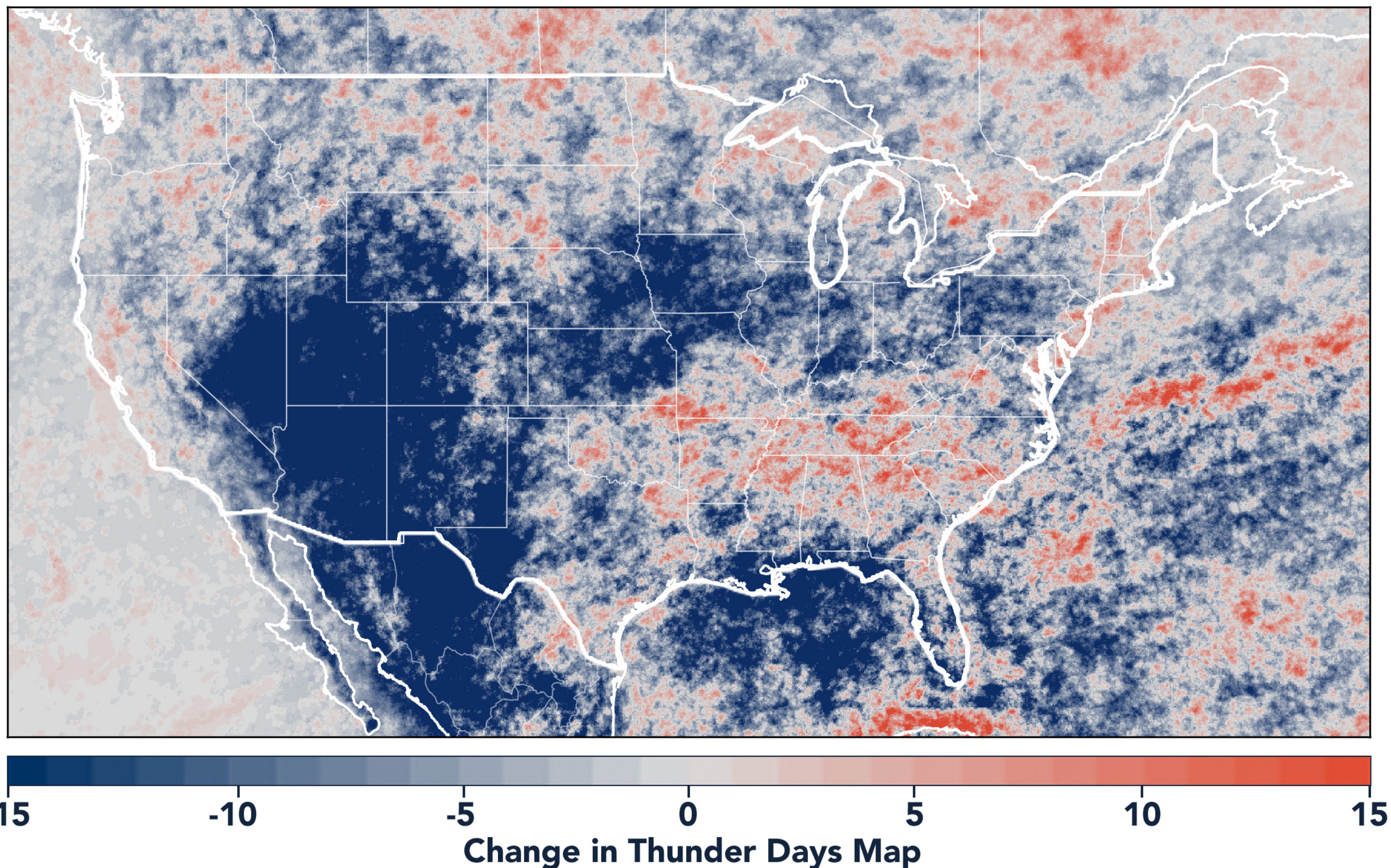
Dangerous Thunderstorm Alerts (DTAs), available exclusively to Earth Networks, provide **50% more lead time** to severe storms compared to publicly available alerts.

DANGEROUS THUNDERSTORM ALERTS BY MONTH

Earth Networks issued 385 Dangerous Thunderstorm Alerts for the state in 2020.



TOTAL STATE THUNDER DAYS: 186



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.

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.



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 counties in the state by total lightning pulses, including in-cloud and cloud to-ground from highest to lowest. Total number of thunder days in each county (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
Wayne County	216,249	79
Dyer County	204,136	76
Hickman County	203,031	79
Gibson County	198,347	76
Hardin County	180,951	80
Carroll County	179,387	87
Obion County	175,697	79
Humphreys County	175,361	77
Henderson County	168,752	74
Henry County	160,432	79
Weakley County	157,197	77
Maury County	153,262	77
Dickson County	153,078	76
Hardeman County	152,802	77
McNairy County	152,255	76
Stewart County	150,051	69
Giles County	149,283	78
Benton County	148,828	78
Lawrence County	148,619	76
Madison County	147,387	79
Wilson County	145,078	91
Lauderdale County	141,698	73
Tipton County	128,735	79
Fayette County	122,518	83
Williamson County	119,861	76
Rutherford County	119,559	92
Haywood County	119,139	78
Franklin County	114,903	84
Cumberland County	107,264	86
Scott County	105,463	91
Shelby County	104,673	91
Lincoln County	104,320	81
Sumner County	103,353	74
Montgomery County	102,198	75
Hamilton County	94,156	92
Campbell County	93,522	81
Decatur County	90,200	74
Monroe County	88,995	95
Perry County	86,823	72
Warren County	86,794	88
Fentress County	85,591	81
Blount County	83,493	87
Marshall County	82,224	74
Davidson County	79,318	79
Polk County	79,214	84
Overton County	78,752	71
Marion County	77,758	81
White County	77,701	86

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
Bedford County	77,455	76
Sevier County	75,942	81
Macon County	74,687	74
Robertson County	73,494	69
Smith County	72,783	79
McMinn County	72,520	86
Cocke County	71,119	74
Chester County	69,319	62
Claiborne County	67,728	72
Morgan County	64,920	81
Bradley County	64,381	79
Roane County	63,269	82
DeKalb County	62,779	82
Knox County	61,762	75
Jackson County	61,631	68
Crockett County	59,757	60
Greene County	59,522	82
Coffee County	59,498	86
Grundy County	59,156	81
Van Buren County	56,737	69
Houston County	56,495	69
Cannon County	55,751	78
Lewis County	55,514	66
Putnam County	55,075	78
Rhea County	48,984	78
Lake County	48,859	71
Bledsoe County	48,627	82
Cheatham County	46,769	63
Clay County	45,970	59
Sequatchie County	39,899	80
Hawkins County	39,115	65
Sullivan County	34,982	70
Loudon County	31,947	77
Anderson County	31,096	77
Meigs County	26,867	71
Carter County	26,185	68
Trousdale County	25,930	64
Washington County	25,893	60
Jefferson County	24,938	69
Pickett County	24,650	65
Moore County	22,303	63
Union County	20,894	62
Hancock County	19,841	55
Johnson County	19,253	57
Hamblen County	18,522	65
Grainger County	17,641	67
Unicoi County	15,433	52