



2020

# *OHIO LIGHTNING REPORT*



## ABOUT THIS REPORT

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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)

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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.

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# REPORT TERMINOLOGY

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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:

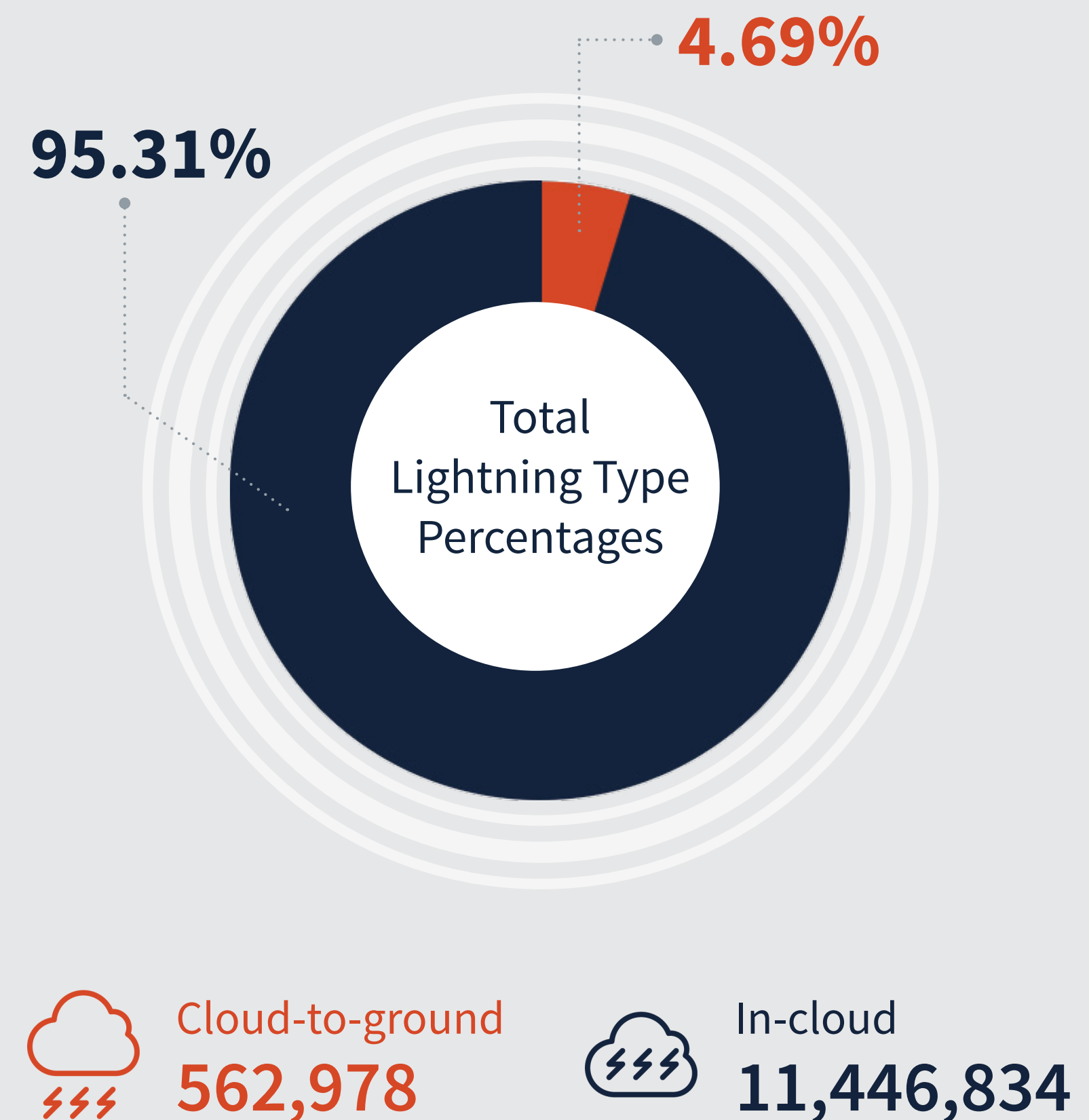
Lightning that happens between opposite charges in a cloud and on the ground

### In-Cloud lightning:

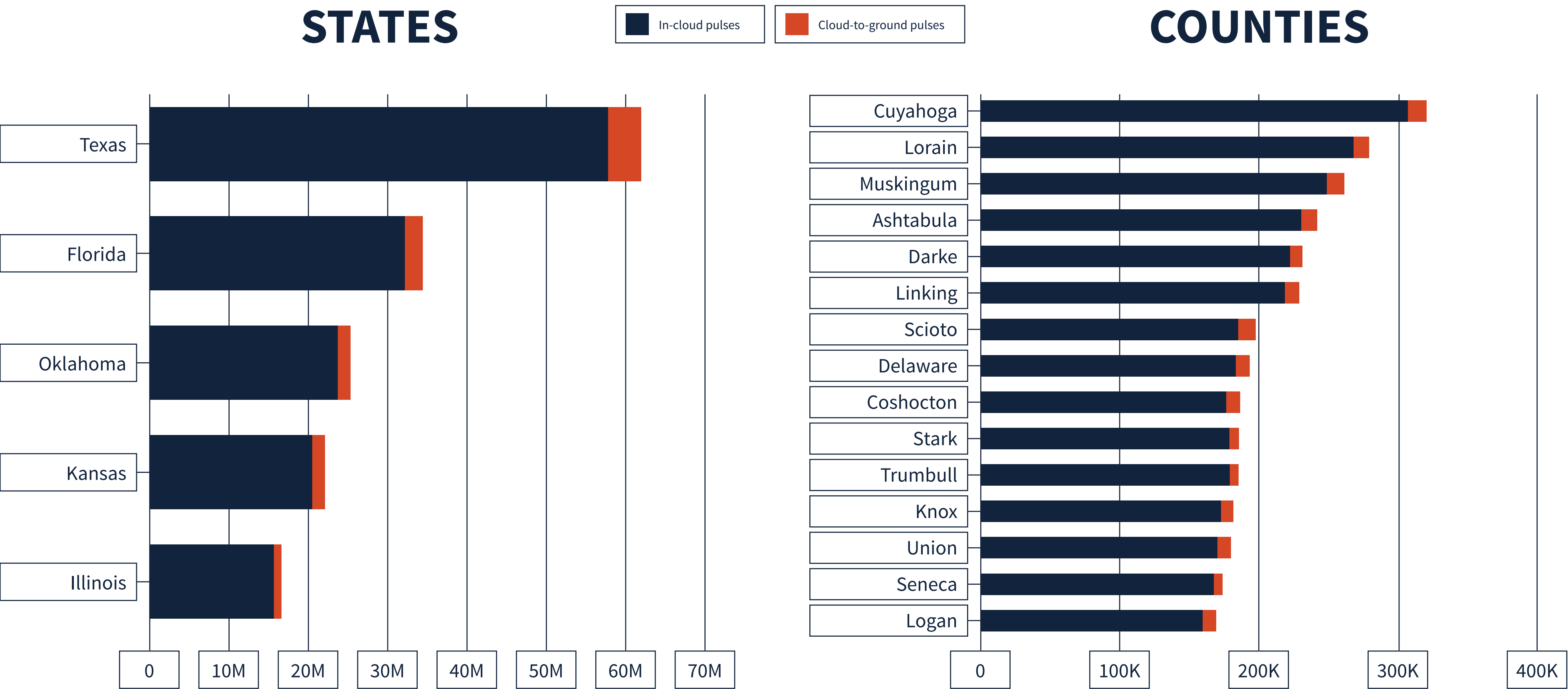
Lightning that occurs between opposite charges within a thunderstorm cloud

## OHIO TOTAL LIGHTNING PULSES

# 12,009,955

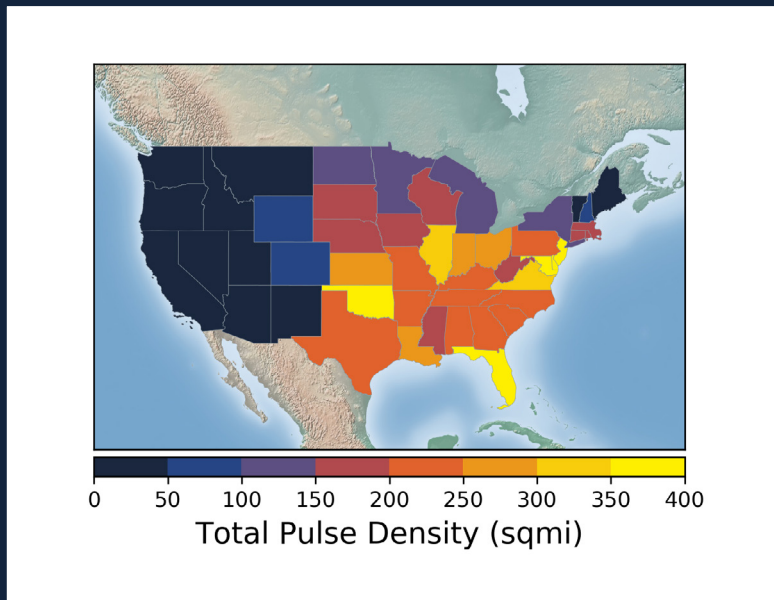
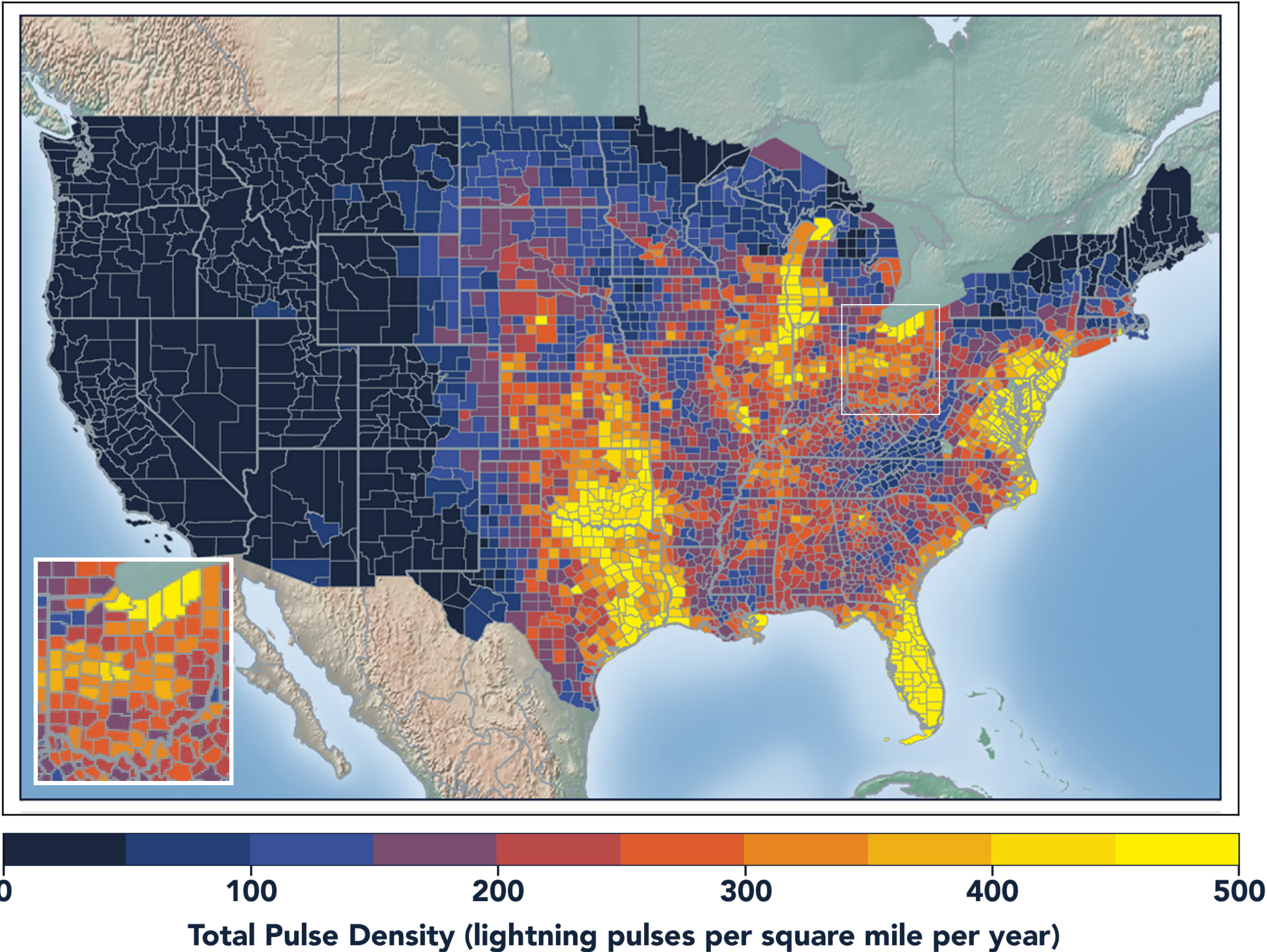


# LIGHTNING COUNT RANKINGS



Ohio ranked 10 in total lightning pulses for 2020.

# TOTAL (CG+IC) PULSE DENSITY MAP

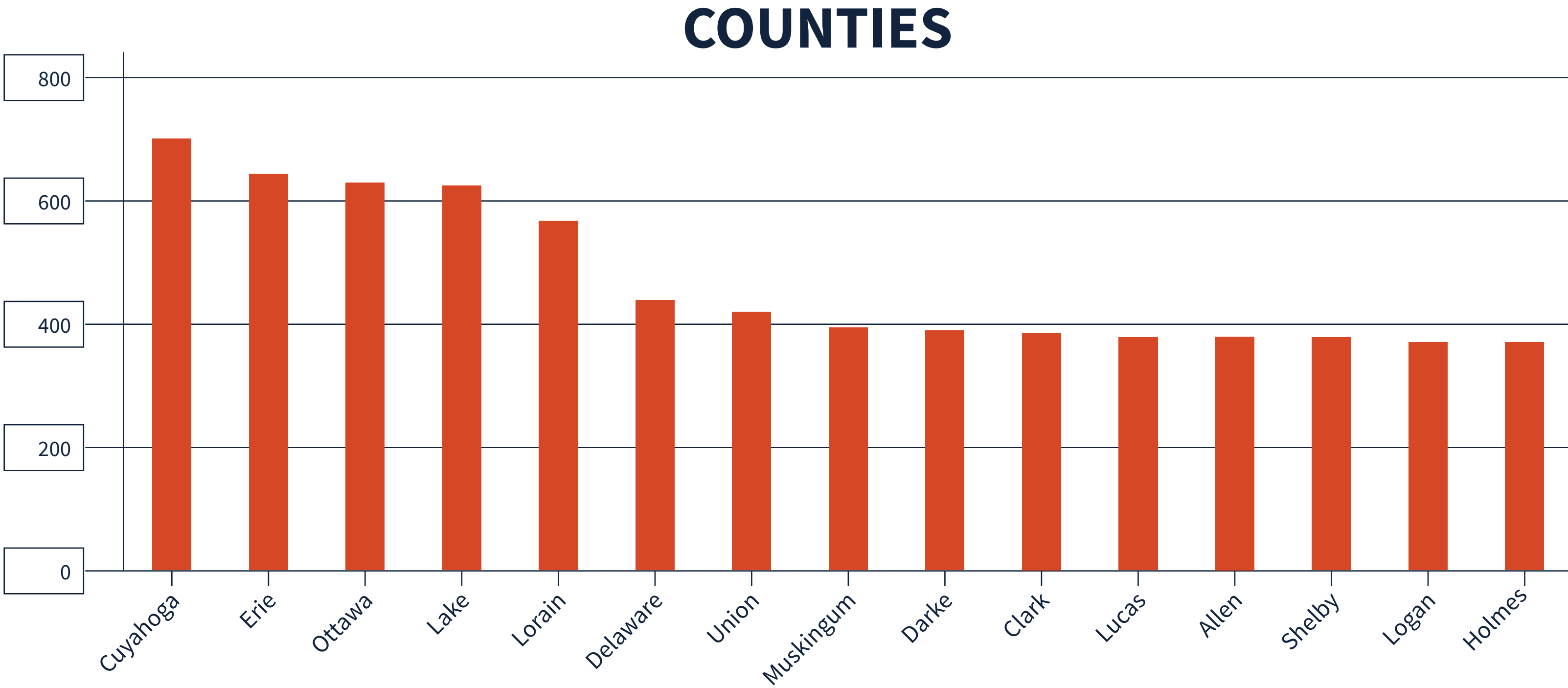


Pulse density is a better indicator of lightning activity than total lightning counts because it enables us to compare different sized areas (like states and counties) fairly.

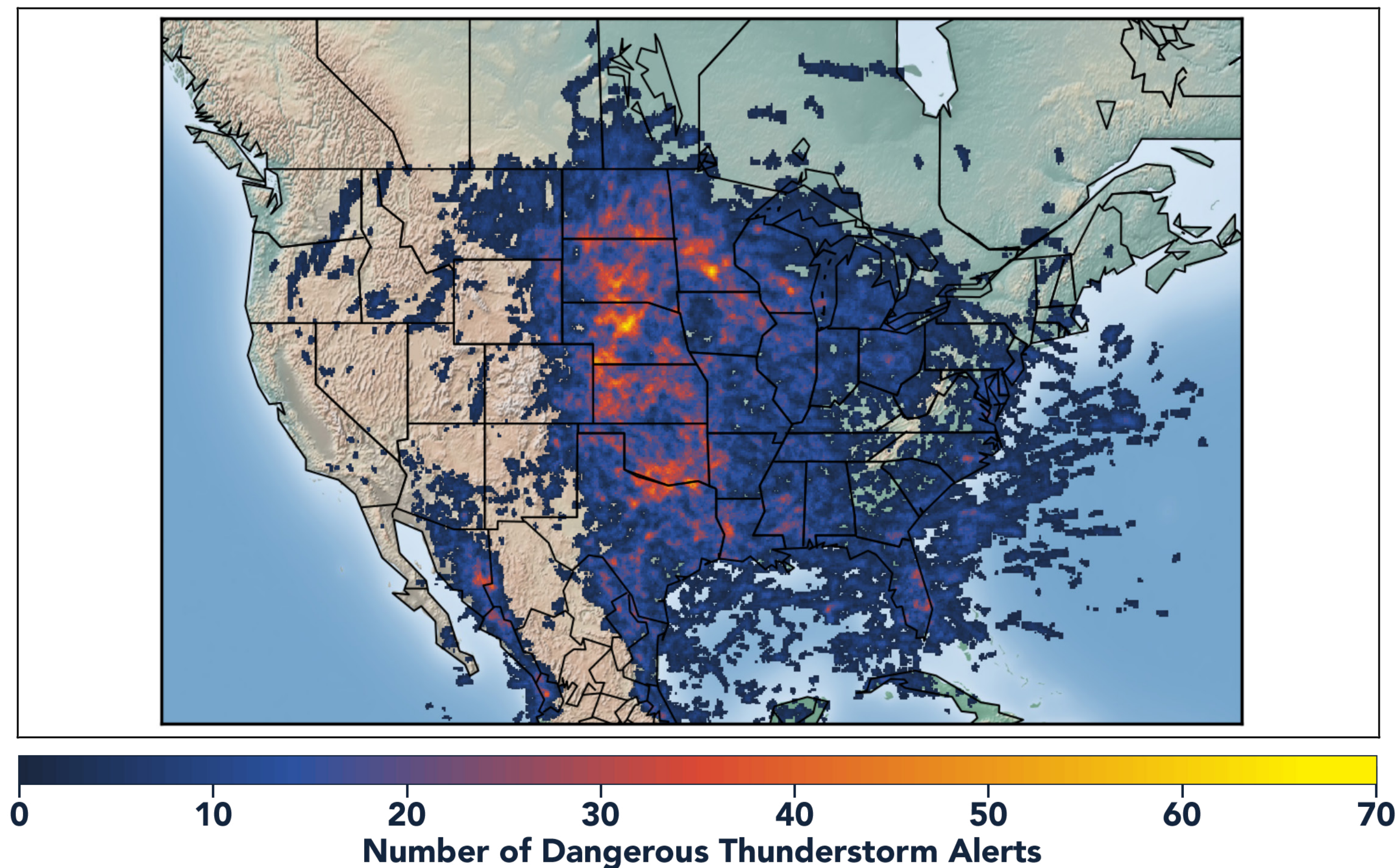
We cluster pulses together into a flash. With every pulse we detect, we receive a more precise measure of lightning activity. At left, areas in bright yellow experienced the highest lightning pulse density per square mile in 2020.

# 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.

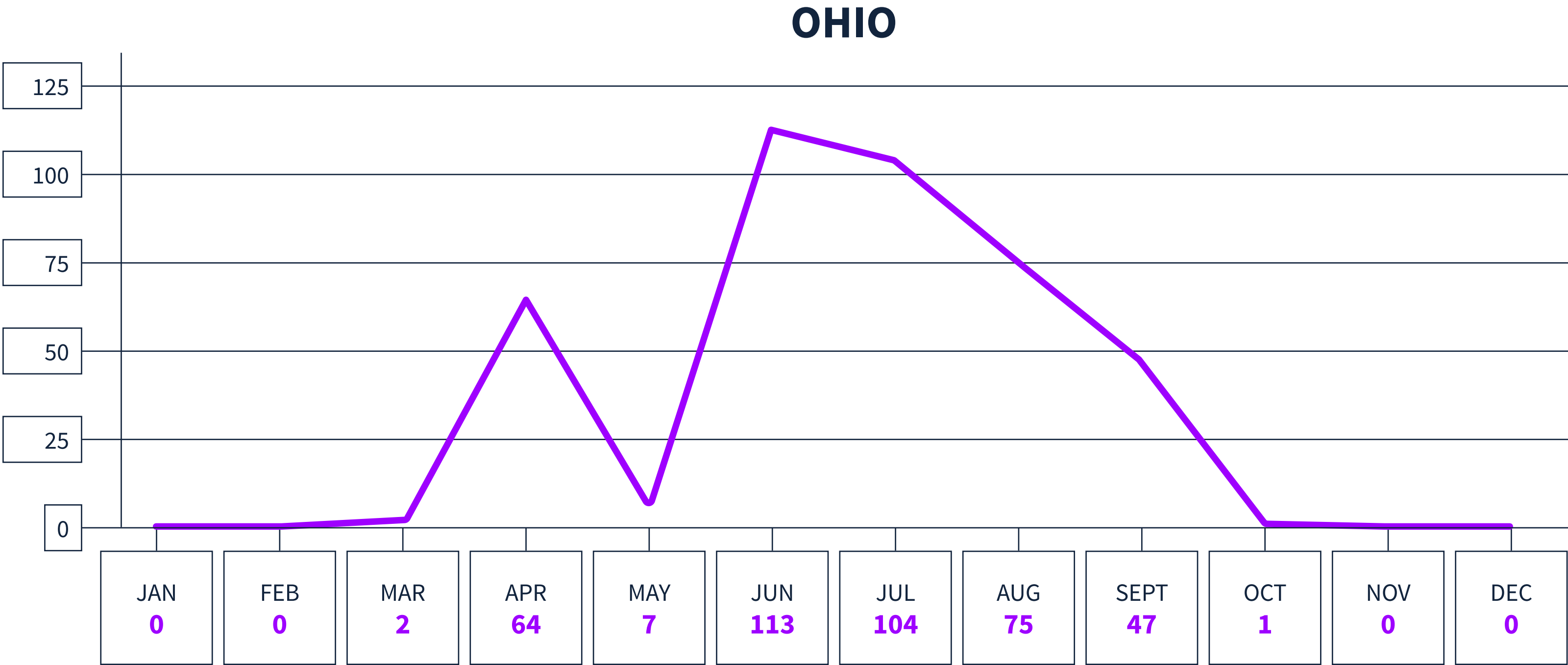


Earth Networks issued 29,401 Dangerous Thunderstorm Alerts (DTAs) in 2020. This year's map clearly shows the persistent drought conditions that have plagued the South and Southwest.

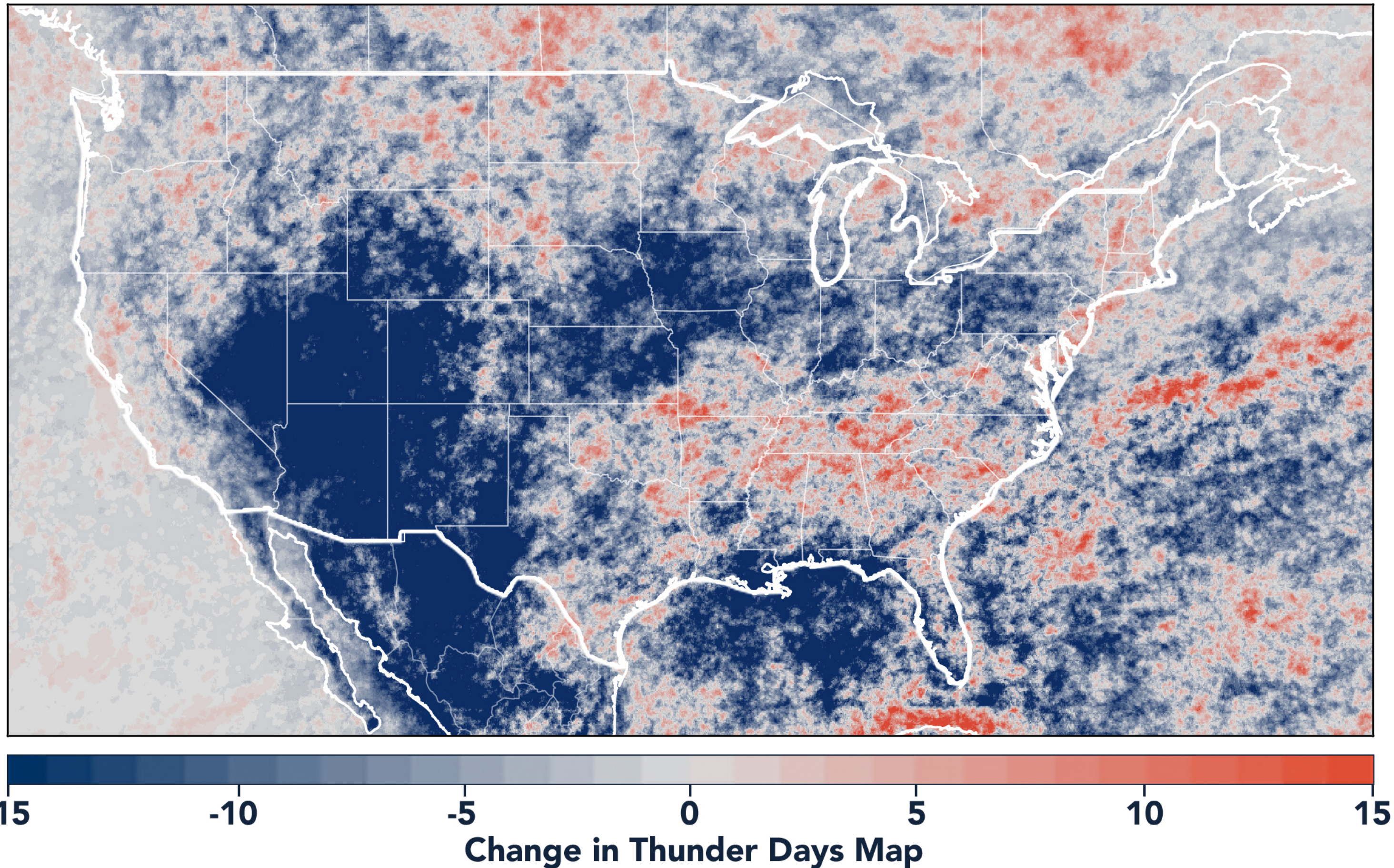
Dangerous Thunderstorm Alerts (DTAs), available exclusively to Earth Networks, provide **50% more lead time** to severe storms compared to publicly available alerts.

# DANGEROUS THUNDERSTORM ALERTS BY MONTH

Earth Networks issued 413 Dangerous Thunderstorm Alerts for the state in 2020.



# TOTAL STATE THUNDER DAYS: 143



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.

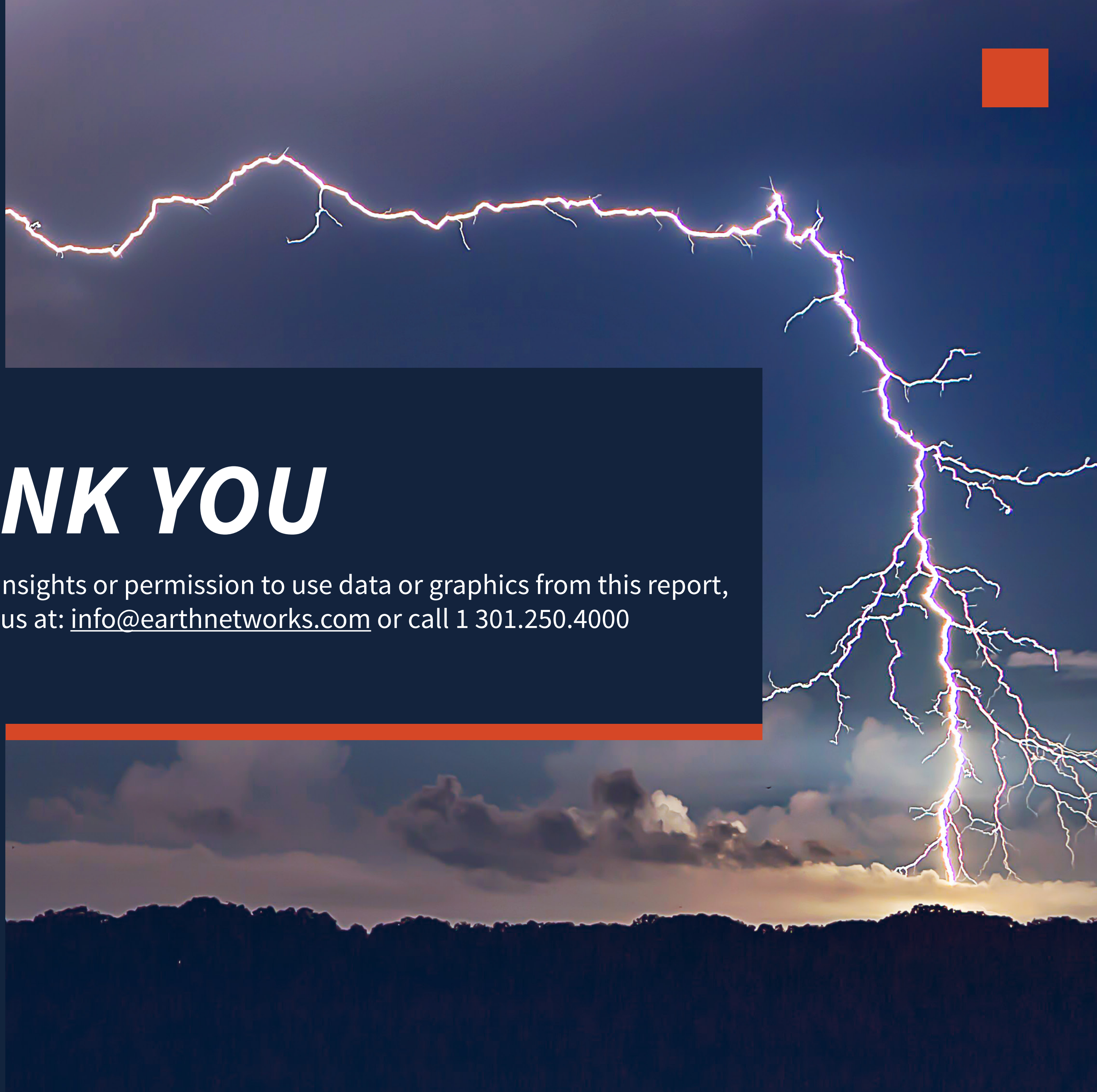
This year, the Southwest and Midwest experienced significantly less lightning than in previous years due to a persistent drought and weak monsoon. States in the Southeast experienced a substantial uptick in lightning activity this year, including Tennessee, North Carolina, South Carolina, Virginia, West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



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# ***THANK YOU***

For additional insights or permission to use data or graphics from this report, please contact us at: [info@earthnetworks.com](mailto: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
Cuyahoga County	320,746	64
Lorain County	279,160	60
Muskingum County	261,092	58
Ashtabula County	241,679	59
Darke County	231,713	57
Licking County	229,546	59
Scioto County	197,424	69
Delaware County	193,603	52
Coshocton County	186,018	53
Stark County	185,786	49
Trumbull County	185,780	46
Knox County	181,671	56
Union County	180,039	55
Seneca County	173,553	48
Logan County	169,155	53
Franklin County	167,864	58
Mercer County	164,372	55
Guernsey County	163,434	54
Erie County	161,594	51
Ottawa County	159,861	41
Holmes County	155,366	48
Shelby County	153,764	53
Madison County	152,332	64
Allen County	151,973	42
Clark County	151,938	63
Huron County	150,379	54
Gallia County	149,878	61
Highland County	148,839	60
Washington County	148,265	59
Adams County	148,078	60
Champaign County	147,657	55
Jackson County	143,480	54
Columbiana County	143,387	49
Lake County	143,320	53
Hardin County	142,672	52
Brown County	142,471	58
Wayne County	141,776	51
Marion County	141,741	57
Clermont County	141,411	58
Tuscarawas County	136,157	57
Richland County	135,501	59
Auglaize County	134,158	56
Portage County	131,400	46
Lucas County	128,648	46
Medina County	128,341	53
Athens County	126,601	53
Fairfield County	126,581	59

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
Greene County	120,016	54
Fulton County	119,628	40
Hancock County	118,969	49
Van Wert County	118,046	53
Belmont County	117,663	53
Summit County	117,260	46
Wood County	117,198	49
Preble County	117,159	56
Montgomery County	116,964	59
Miami County	113,910	53
Pike County	113,319	55
Perry County	112,974	54
Geauga County	112,483	49
Ross County	111,464	67
Vinton County	111,056	56
Ashland County	109,566	53
Morrow County	109,168	54
Putnam County	108,607	44
Fayette County	108,575	52
Mahoning County	107,049	44
Noble County	106,814	53
Morgan County	104,526	46
Crawford County	103,681	50
Lawrence County	102,728	66
Butler County	98,697	61
Pickaway County	98,550	59
Wyandot County	97,052	48
Sandusky County	95,345	41
Hocking County	94,638	54
Hamilton County	91,578	61
Harrison County	90,504	49
Jefferson County	90,073	47
Warren County	88,639	54
Carroll County	87,875	45
Clinton County	85,257	55
Monroe County	85,030	58
Meigs County	84,640	54
Williams County	69,885	46
Henry County	61,399	47
Defiance County	56,057	43
Paulding County	55,565	49