



2020

WISCONSIN 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.

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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:

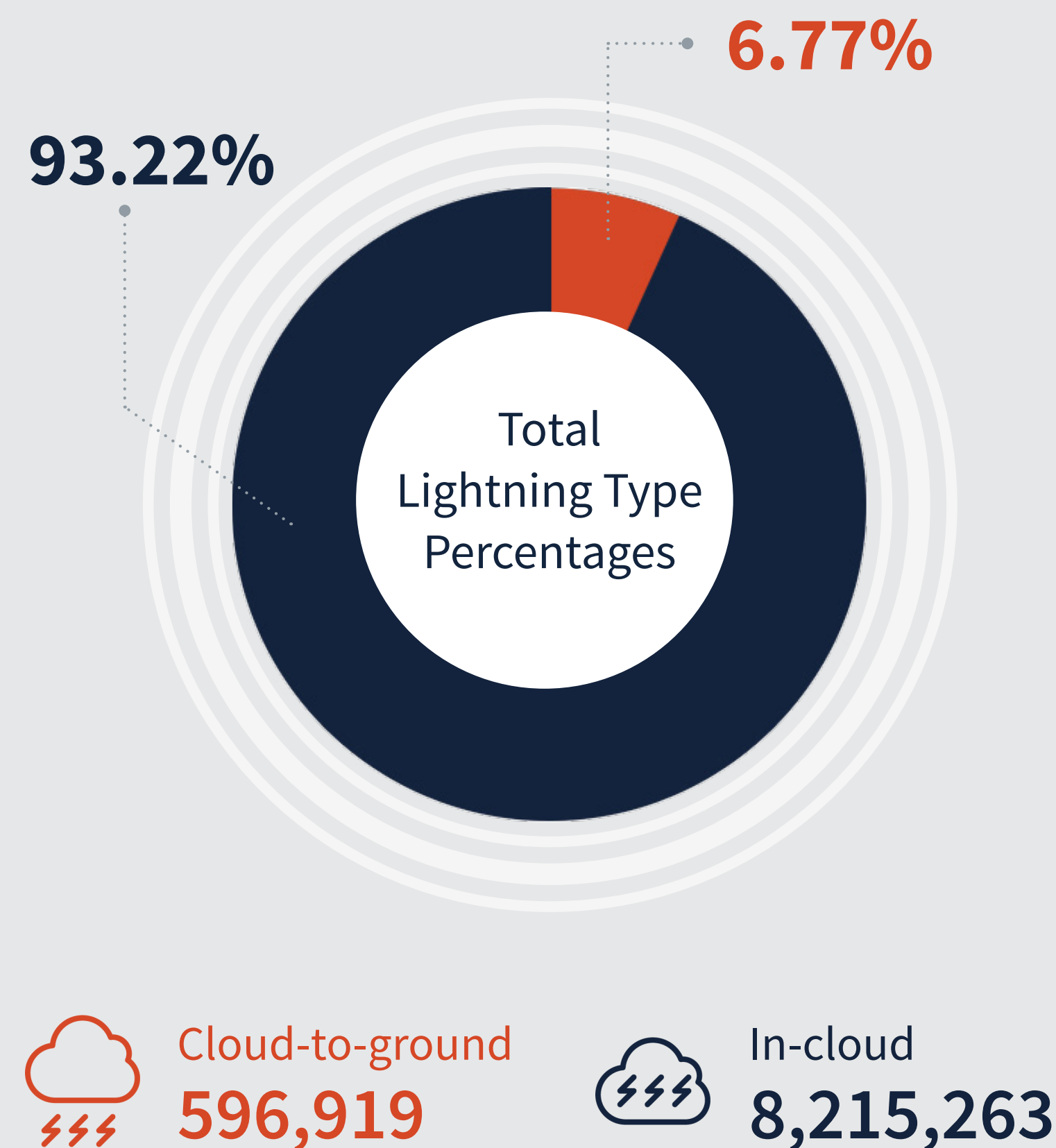
Lightning that happens between opposite charges in a cloud and on the ground

In-Cloud lightning:

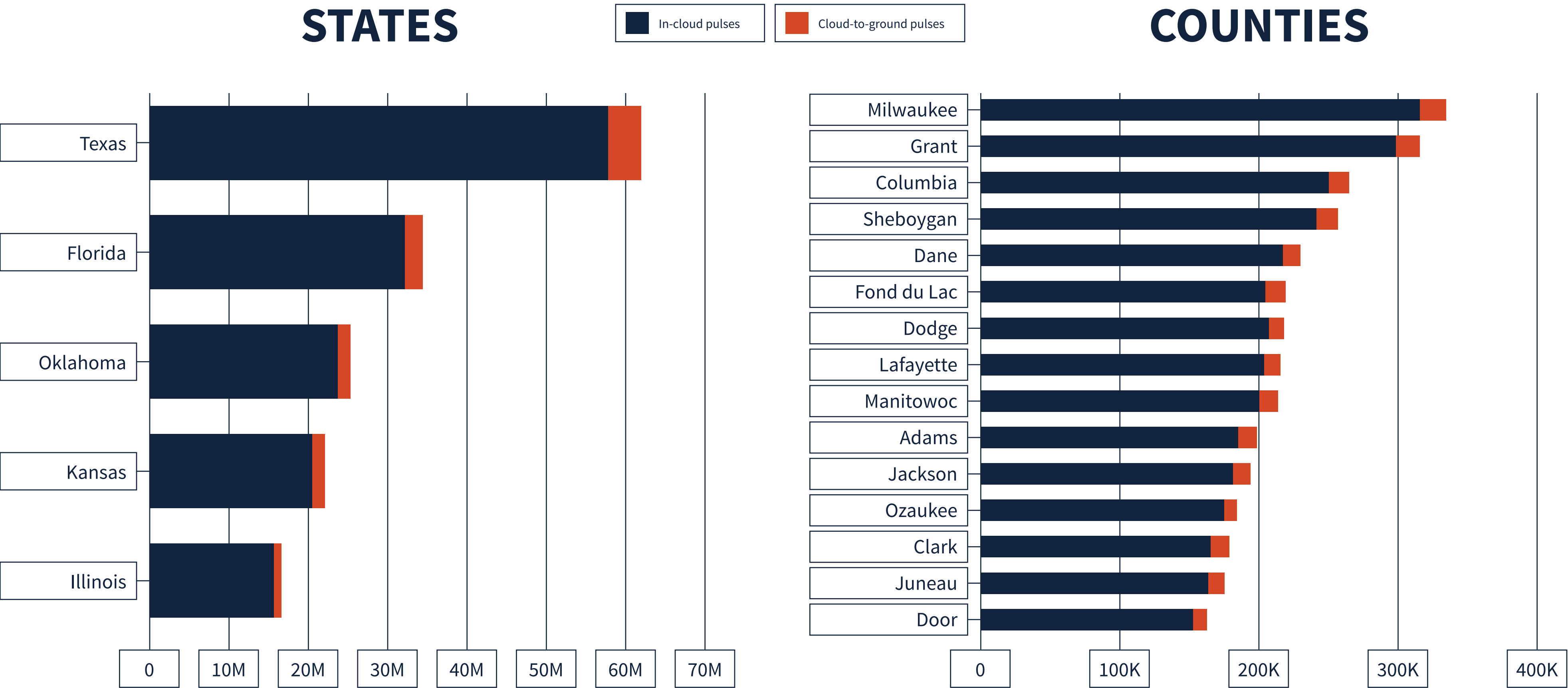
Lightning that occurs between opposite charges within a thunderstorm cloud

WISCONSIN TOTAL LIGHTNING PULSES

8,812,327

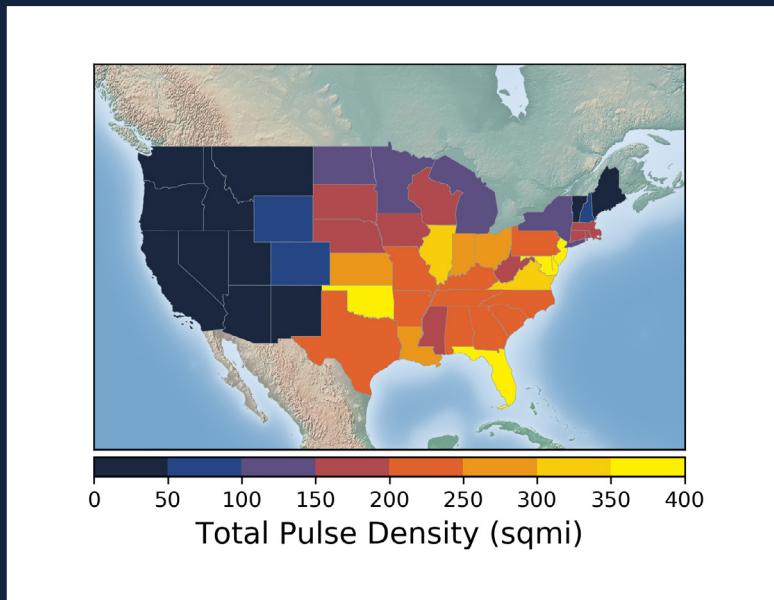
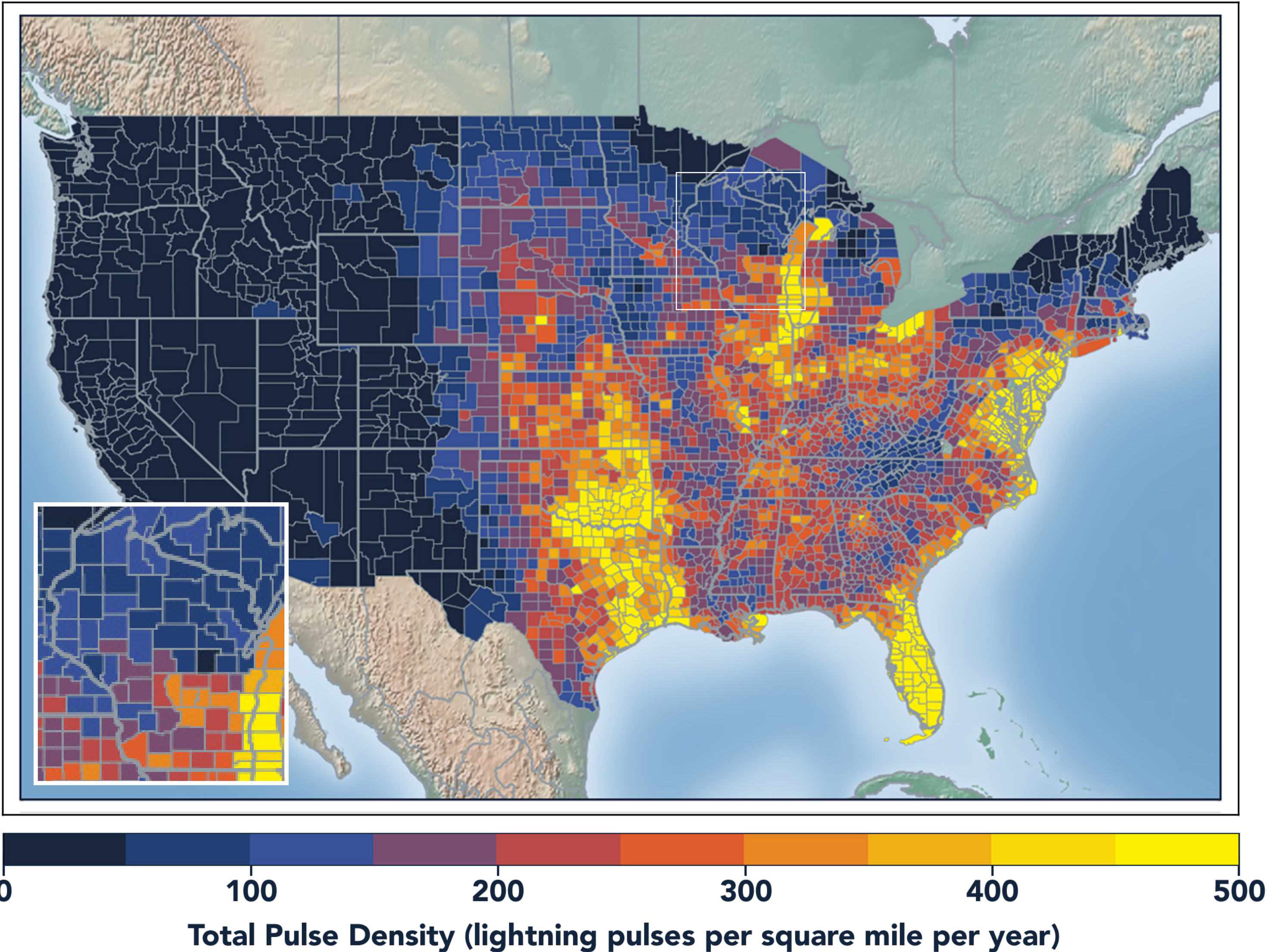


LIGHTNING COUNT RANKINGS



Wisconsin ranked 20 in total lightning pulses for 2020.

TOTAL (CG+IC) PULSE DENSITY MAP

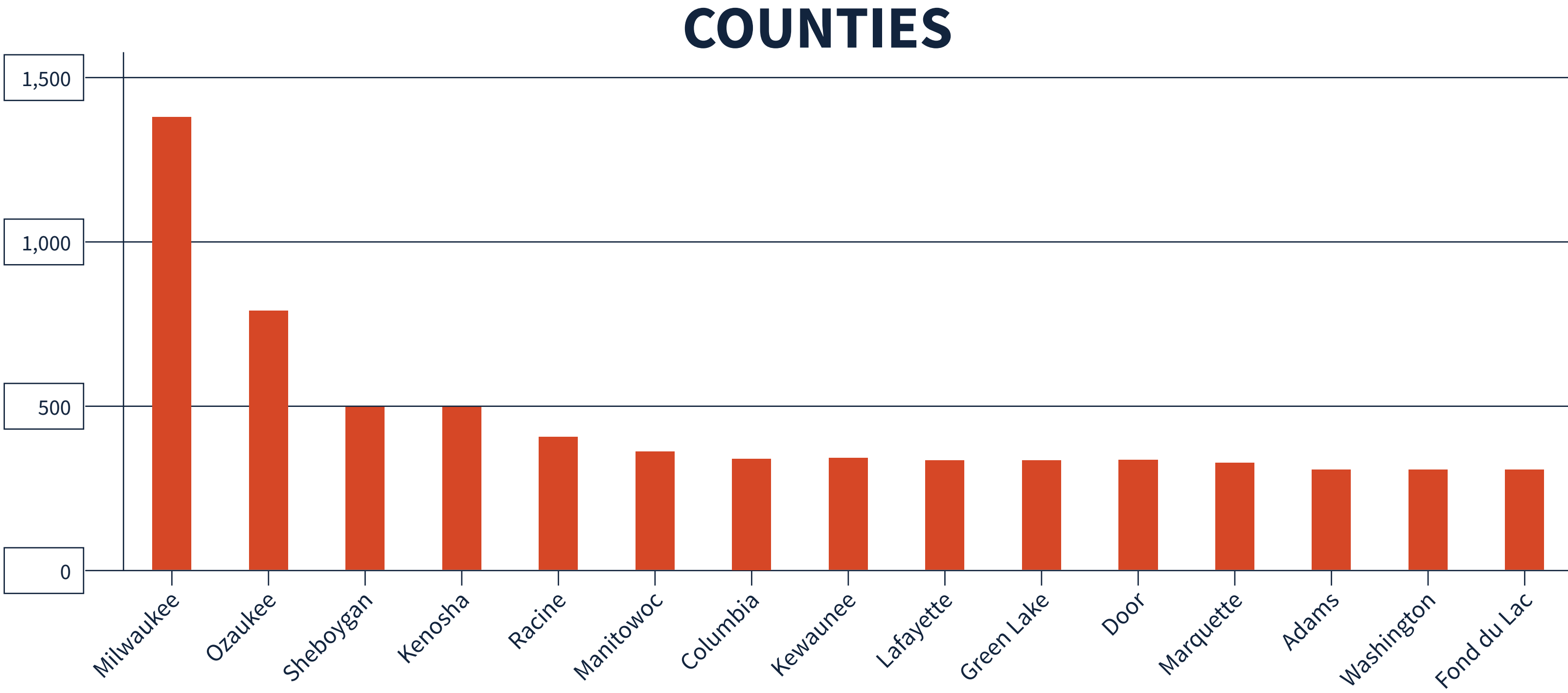


Pulse density is a better indicator of lightning activity than total lightning counts because it enables us to compare different sized areas (like states and counties) fairly.

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.

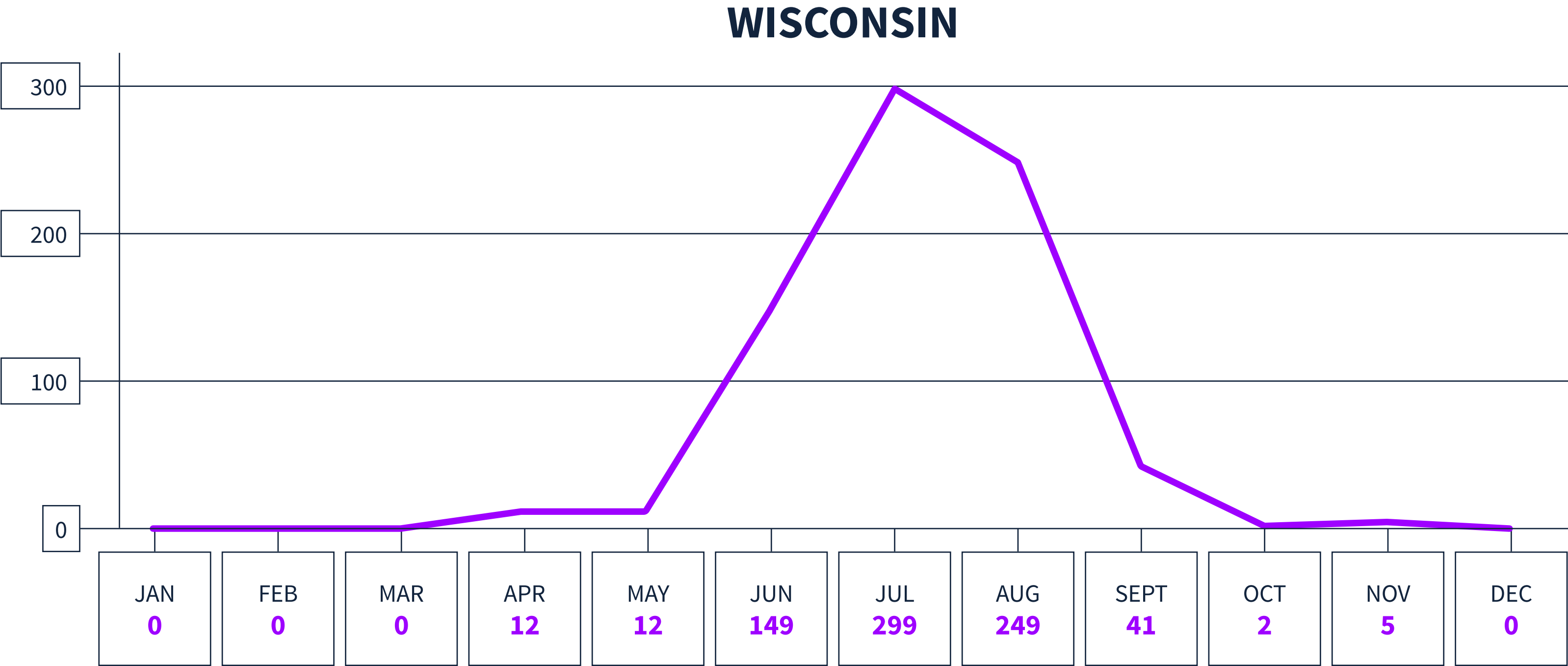


Earth Networks issued 29,401 Dangerous Thunderstorm Alerts (DTAs) in 2020. This year's map clearly shows the persistent drought conditions that have plagued the South and Southwest.

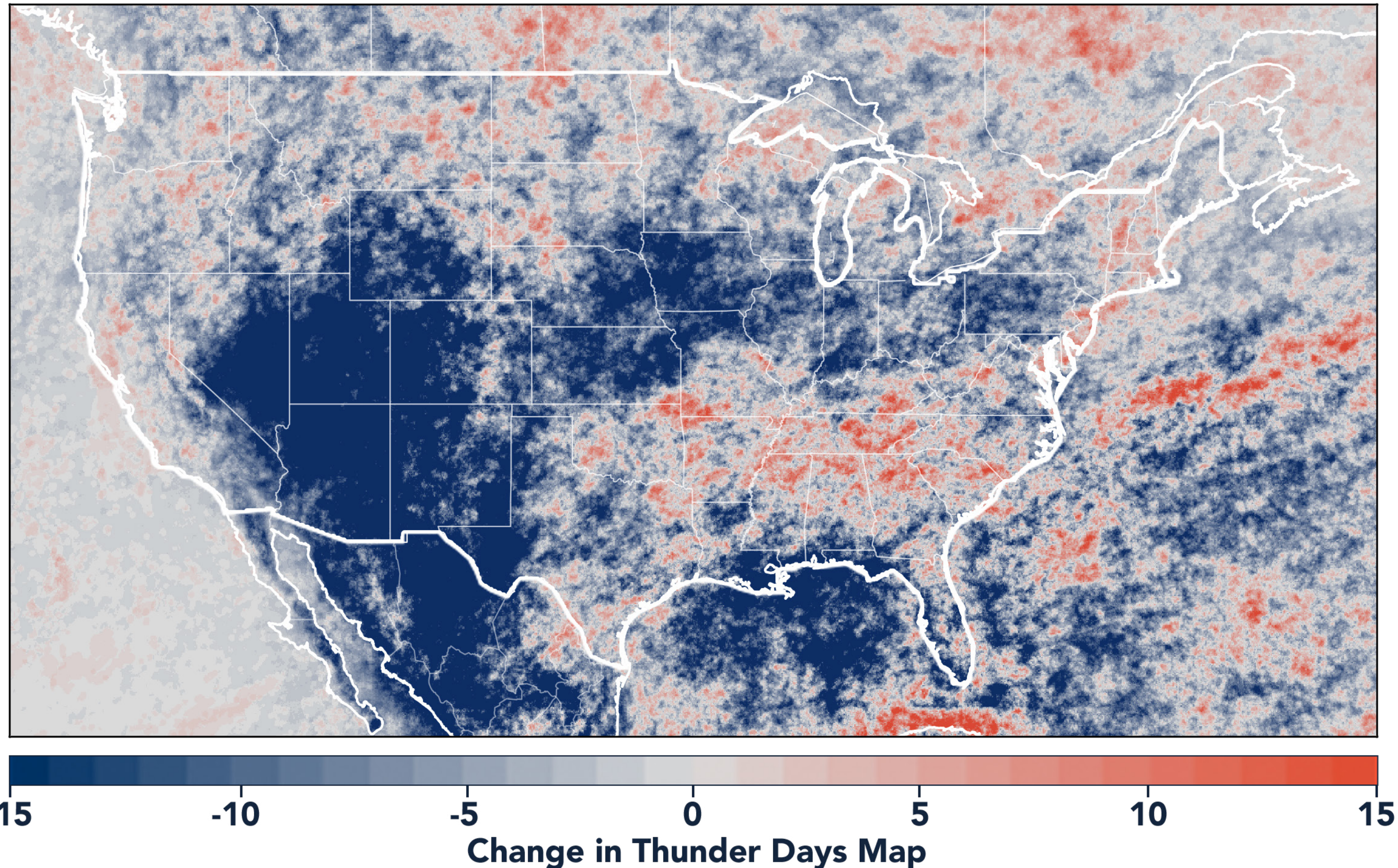
Dangerous Thunderstorm Alerts (DTAs), available exclusively to Earth Networks, provide **50% more lead time** to severe storms compared to publicly available alerts.

DANGEROUS THUNDERSTORM ALERTS BY MONTH

Earth Networks issued 769 Dangerous Thunderstorm Alerts for the state in 2020.



TOTAL STATE THUNDER DAYS: 145



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 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
Milwaukee County	334,312	60
Grant County	315,712	54
Columbia County	264,202	47
Sheboygan County	256,385	45
Dane County	229,454	59
Fond du Lac County	219,139	44
Dodge County	217,759	51
Lafayette County	214,783	56
Manitowoc County	213,311	58
Adams County	198,548	51
Jackson County	193,709	47
Ozaukee County	183,710	50
Clark County	178,212	50
Juneau County	175,175	52
Door County	162,395	49
Green County	159,808	51
Monroe County	155,681	57
Rock County	155,567	51
Bayfield County	155,298	58
Walworth County	149,072	47
Marquette County	148,813	47
Sauk County	143,442	47
Kenosha County	135,581	49
Racine County	135,134	55
Ashland County	132,602	60
Washington County	132,055	48
Iowa County	130,819	50
Chippewa County	130,278	50
Wood County	128,596	46
Waushara County	128,396	50
Jefferson County	121,211	48
Marathon County	120,675	54
Green Lake County	117,811	42
Kewaunee County	117,058	46
Dunn County	113,921	50
Sawyer County	113,758	48
Waukesha County	113,603	48
Eau Claire County	110,237	46
Marinette County	108,122	46
Crawford County	107,174	42
Oconto County	101,817	51
Polk County	101,560	54
Douglas County	100,092	58
Price County	97,088	54
Rusk County	91,402	47
Trempealeau County	90,631	45
Winnebago County	90,307	46

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
St. Croix County	84,379	46
Barron County	84,085	52
Vilas County	82,487	44
Vernon County	82,444	52
Langlade County	81,266	42
Taylor County	81,232	49
Iron County	79,719	49
Washburn County	70,779	53
Pierce County	70,363	49
La Crosse County	69,809	49
Forest County	64,348	50
Oneida County	62,154	55
Richland County	61,402	43
Burnett County	59,824	54
Buffalo County	58,156	49
Shawano County	55,943	46
Lincoln County	54,496	47
Calumet County	53,019	40
Portage County	51,081	47
Brown County	43,890	45
Outagamie County	42,030	38
Waupaca County	36,874	46
Florence County	31,543	41
Pepin County	28,590	39
Menominee County	27,854	34