



2020

# *COLORADO 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

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:

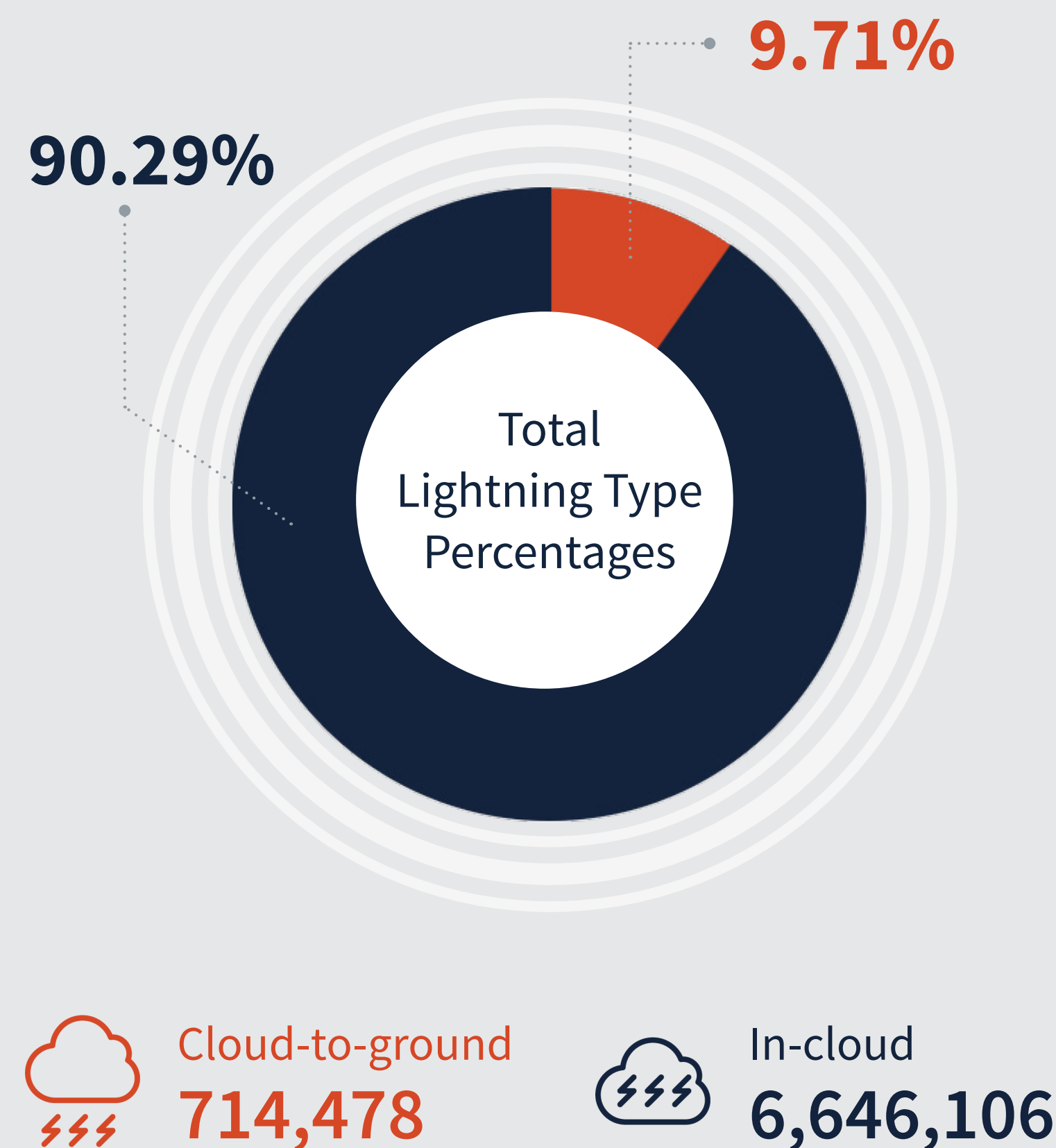
Lightning that happens between opposite charges in a cloud and on the ground

### In-Cloud lightning:

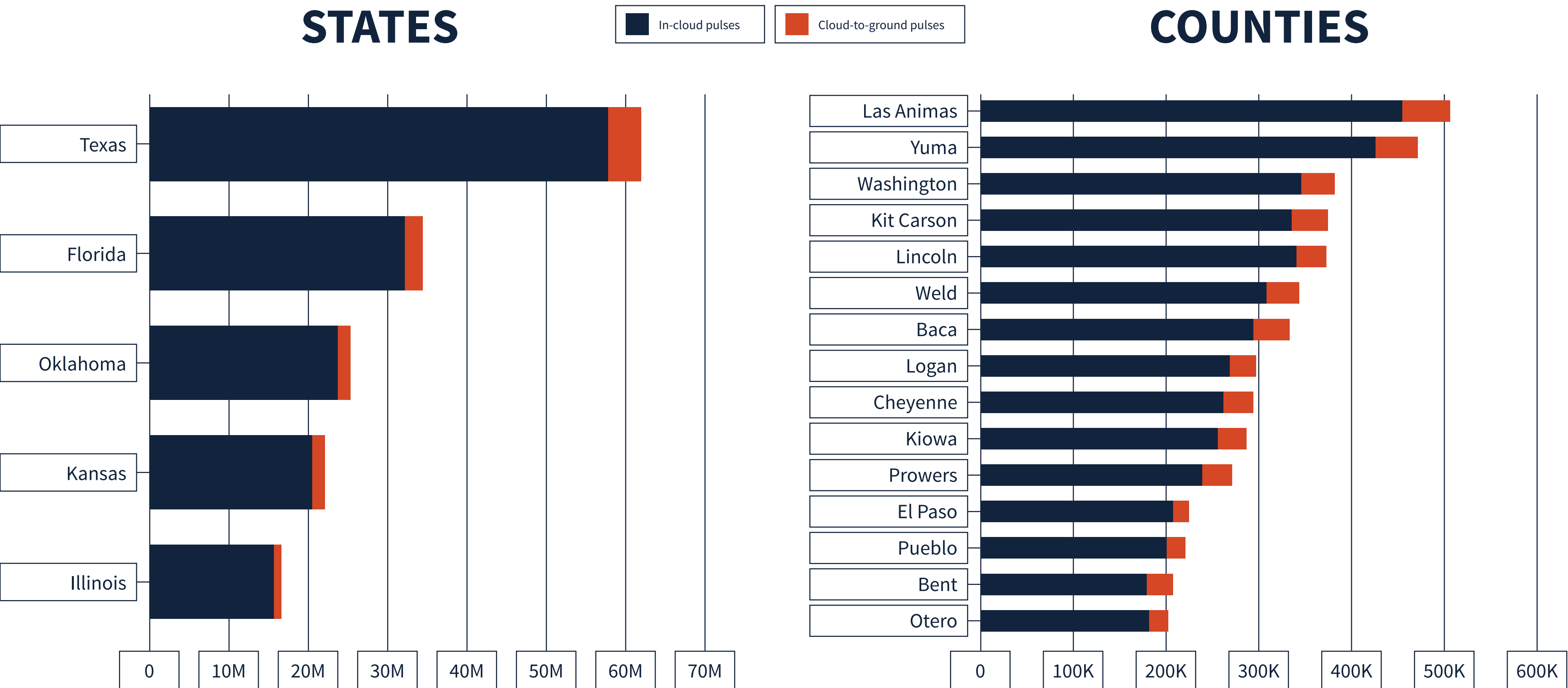
Lightning that occurs between opposite charges within a thunderstorm cloud

## COLORADO TOTAL LIGHTNING PULSES

# 7,360,769



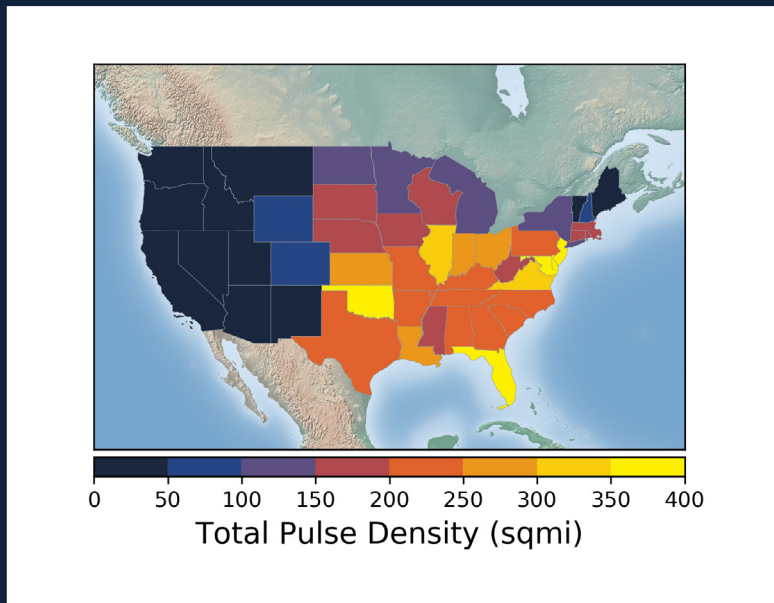
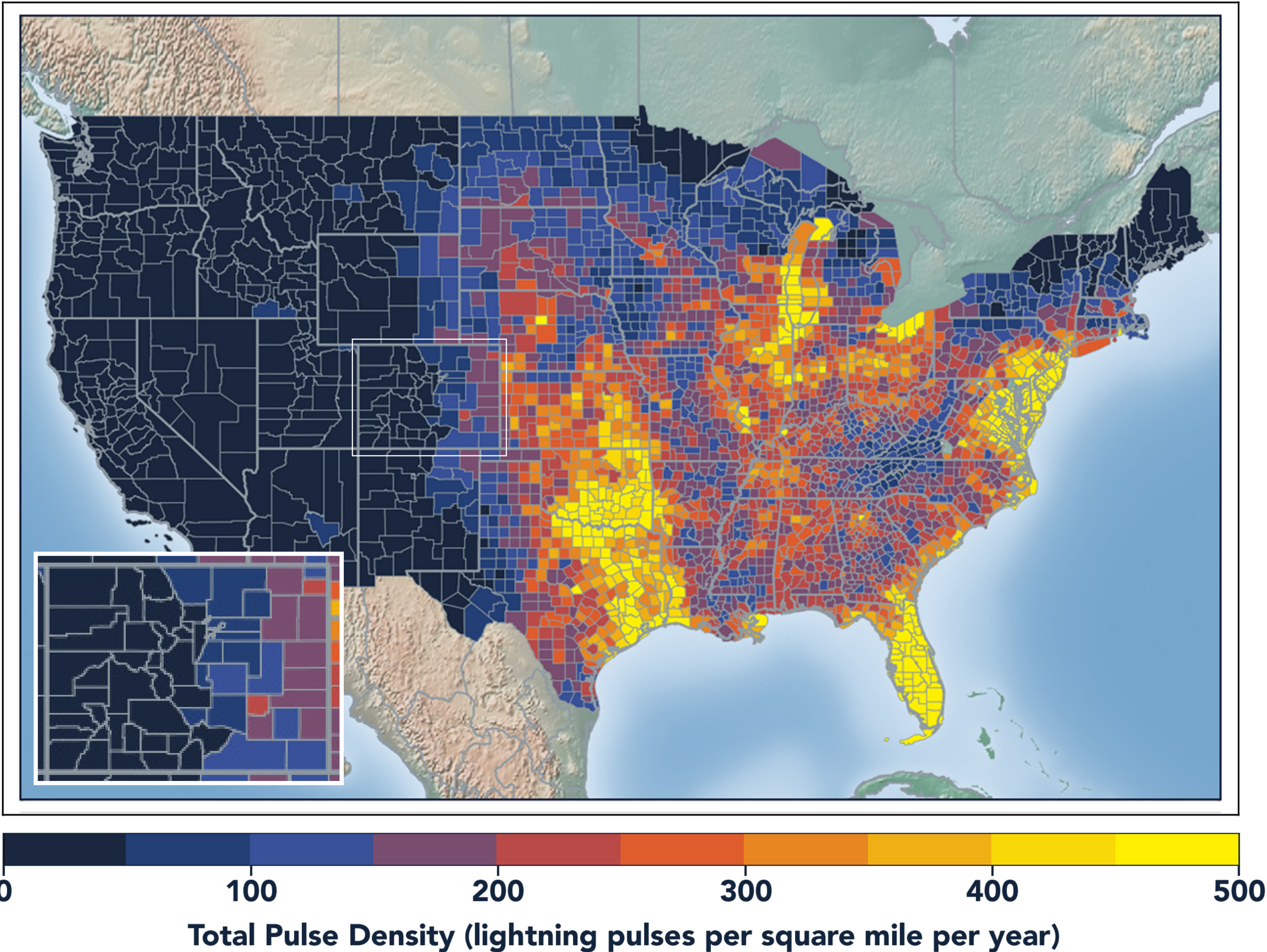
# LIGHTNING COUNT RANKINGS



Colorado ranked 27 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.

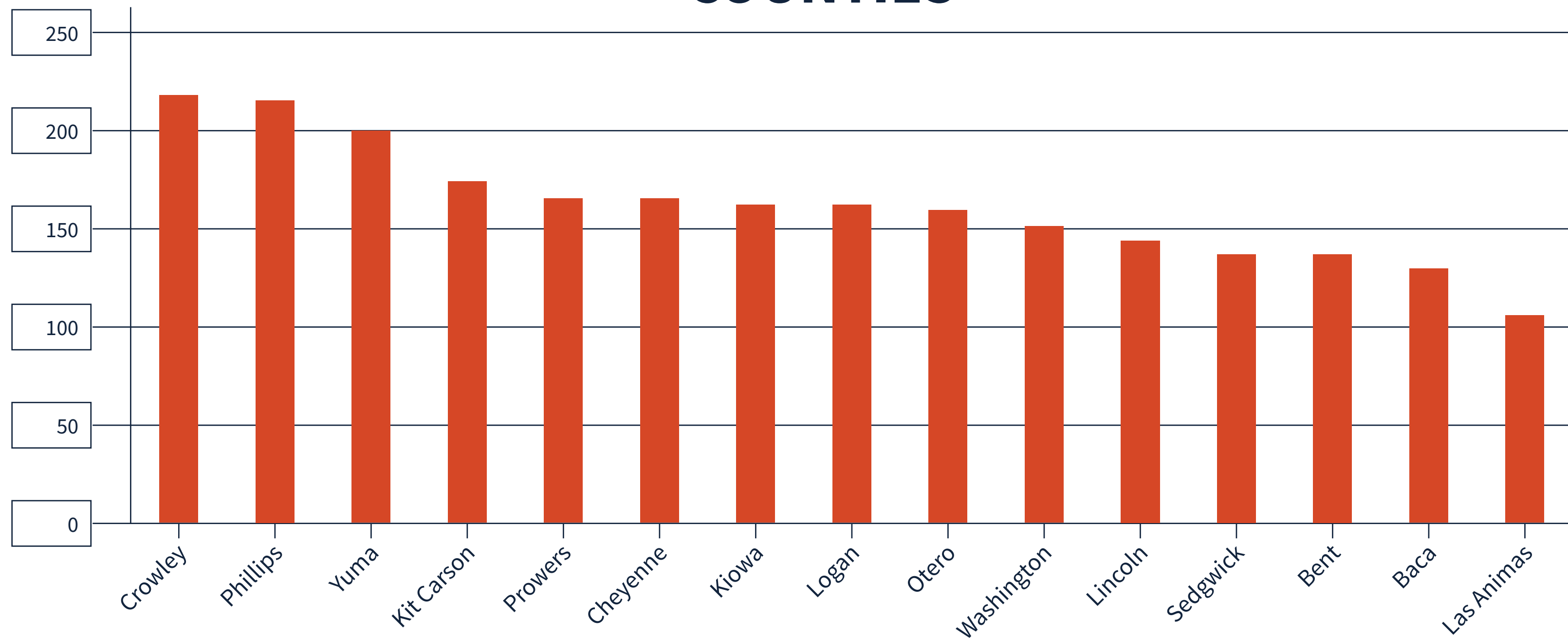
We cluster pulses together into a flash. With every pulse we detect, we receive a more precise measure of lightning activity. At left, areas in bright yellow experienced the highest lightning pulse density per square mile in 2020.



# 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.



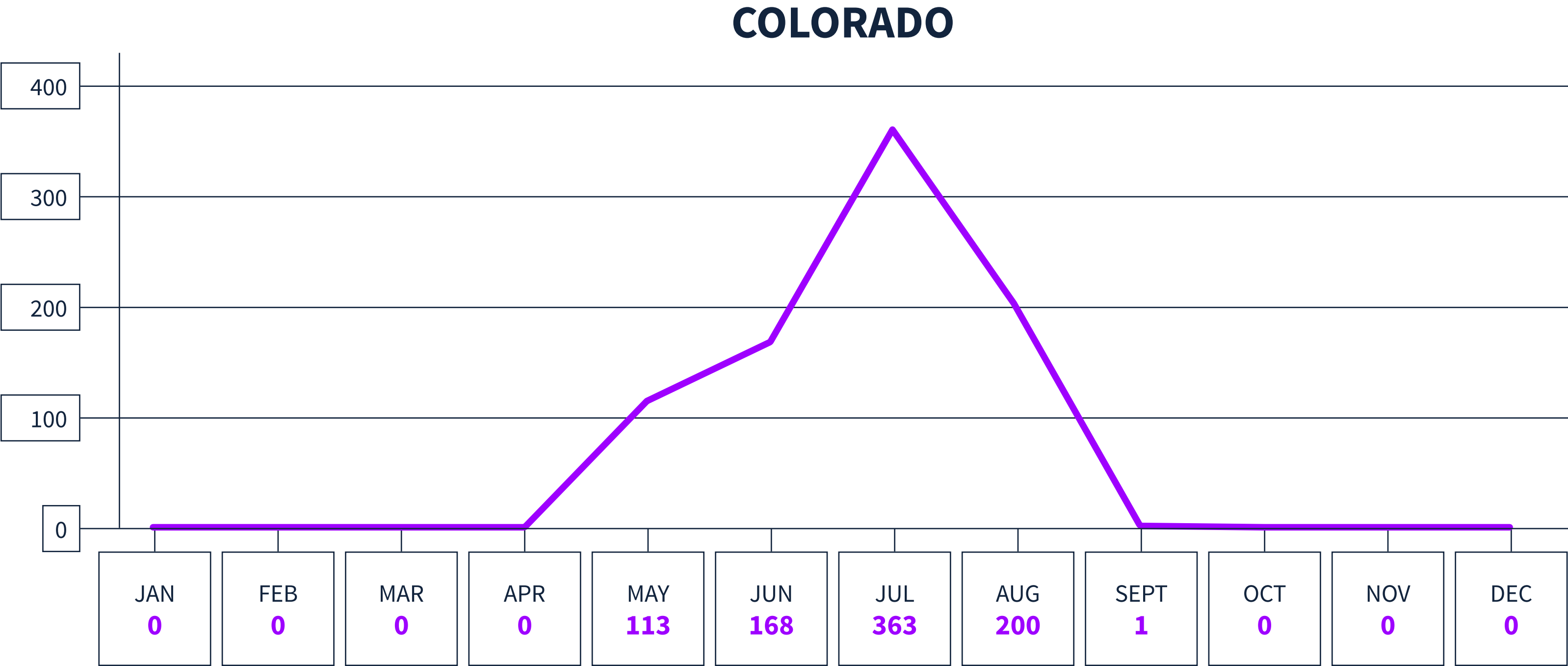
Earth Networks issued 29,401 Dangerous Thunderstorm Alerts (DTAs) in 2020. This year's map clearly shows the persistent drought conditions that have plagued the South and Southwest.

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



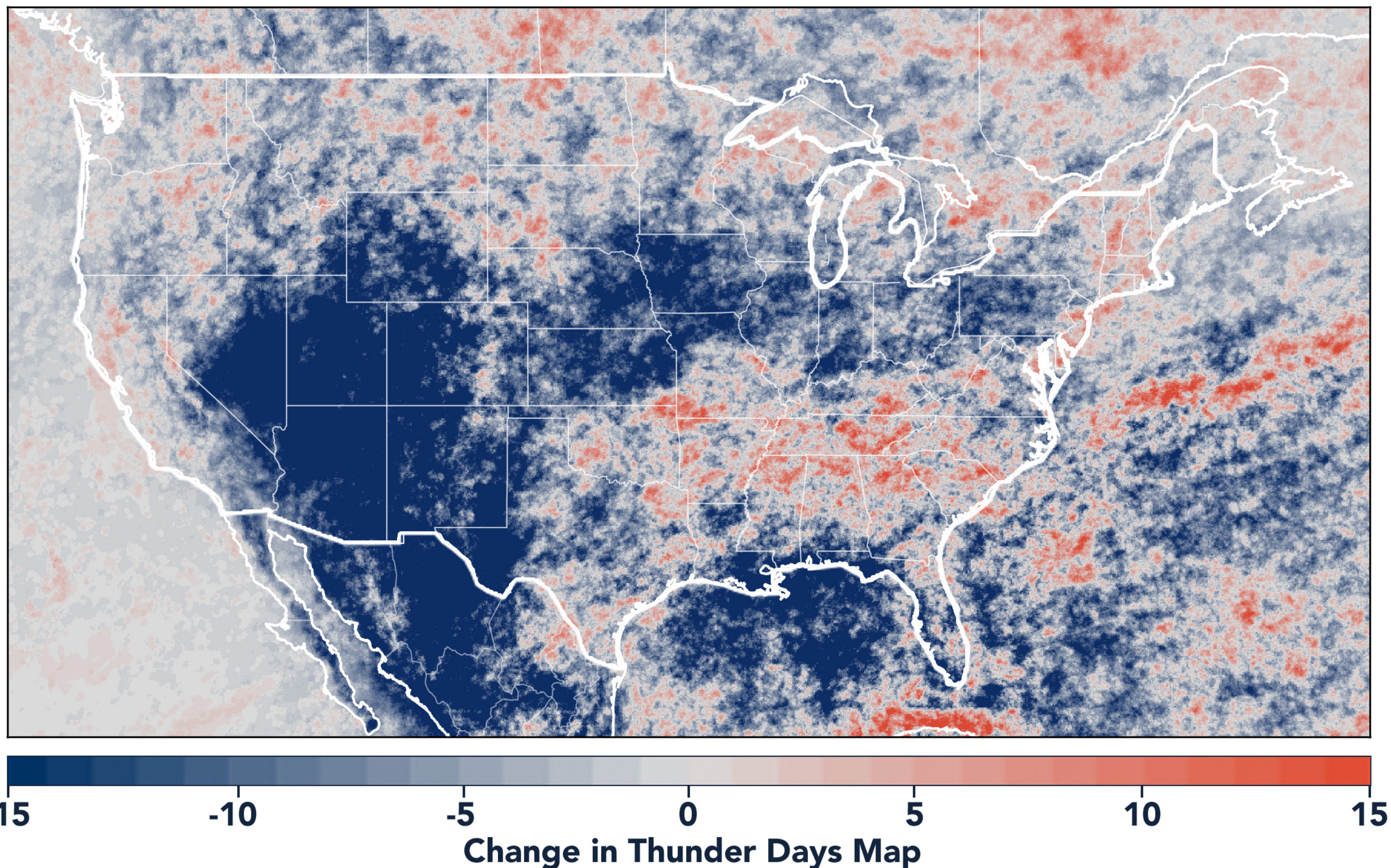
# DANGEROUS THUNDERSTORM ALERTS BY MONTH

Earth Networks issued 845 Dangerous Thunderstorm Alerts for the state in 2020.





# TOTAL STATE THUNDER DAYS: 185



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
Las Animas County	505,836	111
Yuma County	470,765	84
Washington County	381,581	96
Kit Carson County	374,502	82
Lincoln County	372,085	99
Weld County	343,079	103
Baca County	332,529	83
Logan County	297,189	84
Cheyenne County	294,151	82
Kiowa County	286,271	74
Prowers County	271,470	74
El Paso County	225,176	96
Pueblo County	220,454	95
Bent County	206,778	65
Otero County	201,575	74
Crowley County	171,233	61
Elbert County	165,610	90
Phillips County	147,924	53
Larimer County	136,729	92
Moffat County	132,666	86
Morgan County	114,436	79
Rio Blanco County	112,783	82
Saguache County	102,583	91
Garfield County	89,630	83
La Plata County	79,348	77
Sedgwick County	75,181	51
Fremont County	74,339	91
Huerfano County	69,644	94
Archuleta County	63,738	88
Routt County	63,542	80
Adams County	62,650	76
Mesa County	60,162	75
Gunnison County	59,688	84
Park County	58,855	86
Douglas County	57,102	77
Arapahoe County	55,209	72
Montezuma County	49,612	70
Conejos County	47,770	77
Mineral County	41,196	79
Custer County	37,160	84
Teller County	35,985	77
Montrose County	32,589	64
Hinsdale County	32,104	74
Rio Grande County	31,863	67
Grand County	31,523	85
Jackson County	28,644	72

COUNTY	TOTAL LIGHTNING PULSES	TOTAL THUNDER DAYS
Jefferson County	26,731	79
Costilla County	25,038	84
Delta County	25,032	59
Boulder County	23,081	68
Chaffee County	21,249	70
Eagle County	20,984	69
Dolores County	20,429	67
San Miguel County	20,079	58
Alamosa County	17,084	57
Pitkin County	13,331	64
San Juan County	10,396	61
Clear Creek County	8,439	64
Ouray County	7,038	50
Summit County	6,261	59
Denver County	4,550	34
Gilpin County	3,102	51
Lake County	2,139	40
Broomfield County	763	24