

CLIMATE DISASTERS IN COLORADO

With Trump gutting FEMA and fighting with state governments, what is in store for the rest of 2020 for Colorado?

TL/DR:

Trump has [failed to prepare us](#) for disasters caused by climate change. What does this mean for Colorado?

- With increased temperatures this summer, the risk of wildfire in Colorado is extreme.
 - As temperatures rise due to climate change, [the severity, frequency and extent of wildfires increases](#)
 - Colorado will be at an [elevated risk](#) of wildfires in July.
 - Since 2009, wildfires [caused](#) \$33.4 billion in damages and 141 deaths across the Southwest.
- Extreme heat and drought fueled by climate change threatens Coloradans lives and costs billions of dollars:
 - As the atmosphere traps more heat from the sun, extreme heat and drought are exacerbated.
 - Due to below average rainfall, drought conditions are expected to [persist or increase](#) across swaths of the Western U.S. this season. The current drought in Colorado [began in](#) 2000.
 - Since 2009, drought & extreme heat [caused](#) \$63 billion in damages and 271 deaths across the Southwest. Currently, [31% of Coloradans](#), or 1,577,000 people, inhabit places in abnormal drought conditions.
- In addition to wildfires, droughts and extreme heat, Coloradans also face increased risk of flooding and storms due to climate change:
 - [Severe storms have been linked to climate change](#), as hotter air carries more moisture, leading to more frequent and more intense storms:
 - Studies show one-third of the lower 48 states [face flooding risks](#) due to severe storms. AccuWeather also [forecasts an above average](#) number of tornadoes in 2020.
 - Since 2009, storms have [caused](#) \$20 billion in damages and 12 deaths across the Southwest.

- Since 2009, snow and ice storms [caused](#) \$13.7 billion in damages and 3 deaths across the Southwest.
- Across the Southwest, climate change [exacerbates](#) flooding through increased heavy precipitation, increased snowmelt, and sea level rise
 - More frequent heavy storms [may cause](#) increased flooding across the US, even in regions experiencing drought.
 - Since 2009, flooding [caused](#) \$4.5 billion in damages and 40 deaths across the Southwest.

HERE'S WHAT'S HAPPENING:

With Trump gutting FEMA and fighting with state governments, Coloradans should be asking [how ready the federal government is](#) to provide aid in a disaster at a time when climate change is already fueling major disasters that impact Colorado.

Unprecedented droughts have swept across the Southwest over the past several decades, and the current drought, which [began in 2000](#), is projected to [persist](#) in Colorado throughout 2020. Over one and a half million people, or 31% of Coloradans, live in areas experiencing [abnormal drought conditions](#), and in the past decade alone the drought and accompanying extreme heat [caused](#) \$63 billion in damages and 271 deaths across the Southwest.

The drought and accompanying emissions driven [temperature rise](#) leave Coloradans exposed to [wildfire](#). The past decade saw five wildfires [cause](#) \$33.4 billion in damages and 141 deaths across the Southwest. Colorado will next experience [heightened risk](#) of wildfire in July 2020, and the drought and rising temperatures that fuel fire are only expected to [worsen](#) in the coming years.

Lower than average precipitation doesn't even put Colorado off the hook for devastating storms: the National Climate Assessment projects that even in areas where total precipitation is decreasing, storms with heavy precipitation will become [more frequent](#). These heavy storms could cause [an increase](#) in floods as infrastructure buckles under water levels it was never designed to experience: in the past decade 2 floods [caused](#) \$4.5 billion in damages and 40 deaths across the Southwest.

These heavy storms are also dangerous in and of themselves: in the past decade, rainstorms have [caused](#) \$20 billion in damages and 12 deaths across the Southwest, while snow and ice storms [caused](#) \$13.7 billion in damages and 3 deaths.

RESEARCH

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RECENT FEMA SPENDING IN COLORADO

2019: FEMA Obligated No Public Funds To Colorado. According to data from the Federal Emergency Management Agency, Colorado was obligated no public funds for disaster relief in 2019. [[FEMA.Gov, Accessed 5/21/2020](#)]

SEVERE STORMS:

Link to Climate Change

U.S. Heavy Rainstorms Have Become Heavier And More Frequent In The Past Three To Five Decades. According to the National Climate Assessment, “Heavy downpours are increasing nationally, especially over the last three to five decades. The heaviest rainfall events have become heavier and more frequent, and the amount of rain falling on the heaviest rain days has also increased.” [National Climate Assessment, Extreme Weather, [2014](#)]

- **The Midwest And Northeast Have Seen A 30% Increase In Very Heavy Precipitation Over The 1901-1960 Average - The Largest Increase In The Nation.** According to the National Climate Assessment, “Since 1991, the amount of rain falling in very heavy precipitation events has been significantly above average. This increase has been greatest in the Northeast, Midwest, and upper Great Plains – more than 30% above the 1901-1960 average. There has also been an increase in flooding events in the Midwest and Northeast, where the largest increases in heavy rain amounts have occurred.” [National Climate Assessment, Extreme Weather, [2014](#)]

Scientists Have Linked An Increase in Heavy Downpours To Climate Change. According to the National Climate Assessment, “Global analyses show that the amount of water vapor in the atmosphere has in fact increased due to human-caused warming. This extra moisture is available to storm systems, resulting in heavier rainfalls.” [National Climate Assessment, Extreme Weather, [2014](#)]

2020 Season Outlook

Heavy Precipitation Events Projected To Increase Nationwide, “Even In Regions Where Total Precipitation Is Projected To Decrease.” According to the 2014 National Climate Assessment, “Projections of future climate over the U.S. suggest that the recent trend towards increased

heavy precipitation events will continue. This is projected to occur even in regions where total precipitation is projected to decrease, such as the Southwest.” [National Climate Assessment, [2014](#)]

National Weather Service Predicted Lower Than Normal Precipitation In Colorado Through Summer 2020. According to the National Weather Service, precipitation in Colorado has a 33-50% chance of being higher than normal from June-August 2020, placing it in the ‘likely to be below normal’ category for precipitation. [National Weather Service, [accessed 5/23/20](#)]

National Weather Service Predicted Lower Than Normal Precipitation In Colorado Through Fall 2020. According to the National Weather Service, precipitation in Colorado has a 33-40% chance of being higher than normal from Sep-Nov 2020, placing it in the ‘likely to be below normal’ category for precipitation. [National Weather Service, [accessed 5/23/20](#)]

2018 Storms

May 2018: Central And Eastern Severe Weather Caused \$1.4 Billion In Damages And Five Deaths. According to NOAA’s National Centers for Environmental Information, Central and Eastern Severe Weather that hit Pennsylvania in May 2018 caused \$1.4 billion in damages and five deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

- **Colorado Was One Of Nine States That Experienced Severe Storms.** According to NOAA’s National Centers for Environmental Information, “Severe storm damage across many Central states including TX, KS, CO, OK, MO, IL, IN, IA and OH. This was followed by a derecho event across the Northeastern states of MD, NJ, NY, PA, VA, WV, MA and CT that caused widespread high wind damage. Also, there were one dozen tornadoes reported across PA, NY and CT causing further damage.” [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

May 2018: Central And Northeastern Severe Weather Caused \$1.4 Billion In Damages And Zero Deaths. According to NOAA’s National Centers for Environmental Information, severe weather across Central and Northeastern U.S. that hit Colorado in May 2018 caused \$1.4 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

2016 Storms

July 2016: Rockies And Northeast Severe Weather Caused \$1.6 Billion In Damages And Zero Deaths. According to NOAA’s National Centers for Environmental Information, severe weather across the Rockies and Northeast, which hit Colorado in July 2016, caused \$1.6 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

- **Colorado, One Of Seven States Impacted By Severe Storms, Experienced The Most Costly Damage Of All States Due To Hail.** According to NOAA’s National Centers for Environmental Information, “Severe storms across the Rockies and Northeastern states (CO, WY, VA, MD, PA, NJ, NY) caused large hail and high wind damage. Storm damage in Colorado was the most costly due to hail.” [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

May 2016: Rockies/Central Tornadoes And Severe Weather Caused \$1.2 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, severe weather and tornadoes across the Rockies and Central states, which hit Colorado in May 2016, caused \$1.2 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

- **Colorado Was One Of Five States Impacted By Severe Thunderstorms, Tornadoes And Damage From Hail And Wind.** According to NOAA's National Centers for Environmental Information, "Sustained period of severe thunderstorms and tornadoes affecting several states including Montana, Colorado, Kansas, Missouri and Texas. The most concentrated days for tornado development were on May 22 and 24. Additional damage was created by straight-line high wind and hail damage." [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

May 2016: Plains Tornadoes And Central Severe Weather Caused \$1.9 Billion In Damages And Two Deaths. According to NOAA's National Centers for Environmental Information, severe weather across the Central U.S. and tornadoes across the Plains, which hit Colorado in May 2016, caused \$1.9 billion in damages and two deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

- **Colorado Experienced Widespread Damage From Tornadoes And Severe Storms Over A Multi-Day Period.** According to NOAA's National Centers for Environmental Information, "Tornadoes and severe storms cause widespread damage across the Plains and Central states (NE, MO, TX, OK, KS, CO, IL, KY, TN) over a multi-day period. The damage from tornadoes and high wind was most costly in Nebraska and Missouri." [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

2015 Storms

June 2015: Central And Northeast Severe Weather Caused \$1.3 Billion In Damages And One Death. According to NOAA's National Centers for Environmental Information, severe weather across the Central and Northeast United States, which hit Colorado in June 2015, caused \$1.3 billion in damages and one death. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

- **Colorado Experienced Severe Storms With Widespread Hail And High Wind Damage.** According to NOAA's National Centers for Environmental Information, "Severe storms across numerous Central and Northeast states (CO, CT, IA, IL, MD, MI, NJ, NY, PA, SD, VA, WI) with widespread hail and high wind damage." [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

2014 Storms

September 2014: Rockies/Plains Severe Weather Caused \$1.6 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, severe weather across the Rockies and Plains, which hit Colorado in September 2014, caused \$1.6 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov)]

- **Large Hail And High Winds Created Significant Damage Across Eastern Colorado.** According to NOAA's National Centers for Environmental Information, "Severe storms across the Rockies and Plains states (CO, KS, TX). Large hail and high winds created

significant damage across eastern Colorado and Texas, particularly in the Dallas metro area." [ndcd.noaa.gov, Accessed 4/30/2020]

May 2014: Rockies/Midwest/Eastern Severe Weather Caused \$4.1 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, severe weather across the Rockies, Midwest and East, which hit Colorado in May 2014, caused \$4.1 billion in damages and zero deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Colorado Experienced Severe Storms And Was One Of The Top Three States In Terms Of Costly Damages.** According to NOAA's National Centers for Environmental Information, "Severe storms across the Rockies, Midwest and Eastern states (CO, MT, IA, IL, IN, OH, SC, VA, PA, DE, NY) with the most costly damage in Colorado, Illinois and Pennsylvania." [ndcd.noaa.gov, Accessed 4/30/2020]

2012 Storms

June 2012: Rockies/Southwest Severe Weather Caused \$3 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, severe weather across the Rockies and Southwest, which hit Colorado in June 2012, caused \$3 billion in damages and zero deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Colorado Was One Of Three States That Experienced Severe Storms And Damaging Hail Resulting From 25 Confirmed Tornadoes.** According to NOAA's National Centers for Environmental Information, "Severe storms and damaging hail over several states (CO, NM, TX) with 25 confirmed tornadoes. Colorado experienced over \$1.0 (\$1.1) billion in damage due to hail." [ndcd.noaa.gov, Accessed 4/30/2020]
- **Colorado Experienced Over \$1.1 Billion In Damage Due To Hail.** According to NOAA's National Centers for Environmental Information, "Severe storms and damaging hail over several states (CO, NM, TX) with 25 confirmed tornadoes. Colorado experienced over \$1.0 (\$1.1) billion in damage due to hail." [ndcd.noaa.gov, Accessed 4/30/2020]

2011 Storms

July 2011: Rockies And Midwest Severe Weather Caused \$1.4 Billion In Damages And Two Deaths. According to NOAA's National Centers for Environmental Information, severe weather across the Rockies and Midwest, which hit Colorado in July 2011, caused \$1.4 billion in damages and two deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

Colorado Experienced Damage From Tornadoes, Hail And High Wind. According to NOAA's National Centers for Environmental Information, "An outbreak of tornadoes, hail, and high wind caused damage east of the Rockies and across the central plains (CO, WY, IA, IL, MI, MN, OH)." [ndcd.noaa.gov, Accessed 4/30/2020]

2010 Storms

June 2010: Rockies/Central/East Severe Weather Caused \$1.1 Billion In Damages And Two Deaths. According to NOAA's National Centers for Environmental Information, severe weather

across the Rockies, Central and East, which hit Colorado in June 2010, caused \$1.1 billion in damages and two deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Colorado Experienced High Wind And Hail Damage From Severe Storms.** According to NOAA's National Centers for Environmental Information, "Severe storms cause high wind and hail damage across numerous states including CO, NM, KS, OK, IL, IN, GA, SC and NC." [ndcd.noaa.gov, Accessed 4/30/2020]

Link to Climate Change

Winter Storms Have Increased In Frequency And Intensity Since 1950. According to the National Climate Assessment, "Winter storms have increased in frequency and intensity since the 1950s, and their tracks have shifted northward over the United States." [National Climate Assessment, Extreme Weather, [2014](#)]

Scientists Have Linked Increases In Heavy Snowfall Events to Climate Change. According to Climate Signals (a project of the nonprofit Climate Nexus), climate change is responsible for "increasing the frequency of extreme snowfall events." [Climate Signals, [accessed 5/21/20](#)]

2019 Ice Storms

July 2019: Colorado Hailstorms Caused \$1 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, hail storms across Colorado in July 2019 caused \$1 billion in damages and zero deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Hailstorms Across The Denver And Fort Collins Area Damaged Many Homes And Vehicles.** According to NOAA's National Centers for Environmental Information, "Colorado hail storms across the Denver and Fort Collins that damaged many homes and vehicles." [ndcd.noaa.gov, Accessed 4/30/2020]

May 2019: Rockies, Central And Northeast Tornadoes And Severe Weather Caused \$4.5 Billion In Damages And Three Deaths. According to NOAA's National Centers for Environmental Information, tornadoes and severe weather events across the Rockies, Central and Northeastern states that hit Colorado in May 2019 caused \$4.5 billion in damages and three deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Colorado Was One Of 12 States To Be Impacted By Damaging Hail, Thunderstorm Winds And 190 Tornadoes That Broke Out Across The Rockies, Central And Northeastern U.S.** According to NOAA's National Centers for Environmental Information, "A four-day tornado outbreak impacts many states across the Rockies, Central and Northeast (CO, WY, NE, KS, OK, MO, IA, IL, IN, OH, PA and NJ). This outbreak produced 190 tornadoes in addition to hundreds of reports of damaging hail and straight-line thunderstorm winds. Of particular note was an EF-4 tornado that produced heavy damage near the city of Dayton, Ohio on May 27." [ndcd.noaa.gov, Accessed 4/30/2020]

2018 Ice Storms

August 2018: Rockies And Plains Hailstorms Caused \$1.1 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, hailstorms across the

Rockies and Plains states, which hit Colorado in August 2018, caused \$1.1 billion in damages and zero deaths. [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

- **Colorado Experienced Severe Hail, With The Most Costly Impacts Occurring In The Eastern Part Of The State.** According to NOAA's National Centers for Environmental Information, "Severe hail impacts from baseball to softball size impacted several states including Colorado, Nebraska and Wyoming. The most costly impacts occurred in numerous locations of eastern Colorado." [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

June 2018: A Colorado Hailstorm Caused \$2.3 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, a hailstorm across Colorado in June 2018 caused \$2.3 billion in damages and zero deaths. [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

- **Severe Hail Stones Caused Widespread Damage Across The States, Impacting Homes, Businesses And Vehicles.** According to NOAA's National Centers for Environmental Information, "Severe hail storms cause golf ball to baseball-sized hail and widespread damage in many areas from northern Denver to Boulder and Fort Collins. Many homes, businesses and vehicles were impacted. Utah also experienced moderate hail damage." [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

2017 Ice Storms

May 2017: Colorado Hailstorm And Central Severe Weather Caused \$3.6 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, a hailstorm and severe weather across Colorado caused \$3.6 billion in damages and zero deaths. [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

Colorado Was One Of Five States That Experienced Hail And Wind Damage. According to NOAA's National Centers for Environmental Information, "Hail storm and wind damage impacting several states including CO, OK, TX, NM, MO." [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

Hail Damage Made The Storm The Most Expensive Hail Storm In Colorado History, With Insured Losses Exceeding \$2.4 Billion. According to NOAA's National Centers for Environmental Information, "Hail storm and wind damage impacting several states including CO, OK, TX, NM, MO. The most costly impacts were in the Denver metro region where baseball-sized hail caused the most expensive hail storm in Colorado history, with insured losses exceeding \$2.2 (\$2.4) billion." [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

2009 Ice Storms

July 2009: Colorado Hailstorm Caused \$1.2 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, a hailstorm across Colorado in July 2009 caused \$1.2 billion in damages and zero deaths. [[ndcd.noaa.gov](https://www.ndcd.noaa.gov), Accessed 4/30/2020]

Jefferson County Was Most Affected By Hailstorms At Least 8 Inches Deep. According to NOAA's National Centers for Environmental Information, "Severe hail impacts Colorado. Jefferson County was most affected with hail at least 8 inches deep. The hail damage from this

storm was comparable to the July 11, 1990 Colorado hail storm." [ndcd.noaa.gov, Accessed 4/30/2020]

WILDFIRES

Link to Climate Change

Climate Change Is Increasing The Severity, Frequency, And Extent Of Wildfires. According to a report from the EPA: "Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires in Colorado, which could harm property, livelihoods, and human health. In 2013, the Black Forest Fire burned 14,000 acres and destroyed over 500 homes. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems. The size and number of western forest fires have increased substantially since 1985." [[Environmental Protection Agency, "What Climate Change Means for Colorado" August 2016](#)]

Acres Burned By Wildfire Doubled In Recent Decades Due To Climate Change. According to the 2018 National Climate Assessment Report: "Wildfire is a natural part of many ecosystems in the Southwest, facilitating germination of new seedlings and killing pests. Although many ecosystems require fire, excessive wildfire can permanently alter ecosystem integrity. Climate change has led to an increase in the area burned by wildfire in the western United States. Analyses estimate that the area burned by wildfire from 1984 to 2015 was twice what would have burned had climate change not occurred. Furthermore, the area burned from 1916 to 2003 was more closely related to climate factors than to fire suppression, local fire management, or other non-climate factors." [[National Climate Assessment, Chapter 25, 2018](#)]

2020 Season Outlook

Southwest Colorado At Elevated Risk of Wildfire In July 2020. According to the National Interagency Fire Center, parts of Southwest Colorado are projected to be at an above average risk of wildfire in July 2020, though the risk level remains normal otherwise through the end of summer. [National Interagency Fire Center, [5/1/2020](#)]

The National Climate Assessment Has Found That The Number Of Wildfires Is Likely To Increase As The Climate Warms And Could Induce "Profound Changes To Certain Ecosystems." In August of 2018, The Atlantic reported: "As if there wasn't enough evidence of that. Last year, the National Climate Assessment—written by a panel of scientists in the military, federal civilian agencies, and private universities—reviewed the complete scientific literature on climate change and wildfires. They concluded that the number of large blazes had increased since the early 1980s. They also said the number of wildfires 'is projected to further increase in those regions as the climate warms.' They warned this could induce 'profound changes to certain ecosystems.'" [The Atlantic, [8/10/18](#)]

Recent History

In 2017, 111,667 Acres Of Land Were Burned Due To Wildfire In Colorado. According to the National Interagency Fire Center's 2017 report, 111,667 acres of land were burned in 967 fires across Arizona in 2017. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2017 Report](#)]

In 2018, 475,803 Acres Of Land Were Burned Due To Wildfire In Colorado. According to the National Interagency Fire Center's 2018 report, 475,803 acres of land were burned in 1,328 fires across Arizona in 2018. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2018 Report](#)]

In 2019, 40,392 Acres Of Land Were Burned Due To Wildfire In Colorado. According to the National Interagency Fire Center's 2019 report, 40,392 acres of land were burned in 857 fires across Colorado in 2019. [[National Interagency Fire Center, National Report of Wildland Fires and Acres Burned by State, 2019 Report](#)]

2018 Wildfires

Summer – Fall 2018: Western Wildfires And A California Firestorm Caused \$24.7 Billion In Damages And 106 Deaths. According to NOAA's National Centers for Environmental Information, wildfires across the West and a California firestorm, which impacted Colorado in the Summer and Fall of 2018, caused \$24.7 billion in damages and 106 deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

- **Over 8.7 Million Acres, Well Above The Ten Year Average Of 6.8 Million Acres, Burned Across The U.S. In 2018.** According to NOAA's National Centers for Environmental Information, "In 2018, California has experienced its costliest, deadliest and largest wildfires to date, with records back to 1933. The Camp Fire is the costliest and deadliest wildfire - destroying more than 18,500 buildings. California also endured its largest wildfire on record - the Medincino Complex Fire - burning over 450,000 acres. Additionally, California was impacted by other destructive wildfires: the Carr Fire in Northern California and the Woolsey Fire in Southern California. The total 2018 wildfire costs in California (with minor costs in other Western states) approach \$24.0 (\$24.7) billion - a new U.S. record. In total, over 8.7 million acres has burned across the U.S. during 2018, which is well above the 10-year average (2009-2018) of 6.8 million acres. The last 2 years of U.S. wildfire damage has been unprecedented in damage, with losses exceeding \$40.0 (\$41.2) billion." [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

2015 Wildfires

Summer – Fall 2015: Western And Alaskan Wildfires Caused \$3.4 Billion In Damages And 12 Deaths. According to NOAA's National Centers for Environmental Information, wildfires across the Western U.S. and Alaska, which hit Colorado in the Summer and Fall of 2015, caused \$3.4 billion in damages and 12 deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](#)]

- **Colorado Experienced Extensive Burned Acreage As A Result Of Wildfires.** According to NOAA's National Centers for Environmental Information, "Wildfires burned over 10.1

million acres across the U.S. in 2015, surpassing 2006 for the highest annual total of U.S. acreage burned since record-keeping began in 1960. The most costly wildfires occurred in California where over 2,500 structures were destroyed due to the Valley and Butte wildfires with the insured losses alone exceeding \$1.0 (\$1.1) billion. The most extensive wildfires occurred in Alaska where over 5 million acres burned within the state. There was extensive burnt acreage across other western states, most notably (OR, WA, ID, MT, ND, CO, WY, TX).” [ndcd.noaa.gov, Accessed 4/30/2020]

2012 Wildfires

Summer – Fall 2012: Western Wildfires Caused \$2 Billion In Damages And Eight Deaths. According to NOAA’s National Centers for Environmental Information, Western Wildfires, which impacted Colorado in the Summer and Fall of 2012, caused \$2 billion in damages and eight deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

2011 Wildfires

Summer – Fall 2011: Texas, New Mexico And Arizona Wildfires Caused \$2.1 Billion In Damages And Five Deaths. According to NOAA’s National Centers for Environmental Information, wildfires across Texas, Arizona and New Mexico in the Summer and Fall of 2011 caused \$2.1 billion in damages and five deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

2009 Wildfires

Summer – Fall 2009: Western Wildfires Caused \$1.2 Billion In Damages And Ten Deaths. According to NOAA’s National Centers for Environmental Information, wildfires across the Western U.S., which impacted Colorado in the Summer and Fall of 2009, caused \$1.2 billion in damages and ten deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

DROUGHT & EXTREME HEAT:

Link to Climate Change

National Climate Assessment: “The Heat And Drought Depleted Water Resources And Contributed To More Than \$10 Billion In Direct Losses To Agriculture Alone.” According to the National Climate Assessment, “An example of recent drought occurred in 2011, when many locations in Texas and Oklahoma experienced more than 100 days over 100°F. Both states set new records for the hottest summer since record keeping began in 1895. Rates of water loss, due in part to evaporation, were double the long-term average. The heat and drought depleted water resources and contributed to more than \$10 billion in direct losses to agriculture alone.” [National Climate Assessment, Extreme Weather, [2014](#)]

NASA Research Showed Human Activity Has Been Influencing Global Patterns Of Drought, With Increased Drought Occurring In Response To Greenhouse Gas Emissions. According to NASA, “Warming temperatures and changing precipitation patterns can lead to droughts, and NASA research shows that humans have been influencing global patterns of drought for nearly a century. Kate Marvel and Ben Cook,

researchers at NASA's Goddard Institute for Space Studies and Columbia University in New York City, investigated humans' influence on 20th-century drought patterns using historical weather data and drought maps calculated from tree rings. They found that a data 'fingerprint' – a drying and wetting pattern predicted to occur in response to greenhouse gas emissions – was visible as far back as the early 1900s." [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Climate Change Is Already Affecting Global Patterns Of Drought, And Such Trends Are Expected To Continue. According to NASA, "Demonstrating that humans influenced global drought patterns in the past is an important part of understanding how we may influence them in the future, said Cook. 'Climate change is not just a future problem,' he said. 'This shows it's already affecting global patterns of drought, hydroclimate, trends, variability — it's happening now. And we expect these trends to continue, as long as we keep warming the world.'" [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/6/13/2019)]

Colorado Has Been in Drought Since 2000. According to data reported by the National Integrated Drought Information System, Colorado's current period of drought began in 2000. [National Integrated Drought Information System, accessed [5/27/20](#)]

Colorado's Drought Affects 1,577,000 People, Or 31% Of Coloradans. According to data reported by the National Integrated Drought Information System, 1,577,000 people, or approximately 31% of Colorado's population, currently live in areas affected by abnormally dry conditions. [National Integrated Drought Information System, accessed [5/27/20](#)]

2020 Season Outlook

National Weather Service Outlook Predicted Drought Would Persist Across Colorado In The Summer Of 2020. According to data from the National Weather Service's Drought Outlook, Colorado's drought is expected to persist in the summer of 2020. [National Weather Service, [accessed 5/26/20](#)]

National Weather Service Outlook Forecasts 33-70% Chance Of Higher Than Average Temperatures In Colorado June-August 2020. According to data from the National Weather Service, Colorado is likely to have higher than average temperatures between June and August 2020, with odds of higher than average temperatures ranging from 33-70% depending on the region. [National Weather Service, [accessed 5/23/20](#)]

National Weather Service Outlook Forecasts 60-70% Chance Of Higher Than Average Temperatures In Colorado September-November 2020. According to data from the National Weather Service, Colorado is extremely likely to have higher than average temperatures between September and November 2020, with odds of higher than average temperatures at 60-70%. [National Weather Service, [accessed 5/23/20](#)]

Longer And More Intense Droughts Are Expected In The Future Due To Climate Change, With The U.S. Southwest Potentially Experiencing 'Megadroughts' Lasting More Than Three Decades. According to NASA, "Demonstrating climate models' ability to accurately depict past droughts, helps to confirm their ability to model future droughts as well. Other research of Cook's shows that if greenhouse gas emissions continue to increase along current trajectories, the U.S. Southwest could see 'megadroughts' lasting more than three

decades. Cook and his team ran 17 different climate models, and all of them agree that there are likely to be longer and more intense droughts in the future.” [[climate.nasa.gov, 6/13/2019](https://climate.nasa.gov/news/1226/decades-of-drought-are-likely-to-be-longer-and-more-intense-droughts-in-the-future/)]

2018 Drought

Summer – Fall 2018: Drought Across The Southwest And Southern Plains Caused \$3.1 Billion In Damages And Zero Deaths. According to NOAA's National Centers for Environmental Information, drought across the Southwest and Southern Plains, which impacted Colorado in the Summer and Fall of 2018, caused \$3.1 billion in damages and zero deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov/2018/08/28/drought-across-the-southwest-and-southern-plains-caused-3-1-billion-in-damages-and-zero-deaths/)]

- **Colorado Was One Of Four States Where The Most Extreme Drought Conditions Continued To Persist.** According to NOAA's National Centers for Environmental Information, “Drought conditions were present across numerous Southwestern and Plains states (TX, OK, KS, MO, CO, NM, AZ, UT). The most extreme drought conditions continue to persist across the Four Corners region of the Southwest.” [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov/2018/08/28/drought-across-the-southwest-and-southern-plains-caused-3-1-billion-in-damages-and-zero-deaths/)]
- **The Agriculture Sector Across Impacted States Saw Damage To Field Crops From Lack Of Rainfall.** According to NOAA's National Centers for Environmental Information, “The agriculture sector has been impacted across the affected states including damage to field crops from lack of rainfall. Ranchers have also be forced to sell-off livestock early in some regions due to high feeding costs.” [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov/2018/08/28/drought-across-the-southwest-and-southern-plains-caused-3-1-billion-in-damages-and-zero-deaths/)]

2013 Drought

Spring – Fall 2013: Drought And Heatwaves Across The West And Great Plains Caused \$11.7 Billion In Damages And 53 Deaths. According to NOAA's National Centers for Environmental Information, drought and heatwaves across the Western and Great Plains states, which hit Colorado in Spring and Fall of 2013, caused \$11.7 billion in damages and 53 deaths. [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov/2013/11/14/drought-and-heatwaves-across-the-west-and-great-plains-caused-11-7-billion-in-damages-and-53-deaths/)]

- **Colorado Was One Of 22 States That Experienced Moderate To Extreme Drought.** According to NOAA's National Centers for Environmental Information, “The 2013 drought slowly dissipated from the historic levels of the 2012 drought, as conditions improved across many Midwestern and Plains states. However, moderate to extreme drought did remain or expand into western states (AZ, CA, CO, IA, ID, IL, KS, MI, MN, MO, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WI, WY). In comparison to 2011 and 2012 drought conditions the US experienced only moderate crop losses across the central agriculture states.” [[ndcd.noaa.gov, Accessed 4/30/2020](https://www.ndcd.noaa.gov/2013/11/14/drought-and-heatwaves-across-the-west-and-great-plains-caused-11-7-billion-in-damages-and-53-deaths/)]

2012 Drought

2012: Nationwide Droughts And Heatwaves Caused \$34.2 Billion In Damages And 123 Deaths. According to NOAA's National Centers for Environmental Information, drought and heatwaves across the U.S. in 2012 caused \$34.2 billion in damages and 123 deaths.

[ndcd.noaa.gov, Accessed 4/30/2020]

- **The 2012 Drought Impacted Over Half Of The U.S., Including Colorado, And Was The Most Extensive Drought In America Since The 1930s.** According to NOAA's National Centers for Environmental Information, "The 2012 drought is the most extensive drought to affect the U.S. since the 1930s. Moderate to extreme drought conditions affected more than half the country for a majority of 2012. The following states were affected: CA, NV, ID, MT, WY, UT, CO, AZ, NM, TX, ND, SD, NE, KS, OK, AR, MO, IA, MN, IL, IN, GA. Costly drought impacts occurred across the central agriculture states resulting in widespread harvest failure for corn, sorghum and soybean crops, among others. The associated summer heatwave also caused 123 direct deaths, but an estimate of the excess mortality due to heat stress is still unknown." [ndcd.noaa.gov, Accessed 4/30/2020]

2011 Drought

Spring – Summer 2011: Southern Plains/Southwest Drought And Heat Wave Caused \$14 Billion In Damages And 95 Deaths. According to NOAA's National Centers for Environmental Information, drought and heat wave conditions across the Southwest and Southern Plains caused \$14 billion in damages and 95 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

FLOODING

Link to Climate Change:

Scientists Have Linked Increases in Flooding to Climate Change. According to the National Climate Assessment, "Floods are caused or amplified by both weather- and human-related factors. Major weather factors include heavy or prolonged precipitation, snowmelt, thunderstorms, storm surges from hurricanes, and ice or debris jams [...] Increasingly, humanity is also adding to weather-related factors, as human-induced warming increases heavy downpours, causes more extensive storm surges due to sea level rise, and leads to more rapid spring snowmelt [...] The risks from future floods are significant, given expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and human-induced climate change" [National Climate Assessment, Extreme Weather, [2014](#)]

2020 Season Outlook

National Weather Service Predicted Lower Than Normal Precipitation In Colorado Through Summer 2020. According to the National Weather Service, precipitation in Colorado has a 33-

50% chance of being higher than normal from June-August 2020, placing it in the 'likely to be below normal' category for precipitation. [National Weather Service, [accessed 5/23/20](#)]

National Weather Service Predicted Lower Than Normal Precipitation In Colorado Through Fall 2020. According to the National Weather Service, precipitation in Colorado has a 33-40% chance of being higher than normal from Sep-Nov 2020, placing it in the 'likely to be below normal' category for precipitation. [National Weather Service, [accessed 5/23/20](#)]

2015 Flooding

May 2015: Texas And Oklahoma Flooding And Severe Weather Caused \$2.8 Billion In Damages And 31 Deaths. According to NOAA's National Centers for Environmental Information, flooding and severe weather across Texas and Oklahoma, which hit Colorado in May 2015, caused \$2.8 billion in damages and 31 deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Associated Severe Storms Caused Damage Across Seven Other States, Including Colorado.** According to NOAA's National Centers for Environmental Information, "A slow-moving system caused tremendous rainfall and subsequent flooding to occur in Texas and Oklahoma. The Blanco river in Texas swelled from 5 feet to a crest of more than 40 feet over several hours causing considerable property damage and loss of life. The city of Houston also experienced flooding which resulted in hundreds of high-water rescues. The damage in Texas alone exceeded \$1.0 (\$1.1) billion. There was also damage in other states (KS, CO, AR, OH, LA, GA, SC) from associated severe storms." [ndcd.noaa.gov, Accessed 4/30/2020]

2013 Flooding

September 2013: Colorado Flooding Caused \$1.7 Billion In Damages And Nine Deaths. According to NOAA's National Centers for Environmental Information, flooding across Colorado in September 2013 caused \$1.7 billion in damages and nine deaths. [ndcd.noaa.gov, Accessed 4/30/2020]

- **Colorado Experienced Historic Flooding Across Numerous Cities And Downs, With Widespread Destruction Of Residences, Businesses And Transportation Infrastructure.** According to NOAA's National Centers for Environmental Information, "A stalled frontal boundary over Colorado led to record rainfall, as some areas received > 15 inches over several days. This resulted in historic flooding across numerous cities and towns. Destruction of residences, businesses and transportation infrastructure was widespread." [ndcd.noaa.gov, Accessed 4/30/2020]