

Climate and Health Outlook

ISSUED MARCH 2024

The Climate and Health Outlook is an effort to inform health professionals and the public on how our health may be affected in the coming months by climate events and to provide resources for proactive action. Visit the [associated webpage](#) for additional resources and information and the new [Climate and Health Outlook Portal](#) for interactive maps with county-level forecasts for the current month along with county-level data on individual risk factors that may make people more vulnerable to negative health outcomes from these climate hazards. This edition provides information and stories on the behavioral health and pollen impacts associated with climate hazards along with forecasts for winter weather, drought, and wildfire in March 2024.



Northwest: Most of Idaho, Oregon, and Washington have equal chances of above-, near-, or below-normal temperatures. Southern parts of the region have a modest chance of above-normal precipitation. Periods of heavy mountain snow are most likely during the first half of the month. Drought is favored to persist across small portions of Washington, central Oregon, and northern Idaho.



Northeast: Above-normal temperatures are highly likely for the Northeast. A slight tilt toward below-normal precipitation is depicted for southern parts of the region. Most of the Northeast is forecasted to remain drought-free, except for a small portion western New York.



Southwest: Many of the northern parts of the Southwest, including California and Nevada, have elevated probabilities for above-normal precipitation and below-normal temperatures. Multiple periods of heavy mountain snow are likely. Equal chances for above-, near-, or below-normal precipitation is predicted for much of Arizona and New Mexico. Drought is favored to persist across most of New Mexico, Arizona, parts of Colorado, southern Nevada, and eastern Utah. Drought development is likely in southeastern New Mexico. Above normal significant wildland fire potential is forecast along the eastern borders of Colorado and New Mexico.



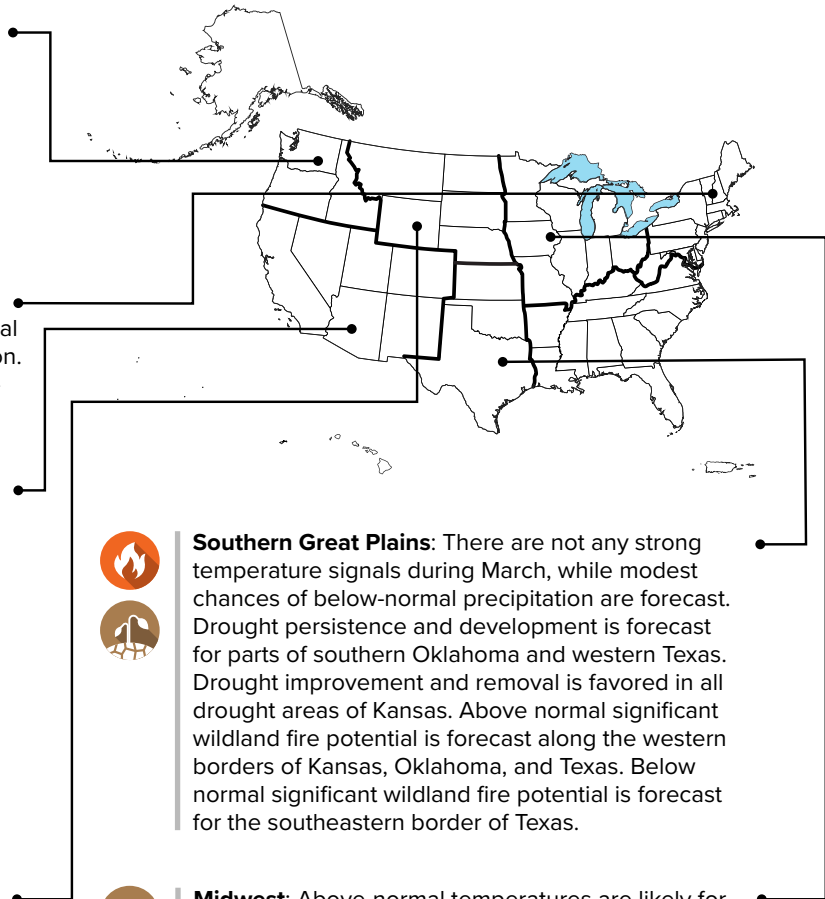
Northern Great Plains: Above-normal temperatures are modestly favored for much of eastern Montana, the Dakotas, and Nebraska. Above-normal precipitation is most likely over Nebraska and South Dakota. Drought persistence and development is favored in most of Montana, northern Wyoming, part of southern Wyoming, northern North Dakota, small portions of western and southeastern South Dakota, and eastern Nebraska. Drought removal is favored in southeastern Nebraska. Above normal significant wildland fire* potential is forecast for the eastern borders of North Dakota and South Dakota.



Southern Great Plains: There are not any strong temperature signals during March, while modest chances of below-normal precipitation are forecast. Drought persistence and development is forecast for parts of southern Oklahoma and western Texas. Drought improvement and removal is favored in all drought areas of Kansas. Above normal significant wildland fire potential is forecast along the western borders of Kansas, Oklahoma, and Texas. Below normal significant wildland fire potential is forecast for the southeastern border of Texas.



Midwest: Above-normal temperatures are likely for the region, while modest probabilities of below-normal precipitation are forecast over Michigan and northeastern Wisconsin. Drought is favored to persist across most of Iowa, Minnesota, Wisconsin, and Michigan. Drought improvement and removal is favored across Missouri, western Illinois, and southern Iowa. Above normal significant wildland fire potential is forecast for the eastern Dakotas, Minnesota, Wisconsin, and northern Iowa. Southern Missouri is also forecast for above normal significant wildland fire potential.



*Smoke from wildfires can impact health hundreds of miles from site of the fire.

Developed with data from the National Oceanic and Atmospheric Administration and the National Interagency Fire Center.

Start of Spring Across the U.S. as of March 1, 2024

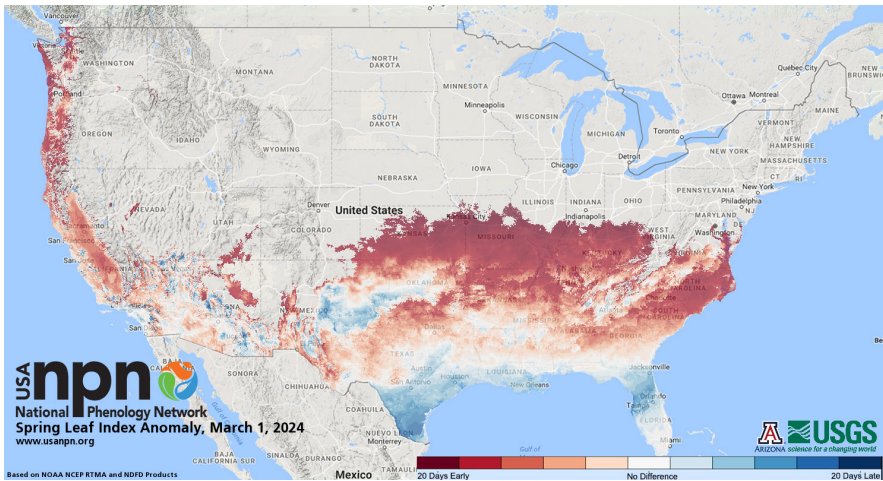


Figure: This map depicts where springtime biological activity has begun earlier than average (in red tones) and later than average (blue tones) so far this year. We can expect an earlier start to the pollen season in regions experiencing an earlier than normal start to spring. For more information, visit the [USA-NPN Status of Spring page](#).

After a slow start to spring 2024 in Florida and parts of the Southern Great Plains, spring is spreading more quickly now across the country. So far in 2024, the **start of springtime activity has been up to three weeks ahead of schedule**, especially in parts of Arkansas, Missouri, Kentucky, and North Carolina. Albuquerque, NM is a week early, St. Louis, MO is two weeks early, and parts of Washington, D.C. are 22 days early compared to a long-term average of 1991–2020. The Sacramento Valley as well as coastal areas of Northern California, Oregon, and Washington are seeing the earliest start of spring on record.

Springtime pollen release is heavily shaped by winter and spring temperatures. Plants must be exposed to sufficient warmth to emerge from dormancy, open their flowers, and release pollen. On average, plants release pollen about two weeks after showing signs of springtime activity.

Spring Pollen Season is Getting Longer & More Intense

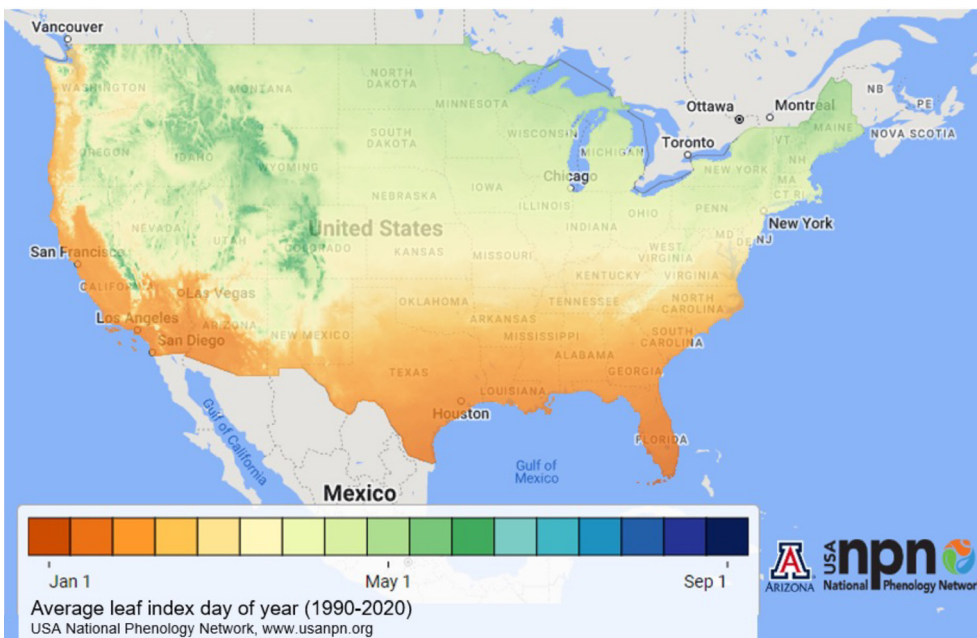


Figure: This map from the [USA National Phenology Network \(USA-NPN\)](#) shows when springtime activity in plants typically began over the last 30 years based on pollen monitoring stations certified by the American Academy of Allergy, Asthma & Immunology [National Allergy Bureau](#). The start of spring occurs on the date when enough heat has accumulated to initiate growth (leafing and flowering) in temperature-sensitive plants. The [United States Global Change Research Program](#) uses data from the USA-NPN as an indicator for the start of the spring season.

Our changing climate has caused shifts in precipitation patterns, more frost-free days, warmer seasonal air temperatures, and more carbon dioxide (CO₂) in the atmosphere. These changes may lead to both **higher pollen concentrations and earlier and longer pollen seasons**. Overall, data from the USA National Phenology Network (shown on the map to the left) indicate that on average, the start of spring has occurred earlier in the contiguous United States since 1984. [One study](#) found that nationwide, total pollen amounts increased up to 21% between 1990 and 2018, with the greatest increases recorded in Texas and the Midwest.

Some of these changes in pollen due to climate change could have major impacts on human health such as **increasing individuals' exposure to pollen and their risk of having allergy and/or asthma symptoms**.

Resources to Reduce Health Risks Associated with Pollen

Reducing exposure to pollen and sufficiently treating allergies can reduce inflammation and associated mental distress. CDC provides guidance on [protecting those with allergies from pollen](#).

- The Food and Drug Administration’s [Allergy Relief for Your Child site](#) has information on allergy medications and shots for children and how to avoid pollen and other allergy triggers. The [Seasonal Allergies: Which Medication is Right for You site](#) has information on different allergy medications for all ages.
- The National Institutes of Health National Center for Complementary and Integrative Health has helpful tips on [additional approaches you can take to manage your allergy symptoms](#) alongside medications and other therapies.

Pollen Affects Health in Many Ways

Pollen is an airborne allergen that can affect our health. Pollen exposure can trigger various allergic reactions, including:



People living with seasonal allergies are more likely to be diagnosed with mood disorders like anxiety & depression.



red, watery, or itchy eyes



asthma or other respiratory illness exacerbation



sneezing, runny nose, and congestion

[These symptoms have been linked](#) to negative impacts on sleep, daily activities, productivity, concentration, and quality of life. Allergic asthma and seasonal allergies affect approximately 40% of the U.S. population.

Heat Season Returning Soon: Impacts of Heat on Mental Health Outcomes & Risks for Those with Preexisting Conditions

Exposure to extreme heat can lead to increased stress, anxiety, and [cognitive impairment](#). Research has shown that [extreme heat is associated with several mental health outcomes](#) including increased risk of suicide and increased mental health-related hospital admissions and emergency department (ED) visits. A recent study found that [associations between heat and mental health-related ED visits were highest in the U.S. Northeast, Midwest, and Northwest](#) regions. Furthermore, individuals with preexisting behavioral health conditions [are at increased risk of heat-related illness or death from extreme heat](#). [Psychotropic medications](#), which are commonly used in mental health treatment, as well as alcohol and other substances can contribute to this increased risk. [A recent study on heat-related deaths](#) found that 18% of deaths were due to alcohol poisoning (3%) and drug overdose (15%).

Heat considerations for those on certain psychiatric and other medications

- The CDC provides a list of common [warning signs and symptoms of heat-related illness](#) along with tips on what to do when you or someone you know is experiencing symptoms.
- Some medications increase the risk of heat-related illness. These include diuretic medicines (sometimes called “water pills”), antihistamine medicines (including many allergy medicines), and many antipsychotic medicines used to treat a variety of psychiatric and neurologic illnesses. Check out SAMHSA’s [Tips for People Who Take Medication: Coping with Hot Weather](#) for more information.

NOTES FROM THE FIELD:

Dr. Stanley Fineman

Dr. Stanley Fineman from Atlanta Allergy and Asthma has been practicing allergy medicine for over 40 years and has seen firsthand the impacts of a warming climate on patients allergic to pollen. The pollen season has been starting earlier and lasting longer, leading to higher pollen counts and more intense allergy symptoms that last for longer periods of time.

Dr. Fineman reflected on how these changes to the pollen season have impacted his work:

“I had suggested that patients begin using their allergy medication, such as topical nasal corticosteroids, beginning St. Patrick’s Day (March 17th), prior to the peak pollen season. Now I recommend that patients start their medications on Valentine’s Day (February 14th).”

In addition to taking allergy medications earlier in the season, Dr. Fineman recommends that patients follow local pollen counts. Those who experience pollen allergies should limit their outdoor activities when pollen counts are high in their area.

Winter Weather Outlook




The weakening El Niño remains a driver of temperature and precipitation patterns over North America as we transition from winter to spring. El Niño and other patterns of climate variability act alongside long-term trends (due in part to climate change) to impact seasonal temperatures. For March 2024, above-normal temperatures are more likely across much of the eastern part of the contiguous U.S. and the Hawai’ian Islands. The greatest chance for above-normal temperatures is centered over the Northeast. Below-normal temperatures are modestly favored over the Southwest and the best odds for below-normal temperatures are centered over western Alaska. The remainder of the U.S. has equal chances for below-, near-, or above-normal seasonal temperatures.

For March 2024, the odds of above-normal precipitation are elevated for much of the west-central contiguous U.S. including California and the intermountain West, the Southeastern Coast, and parts of southern Alaska. North-central California and points east, along with parts of the Southeast, have the best chance of above-normal precipitation. Below-normal precipitation is favored for the Hawai’ian Islands, southwestern Texas, and parts of the Great Lakes. The remainder of the U.S. will see equal chances for below-, near-, or above-average seasonal precipitation.

For updated winter weather forecasts, please visit [WPC Winter Weather Forecasts | NOAA](#) and [CPC Week-2 U.S. Hazards Outlooks](#). For the latest severe weather potential, please see the [SPC Convective Outlooks](#).

Winter Weather Affects Health in Many Ways

Winter can bring extreme cold, freezing rain, snow, ice, and high winds which can last a few hours or several days.

-  **Extreme winter storms can cause people to experience significant emotional distress.**
-  Those with inadequate indoor heating or clothing coverage, and those who work outdoors are at greater risk of **hypothermia** and **frostbite** with prolonged exposure to excessive cold.
-  Winter storms can lead to **outages of power, heating, and communication systems** which can pose safety hazards, especially for people who critically depend on electricity-dependent medical equipment.

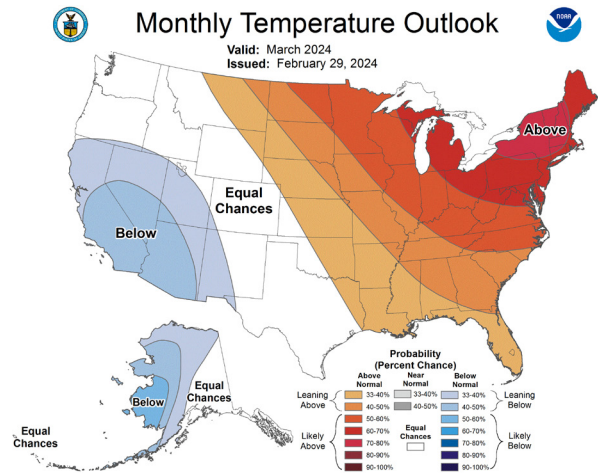


Figure: This NOAA Climate Prediction Center March temperature outlook shows the most likely outcome in terms of probabilities, but this is not the only possible outcome.

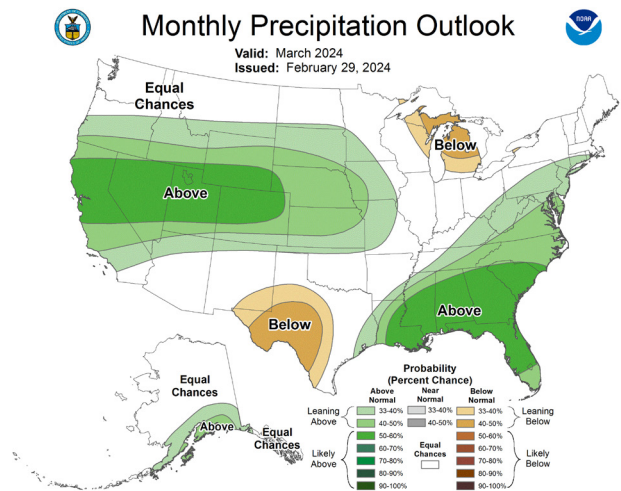


Figure: This NOAA Climate Prediction Center March precipitation outlook shows the most likely outcome in terms of probabilities. Higher probabilities mean higher confidence, but this is not the only possible outcome.



Using space heaters, fireplaces, or appliances that are not meant for heating, such as ovens or stoves, can increase the **risk of fire** and **worsen indoor air quality**.



Running a generator indoors or outdoors without adequate ventilation can cause carbon monoxide [CO] exposure, which can lead to **loss of consciousness** and **death**. Over 400 people die each year from accidental CO poisoning.

U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period

Valid for March 2024
Released February 29, 2024

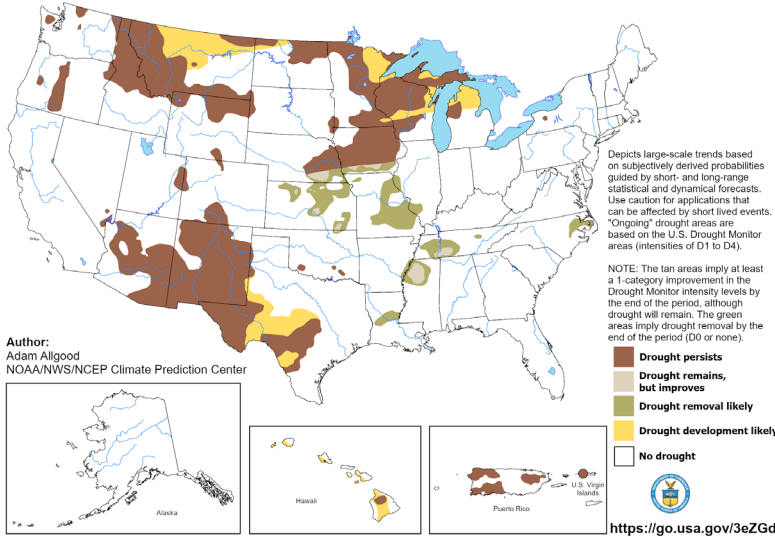


Figure: The National Weather Service Climate Prediction Center’s Monthly Drought Outlook is issued at the end of each calendar month and is valid for the upcoming month. The outlook predicts whether drought will persist, develop, improve, or be removed over the next 30 days or so. For more information, please refer to drought.gov.

During March, drought improvement and removal is favored for all drought areas in the Southeast and in portions of the Midwest and Southern Great Plains. Drought development is likely across portions of the Midwest, Northern and Southern Great Plains, southeastern New Mexico, and parts of Hawai’i. Drought persistence is forecast across drought areas of the Northwest, Southwest, Northern and Southern Great Plains, Midwest, Puerto Rico, the U.S. Virgin Islands, and in parts of Hawai’i and western New York. Drought can have direct and indirect impacts on health—increasing incidence of illness among those living in the affected area and worsening mental health outcomes as livelihoods are challenged.

Who is at high risk in the counties projected to have drought in March?




As indicated in the map to the left, **577 counties** across **20 states** are projected to have persistent/remaining drought or drought development in November. In these counties, the total population at risk is **38,806,965 people** and, of those, **475,545 people** work in agriculture. Of these counties:




- 206 (36%)** have a high number* of people aged 65 or over, living alone.
- 159 (28%)** have a high number of people living in rural areas.
- 90 (16%)** have a high number of people living in poverty.
- 64 (11%)** have a high number of people with frequent mental distress.
- 82 (14%)** have a higher number of adults with asthma.
- 123 (21%)** have a high number of people without health insurance.
- 185 (32%)** have a high number of uninsured children.
- 10 (2%)** have a high number of Black or African American persons.
- 93 (16%)** have a high number of people with severe housing cost burden.
- 93 (16%)** have a high number of people in mobile homes.
- 102 (18%)** have a high number of people with one or more disabilities.
- 100 (17%)** are identified as highly vulnerable by CDC’s Social Vulnerability Index.

*“A high number” indicates that these counties are in the top quartile for this indicator compared to other counties.

Drought Affects Health in Many Ways

Drought increases the risk for a diverse range of health outcomes. For example:

-  **Drought’s complex economic consequences can increase mood disorders, domestic violence, and suicide.**
-  Low crop yields can result in rising food prices and shortages, potentially leading to **malnutrition**.
-  Dry soil can increase the number of particulates such as **dust and pollen** that are suspended in the air, which can irritate the bronchial passages and lungs.

-  Dust storms can spread the fungus that causes coccidioidomycosis (**Valley Fever**).
-  If there isn’t enough water to flow, waterways may become stagnant breeding grounds for **disease vectors** such as mosquitoes as well as viruses and bacteria.
-  Long-term droughts can cause **poor-quality drinking water** and leave inadequate water for hygiene and sanitation.

Drought's Impact on Mental Health: Outcomes and Particularly At-Risk Populations

Drought is a slow-moving climate disaster with both direct and indirect impacts on mental health. Farmers and their families are of particular concern because drought affects their jobs and livelihoods which in turn leads to stress and other health impacts. A recent study looking at the association between drought exposure and the risk of death by suicide in the United States from 2000 to 2018 found an [association between all drought types and increased firearm suicides among U.S. farmers](#)—the more severe the drought, the greater the association. A systematic review identified [additional vulnerable populations for the impact of drought on mental health including rural or remote populations and indigenous populations](#). A few of the factors that can be exacerbated by drought and lead to anxiety and/or depression are struggling economies, migrations of community members, feelings of humiliation, household tension, and increased workloads.



Figure: [Keep It Together by Tammy West](#). Artist's statement: Texas and much of the Western United States have been experiencing climate change-induced severe drought. This site-specific piece focuses on our collective climate grief.

Funded by the Federal Office of Rural Health Policy within the Health Resources and Services Administration, the [Rural Health Information Hub](#) offers several resources about drought and other stressors farmers face, as well as information and resources about farmers' [mental health and prevention of suicide among farmers](#).

Drought is a slow-moving hazardous event, so the psychological effects of living through this type of disaster are often more subtle and last longer than with other natural disasters. SAMHSA provides [coping tips and other resources for dealing with drought](#).

Protecting Vulnerable Patient Populations from Climate Hazards: A Referral Guide for Health Professionals

The Office of Climate Change and Health Equity's new [Referral Guide](#) summarizes federal resources that can address patients' social determinants of health and mitigate health harms related to climate change. These resources include social services and assistance programs to which patients can be referred, as well as references for anticipatory guidance and counseling to help patients prepare for potential hazards.

The Guide also includes case stories illustrating how these resources can be used in practice. For example, La Maestra Community Health Centers cared for a patient who, because of her utility insecurity, age, and social isolation, was at risk for health harms from extreme heat exposure. She also required access to refrigeration for essential medications, making her additionally vulnerable to utility disruptions. The patient's health risk from these climate-related hazards was reduced by La Maestra's care team's interventions to address her unmet health-related social needs, including referrals to HHS's [Low Income Home Energy Assistance Program](#), [Department of Energy's Weatherization Assistance Program](#), and Medicare resources for essential equipment.

Learn more about wildfires and mental health from SAMHSA's [Wildfires](#) site as well as CDC's printable [Ready Wrigley](#) activity book for children on preparing for wildfires & smoke.

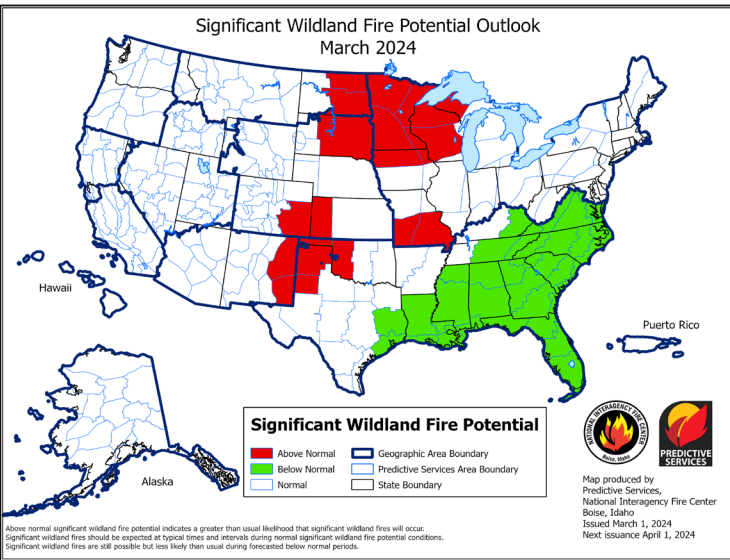


Figure: The [National Significant Wildland Fire Potential Outlook](#) identifies areas with above, below, and near normal significant fire potential using the most recent weather, climate, and fuels data available. These outlooks are designed to inform decision makers for proactive wildland fire management.

Fire activity remained at low levels across the U.S. at the beginning of February, but activity increased significantly across portions of the Rocky Mountain, Eastern, and Southern Areas the latter half of the month. Much of the Southern Area is forecast to have below normal significant fire potential from southeast Texas to the Southeast Coast in March. Above normal significant fire potential is forecast for portions of the central and southern High Plains in March and April, as well as the Eastern Dakotas, Upper Midwest, and Southern Missouri.

Who is at high risk in the counties with above normal wildland fire potential in March?







Wildland fires are occurring more frequently in the United States and present a health hazard for populations living close to a fire. As indicated in the map to the left, **477 counties** across **12 states** are projected to have above normal wildfire potential in August. In these counties, the total population at risk is **19,924,942 people**. Of these counties:

- 171 (36%)** have a high number* of people aged 65 or over, living alone.
- 131 (27%)** have a high number of people without health insurance.
- 168 (35%)** have a high number of uninsured children.
- 74 (16%)** have a high number of people with frequent mental distress.
- 61 (13%)** have a higher number of adults with asthma.
- 93 (19%)** have a high number of adults with coronary heart disease.
- 87 (18%)** have a high number of people living in poverty.
- 42 (9%)** have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.
- 43 (9%)** have a high number of people in mobile homes.
- 70 (15%)** have a high number of people with one or more disabilities.
- 75 (16%)** are identified as highly vulnerable by [CDC's Social Vulnerability Index](#).

*"A high number" indicates that these counties are in the top quartile for this indicator compared to other counties.

Wildfires Affect Health in Many Ways

Wildland fire increases the risk for a diverse range of health outcomes from both the fire itself and smoke. For example:

-  **Wildfires are associated with poor mental health, especially among wildland fire personnel, but also among those hundreds of miles away exposed to the smoke.**
-  Due to the nature of their work, firefighters are at risk of developing severe heat-related illness (such as **heat stroke**) and rhabdomyolysis (**muscle breakdown**).
-  Wildfire can cause **burns** through contact with flames and hot surfaces as well as chemical and electrical burns.
-  Wildfire smoke can lead to disorders including **reduced lung function, bronchitis**, exacerbation of **asthma**, and cardiovascular effects like **heart failure**.
-  For pregnant people, smoke exposure may increase the risk of **reduced birth weight** and **preterm birth**.
-  Wildfire smoke may affect the immune system, potentially leading to increased vulnerability to **lung infections** like COVID-19.

Growing Climate Distress Among Children, Youth, and Young Adults

Climate change is directly and indirectly influencing mental health. Alongside high acute distress that people often experience as a result of climate disasters, broader climate distress can accumulate over time and increase the risk of mental health problems such as anxiety and depression. Climate distress may be described as a hidden stressor, as it is often not recognized or acknowledged by health care providers or society at large, which can lead to a lack of appropriate support and resources for individuals experiencing it, which can further exacerbate distress. While climate distress is not a clinical condition, some populations will experience new behavioral health conditions as well as exacerbations of existing conditions with ongoing distress from the changing climate. Climate-related distress is increasing, especially among children, youth, and young adults. Various estimates are available, but a recent [study](#) found that among 1,000 people aged 16–25 years in the U.S., 46% said they were “very” or “extremely” worried about climate change, and 26% of respondents indicated that their feelings about climate change negatively affected their daily life and functioning.

Children’s Mental Health

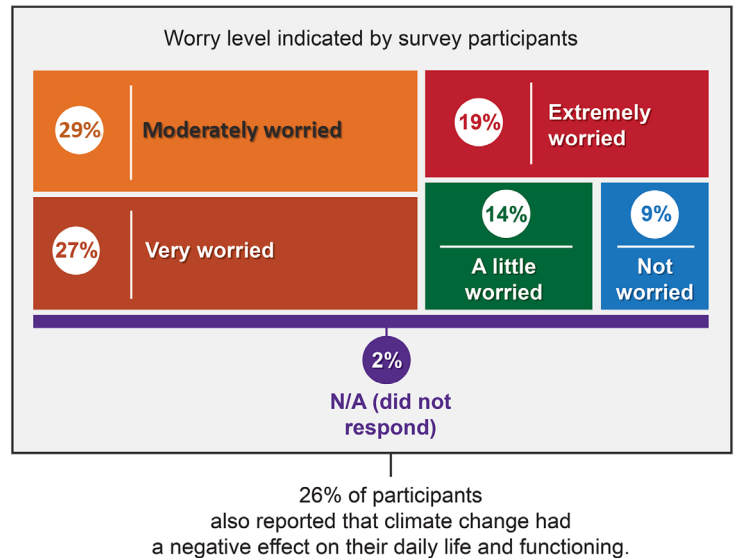


Figure: 26% of the 1,000 people aged 16–25 years surveyed for the recent [study](#) reported a negative effect on at least one of the following: eating, concentrating, work, school, sleeping, spending time in nature, playing, having fun, and relationships. Figure from NCA5’s [Human Health](#) chapter, based on data from this study.

National Park Service: Opportunities to Explore the Benefits of Outdoor Engagement on Youth Behavioral Health

In the face of [growing climate distress among children, youth, and young adults](#), the National Park Service (NPS) presents potential opportunities for recovery and resilience. Every year, nearly 300 million people visit the more than 400 National Park sites across the nation to enjoy these natural and cultural treasures. In addition to the learning and recreational activities they provide, parks are a valuable health resource. Mounting scientific evidence shows how [exposure to green space improves mental health](#) and [adolescent mental well-being can be improved through participation in outdoor activities](#). Engaging youth in nature-based activities has been found to impart a sense of hope and agency in facing major stressors of today’s world, including climate change. With a strong emphasis on youth engagement, the NPS has the potential for making an even greater impact on the health and wellbeing of this and future generations. Further research is needed to better understand nature-based interventions and the kinds of outdoor activities that enhance the mental well-being of adolescents. The NPS plays a crucial role in this arena, as a land management agency that provides a [diverse array of structured programming for approximately 50,000 youth annually](#) including recreational, educational, volunteer, and career development opportunities.



Figure: Youth engaging in the residential Youth Camping program in the summer of 2022 in Washington State. This NPS program combines education and job skills training with outdoor adventure for 16- to 18-year-olds. With the guidance of experienced field staff, youth crew members work on conservation, reforestation, and recreation projects, while developing leadership and teamwork skills. Participants earn money and potential high school credit while gaining job skills and professional references. Photo credit: Northwest Youth Corps.

Additional Climate Mental/Behavioral Health Resources

It's normal for extreme climate events as well as the existential threat of climate change to cause people to experience emotional distress. Feelings such as overwhelming anxiety, constant worrying, trouble sleeping, and other depression-like symptoms are common responses.

- If you are experiencing emotional distress related to any natural or human-caused disaster, call or text SAMSHA's [Disaster Distress Helpline](#) at 1-800-985-5990 for free 24/7 crisis counseling for people. Deaf and hard of hearing ASL callers can use a videophone or ASL Now.
- If you or someone you know is struggling or in crisis for any reason, help is available: call or text 988 or check out SAMHSA's [988 Suicide & Crisis Lifeline](#) online.
- For younger kids, CDC provides printable [Ready Wrigley](#) activity books in English and Spanish on preparing for many climate hazards including extreme heat, hurricanes, and tornadoes, as well as coping after a disaster, flooding & mold, and mosquitoes. For older kids, check out CDC's [Helping Teens Cope After a Natural Disaster](#) and Ready.gov's [Disaster Preparation Games](#).
- Learn about [meditation and mindfulness](#) from NIH's National Center for Complementary and Integrative Health and practice mindfulness with the [5-part guided series of Mindfulness Tools](#) from the Office of the Surgeon General designed to offer support during stressful times.
- Learn more about climate hazards and mental health from:
 - SAMHSA's [Disaster Technical Assistance Center](#), including information on [hurricanes and tropical storms](#), [floods](#), [wildfires](#), and [tornadoes and severe storms](#);
 - SAMHSA's [Disaster Behavioral Health Information Series Resource Center's](#) climate change-related resources;
 - SAMHSA's [Climate Change and Health Equity](#) webpage;
 - SAMHSA's [Disaster Handbook for Behavioral Health Service Programs](#);
 - ASPR TRACIE's [Disaster Behavioral Health Resources](#), which include information about services for at-risk populations following a disaster; and
 - The [Fifth National Climate Assessment, Human Health, Chapter 15](#), which includes discussion of mental health.

Organizations Focused on Climate and Mental Health

- In addition to the federal resources listed throughout this edition, some non-governmental and other organizations work in the space of climate and mental health and may have helpful resources. Please note that views expressed are not necessarily those of HHS:
- [The American Academy of Child & Adolescent Psychiatry \(AACAP\) Climate Change Resource Center](#)
- [American Psychological Association and ecoAmerica](#)
- [American Psychiatric Association](#)
- [Climate Mental Health Network](#)
- [Climate Psychology Alliance North America](#)
- [Connecting Climate Minds](#)
- [The All We Can Save Project](#)
- [Good Grief Network](#)
- [Climate Psychiatry Alliance](#)
- [Mental Health and Climate Change Alliance \(MHCCA\)](#)
- [International Transformation Resilience Coalition](#)
- [National Association of State Alcohol and Drug Abuse Directors, Policy Brief on Disasters and Substance Use](#)
- [World Health Organization Mental Health and Climate Change Policy Brief \(2022\)](#)
- [Intergovernmental Panel on Climate Change Chapter 7: Health, Wellbeing, and the Changing Structure of Communities](#)

THANK YOU to the partners who provide invaluable information, expertise, and data for the Climate and Health Outlook series:

