

Climate and Health Outlook

ISSUED MAY 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 forecasts for heat, flooding, drought, and wildfire in May 2024, plus a look at how climate change is influencing Valley fever and pollen along with seasonal allergies.



Northwest: Drought is favored to persist across small portions of Washington, central Oregon, and Idaho. Drought improvement and removal is likely in central Washington and northern Idaho. Above normal snowpack in southern Idaho will lead to the potential for minor flooding* on tributaries in areas south of the Snake River Plain this spring.



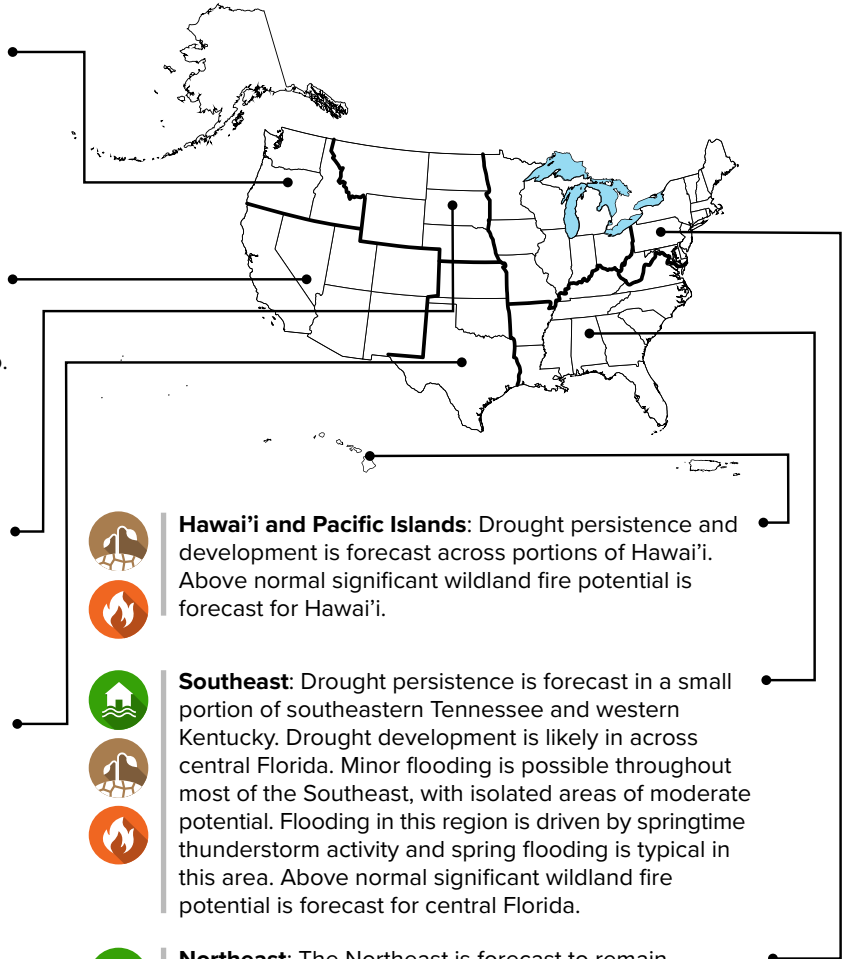
Southwest: Drought is favored to persist across parts of New Mexico, Arizona, Colorado, southern Nevada, and eastern Utah. Drought development is forecast in parts of east New Mexico and southeastern Colorado. Above normal significant wildland fire** potential is forecast for parts of southeast Arizona and parts of New Mexico. Below normal significant wildfire potential is forecast for parts of southern California.



Northern Great Plains: Drought persistence is favored in portions of Montana, northern Wyoming, North Dakota, and South Dakota. Drought development is forecast in eastern Montana. Drought improvement and removal is favored in southeastern Nebraska, northeastern North Dakota, and portions of Montana.



Southern Great Plains: 12 counties in Texas are expected to have five or more extremely hot days*** in May. Drought persistence is forecast in western Texas, western Oklahoma, and western Kansas. Drought development is likely in northwestern Texas and northwestern Oklahoma. Drought improvement and removal is favored in Kansas, Oklahoma, and central Texas. Above normal significant wildland fire potential is forecast for west Texas. Isolated moderate flooding is expected over tributaries to the Lower Missouri River in Kansas, as well as tributaries to the Lower Arkansas River in southeast Kansas and eastern Oklahoma along portions of the Neosho and Poteau Rivers. Minor flooding is projected over much of eastern Kansas, eastern Oklahoma, and eastern Texas this spring.



Hawai'i and Pacific Islands: Drought persistence and development is forecast across portions of Hawai'i. Above normal significant wildland fire potential is forecast for Hawai'i.



Southeast: Drought persistence is forecast in a small portion of southeastern Tennessee and western Kentucky. Drought development is likely in across central Florida. Minor flooding is possible throughout most of the Southeast, with isolated areas of moderate potential. Flooding in this region is driven by springtime thunderstorm activity and spring flooding is typical in this area. Above normal significant wildland fire potential is forecast for central Florida.



Northeast: The Northeast is forecast to remain drought-free. Minor flooding is possible across portions of Maryland, New Jersey, southern New York and New England this spring. Areas including the Adirondack Mountains in northern New York, Vermont, New Hampshire, and the mountains of western Maine will be vulnerable to flooding from steady snowmelt through the spring, particularly if heavy rainfall occurs in the next few weeks. The potential for flooding due to ice jams is above normal across the northern portion of Maine.

* It is important to remember that heavy and intense rainfall at any time can cause flooding conditions in excess of the Spring Outlook. Communities are encouraged to monitor their flood risk at water.noaa.gov.

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

*** An "extremely hot day" is defined by having an expected temperature above the 95th percentile value of the historical temperature distribution for the month and county. For more information, check out [CDC's National Environmental Public Health Tracking Network](#) documentation.

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



Drought



Wildfire



Flooding



Heat

Extreme Heat

Where are extremely hot days expected in May?

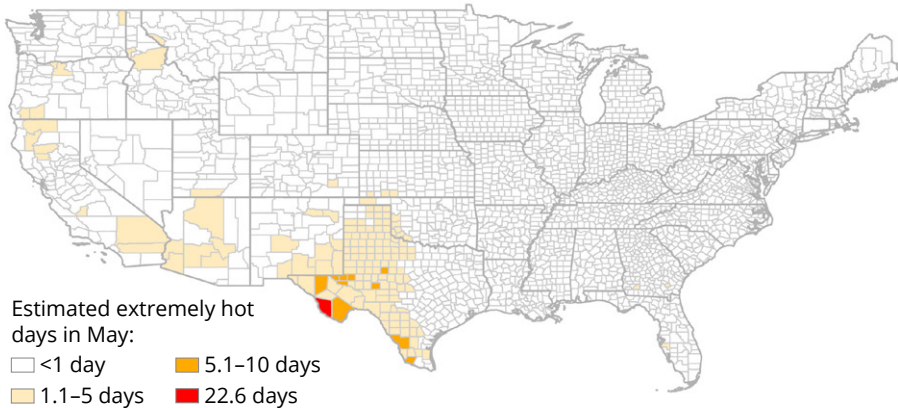







Figure: This map shows the expected number of extremely hot days in May in each county in the contiguous U.S. The forecast is based on the NOAA Climate Prediction Center’s probabilistic outlook of temperatures being above, below, or near normal in May. A county’s ‘normal’ temperature is based on the 30-year average from 1991–2020. An ‘extremely hot day’ is when the daily maximum temperature is above the 95th percentile value of the historical temperature distribution in that county. For more information on your county, please refer to the [Centers for Disease Control and Prevention \(CDC\) Heat and Health Tracker](#).

In May, **12 counties in Texas** are expected to have five or more extremely hot days. In these counties, the total population at risk is **615,328**. Extreme summer heat is already increasing in the U.S. and climate projections indicate that extreme heat events will become more frequent and intense in coming decades. [Heat-related deaths have been increasing in the U.S.](#), with approximately 1,602 occurring in 2021, 1,722 in 2022, and 2,302 in 2023.

Heat Affects Health in Many Ways

Warmer temperatures increase the risk for a diverse range of health risks. For example:

-  An increased risk of **hospitalization for heart disease**.
-  **Heat exhaustion**, which can lead to **heat stroke** which, if not treated, can cause critical illness, brain injury, and even death.
-  Worsening **asthma** and **chronic obstructive pulmonary disease (COPD)** as heat increases the production of ground-level ozone.
-  Dehydration, which can lead to **kidney injury** and blood pressure problems. Some kidney damage can become irreversible with repeated or untreated injury.
-  **Violence, crime, and suicide** may increase with temperature, adding to the rates of depression and anxiety already associated with climate change.

Who Is at High Risk in the Counties With the Most Extreme Heat Days?

Some communities face greater health risks from extreme heat given various risk factors they face. These communities include people who: are elderly and live alone, have existing health conditions such as cardiovascular disease, have poor access to healthcare, live in rural areas, have disabilities, work outdoors (or indoors with insufficient ventilation or mechanical cooling), make a low income, face difficulty paying utility bills, live in poor quality housing, and live in urban areas without adequate tree cover.

Extreme Heat Resources

- [HEAT.gov](#) is a NIHHS collaboration that serves as a national source of science-based information on heat and health.
- [CDC’s new clinical guidance](#) advises how clinicians can keep at-risk individuals safe when temperatures rise.
- The [NWS HeatRisk](#), created in partnership with NOAA and CDC, is a color-numeric-based index that provides a seven-day forecast of risk for heat-related impacts occurring over a 24-hour period.
- The [Heat-Related EMS Activation Surveillance Dashboard \(EMS HeatTracker\)](#) reports retrospective data on EMS responses to people experiencing heat-related emergencies.
- The [OSHA-NIOSH Heat Safety Tool](#) is an application that shows the real-time heat index and hourly forecasts based on your location.
- The [Low-Income Home Energy Assistance Program \(LIHEAP\)](#) provides federally funded assistance to reduce the costs associated with home heating and cooling bills. Find out if you qualify for assistance using the [LIHEAP Eligibility Tool](#).
- The CDC [Heat & Health Tracker](#) provides local heat and health information so communities can better prepare for and respond to extreme heat events.

How Hot Will It Be, and Where, Over the Next 3 Months?

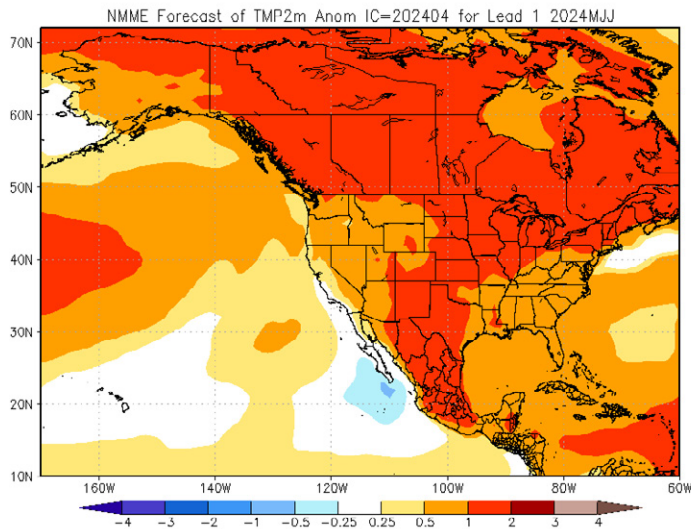


Figure: The North American Multi-Model Ensemble (NMME) predicts the average temperature over the next 3 months (May–July) will be 0.9–1.8°F (0.5–1°C) hotter than average across almost all of the contiguous U.S. For more information about this model or prediction, please refer to the [NMME website](#).

For May–July, the North American Multi-Model Ensemble (NMME) predicts that the average temperature will be 0.9–1.8°F (0.5–1°C) above normal across the entirety of the contiguous U.S., except along the coast of California and the southern coast of Oregon. However, large portions of the northern Great Plains, the Midwest, New Mexico, southern Colorado, Kansas, western Oklahoma, most of Texas, the Northeast, and northern Alaska, may experience a higher 90-day average that is 1.8–3.6°F (1–2°C) above the normal average temperature for this period. The NMME integrates multiple forecasts of the next 90 days to build the best estimate of temperatures and precipitation over that time frame. Note that although many regions may expect a warmer 90-day average temperature, this is not the same as your local weather forecast, in which large fluctuations in temperature may be predicted from day to day.

Agricultural Workers: A Priority Population for Preventing Heat-related Illness

Extreme heat exposure can cause [heat-related illnesses](#) including heat stroke, heat exhaustion, cramps, fainting, and rashes. Outdoor workers, as well as indoor workers with insufficient ventilation or mechanical cooling, are at elevated risk for heat-related illness. One group of particular concern is [agricultural workers](#), who often have physically demanding work outdoors through the hottest months and even during extreme heat waves. Recent studies have found that the [average agricultural worker experiences 21 days \(out of the average 153 day summer\) of unsafe working days](#) per year (i.e., days over 83.4°F) and the [risk of heat-related death was more than 35 times higher for people working in agriculture](#) compared to other occupations. The risks associated with unsafe working days are further compounded if nighttime temperatures are elevated or many excess heat days occur in a row.

There are an estimated [2.9 million agricultural workers](#) in the U.S., of which a recent survey found that 78% self-identify as Hispanic and 70% as born outside of the U.S. Without protective measures, these workers are likely to experience even more heat-related illnesses as heat seasons become longer, hotter, and more intense. Important [preventative measures](#) for agricultural workers as well as all outdoor workers include providing water, shade, and breaks during the working day. The creation of culturally and linguistically appropriate training and resources related to heat protection and symptom identification can help migrant and seasonal agricultural workers protect themselves from the dangers of extreme heat. The [OSHA field sanitation standard](#) requires agricultural employers with 11 or more workers to provide drinking water. For more information on how to prevent, recognize, and treat heat-related illness, check out the Farmworker Justice and Migrant Clinicians Network [Heat-Related Illness Clinicians guide](#). Migrant workers can also find helpful resources and more information about their employment-related rights in the U.S. at [MigrantWorker.gov](#) or [TrabajadorMigrante.gov](#).



Image: Farmworkers exposed to sun and heat working in a strawberry field in Salinas, CA, wearing protective clothing including hats and long sleeve shirts.

Source: iStock/rightdx

Drought

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

Valid for May 2024
Released April 30, 2024

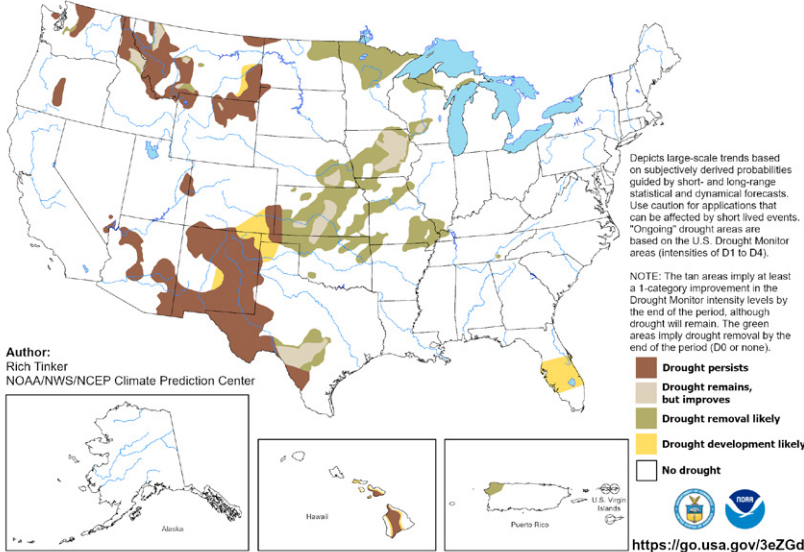


Figure: The National Weather Service Climate Prediction Center’s Monthly Drought Outlook is issued at the end of each calendar month and is valid for the upcoming month. The outlook predicts whether drought will persist, develop, improve, or be removed over the next 30 days or so. For more information,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

During May, drought improvement and removal is favored in parts of the Southeast, Northern Great Plains, Southern Great Plains, the Northwest, Puerto Rico, and all drought areas of the Midwest. Drought development is likely in the Southeast, Northern Great Plains, Southern Great Plains, Southwest, and Hawai’i. Drought persistence is forecast across drought areas of the Southwest, Northwest, Northern Great Plains, Southern Great Plains, and in parts of Hawai’i. 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 May?

As indicated in the map to the left, **237 counties** across **16 states** are projected to have persistent/remaining drought or drought development in November. In these counties, the total population at risk is **32,341,681 people** and, of those, **331,509 people** work in agriculture. Of these counties:

- 77 (32%)** have a high number* of people aged 65 or over, living alone.
- 65 (27%)** have a high number of people living in rural areas.
- 64 (27%)** have a high number of people living in poverty.
- 44 (19%)** have a high number of people with frequent mental distress.
- 25 (11%)** have a higher number of adults with asthma.
- 100 (42%)** have a high number of people without health insurance.
- 124 (52%)** have a high number of uninsured children.
- 13 (5%)** have a high number of Black or African American persons.
- 74 (31%)** have a high number of people with severe housing cost burden.
- 80 (34%)** have a high number of people in mobile homes.
- 58 (24%)** have a high number of people with one or more disabilities.
- 78 (33%)** 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.

Resources to Reduce Health Risks Associated with Drought

- The [CDC Drought and Health site](https://www.cdc.gov/drought/) and [Ready.gov Drought site](https://www.ready.gov/drought/) have information on the health implications of drought and how to prepare.
- CDC’s [When Every Drop Counts](https://www.cdc.gov/drought/) guide and [supplement](https://www.cdc.gov/drought/) provide information about how drought affects public health, recommends steps to help mitigate the health effects of drought, and provides a list of helpful resources.
- Call or text 1-800-985-5990 to get help and support for any distress that you or someone you care about may be feeling related to any disaster. This SAMHSA [Helpline and Text Service](https://www.samhsa.gov/helpline) is available 24/7, free, and staffed by trained crisis counselors.

Drought Affects Health in Many Ways

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



Long-term droughts can cause **poor-quality drinking water** and leave inadequate water for hygiene and sanitation.



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.

- Drought’s complex economic consequences can increase **mood disorders, domestic violence, and suicide**.

Valley Fever

[Valley fever](#), also called coccidioidomycosis, is a fungal disease that can affect people who breathe in the microscopic fungal spores in areas where the fungus lives in the environment. Roughly [15,000–20,000 Valley fever cases are reported each year](#) to the CDC, but it is thought that the true number of infections is much higher. Some people who are exposed to the fungus never get sick, but others may develop [symptoms](#) similar to other lung infections (e.g., cough, fever, shortness of breath). In some cases, the infection may spread to other parts of the body, which often results in hospitalization and prolonged antifungal treatment. In endemic areas, Valley fever can cause [up to a third of community-acquired pneumonia cases](#).

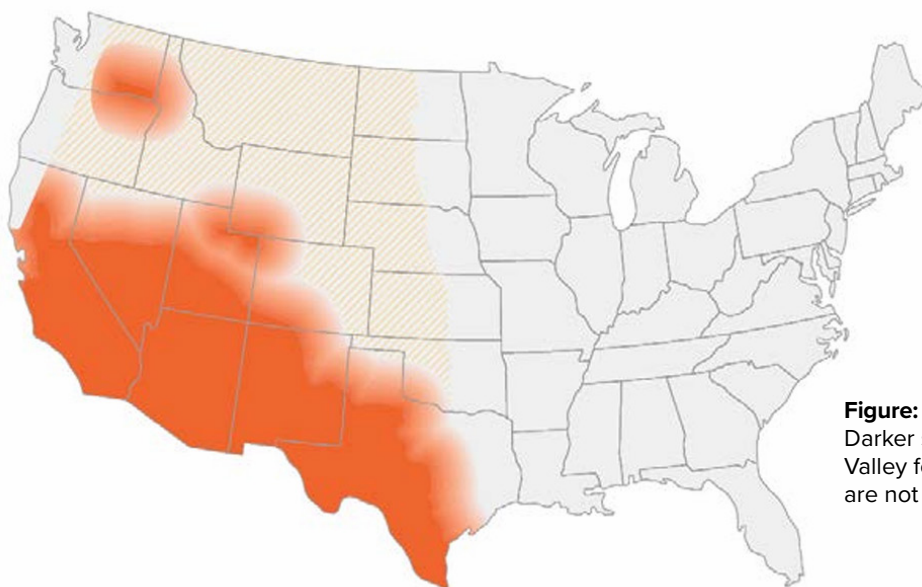


Figure: Estimated areas with Valley fever in the U.S. from [CDC](#). Darker shading shows areas where the fungus that causes Valley fever is more likely to live but geographic boundaries are not strictly defined and may change over time.

Climate Change

Coccidioides, the fungus that causes Valley fever, lives in soil in hot, dry regions, and its geographic range may be expanding because of climate change. Traditionally, the fungus has [predominantly been found in the southwestern U.S.](#), but more recently, in 2015, it was detected as far north as [Washington state](#). As temperatures increase, more areas may offer conditions favorable to the growth and dispersal of the fungus. [Experts predict that *Coccidioides*' endemic range in the U.S. could more than double by the year 2100.](#) Valley fever rates are also affected by rainfall and drought cycles; in California, researchers found that [incidence increased after long periods of drought followed by wet winters](#). These patterns are expected to become more common and widespread, and to intensify with the changing climate. Severe weather events such as [dust storms](#) and [wildfires](#) are becoming more frequent and have also been linked to Valley fever, although the exact nature and extent of the associations is unclear.

Health Equity

Anyone can get Valley fever if they live in or travel to an area where the fungus lives, but [certain populations](#), such as those with weakened immune systems, are at greater risk for developing severe illness. Some racial and ethnic minorities also appear to be at greater risk of Valley fever in the U.S.: [American Indian and Alaska Native and Hispanic populations have more than twice the rate of Valley fever compared with White populations](#). Although the reasons for these health disparities are unclear, they are likely influenced by [social determinants of health](#), such as [housing conditions and access to healthcare](#). People with certain occupations, particularly outdoor jobs, also have higher rates of severe Valley fever. A survey of Hispanic [farm workers](#) found that self-reported exposures to dust and root and bulb crops were linked to increased incidence of Valley fever, though the relative impact of occupation compared with ethnicity on infection was unclear. [Outbreaks](#) among firefighters have also been reported, particularly among those that use hand tools and work in dusty conditions in areas where *Coccidioides* lives.

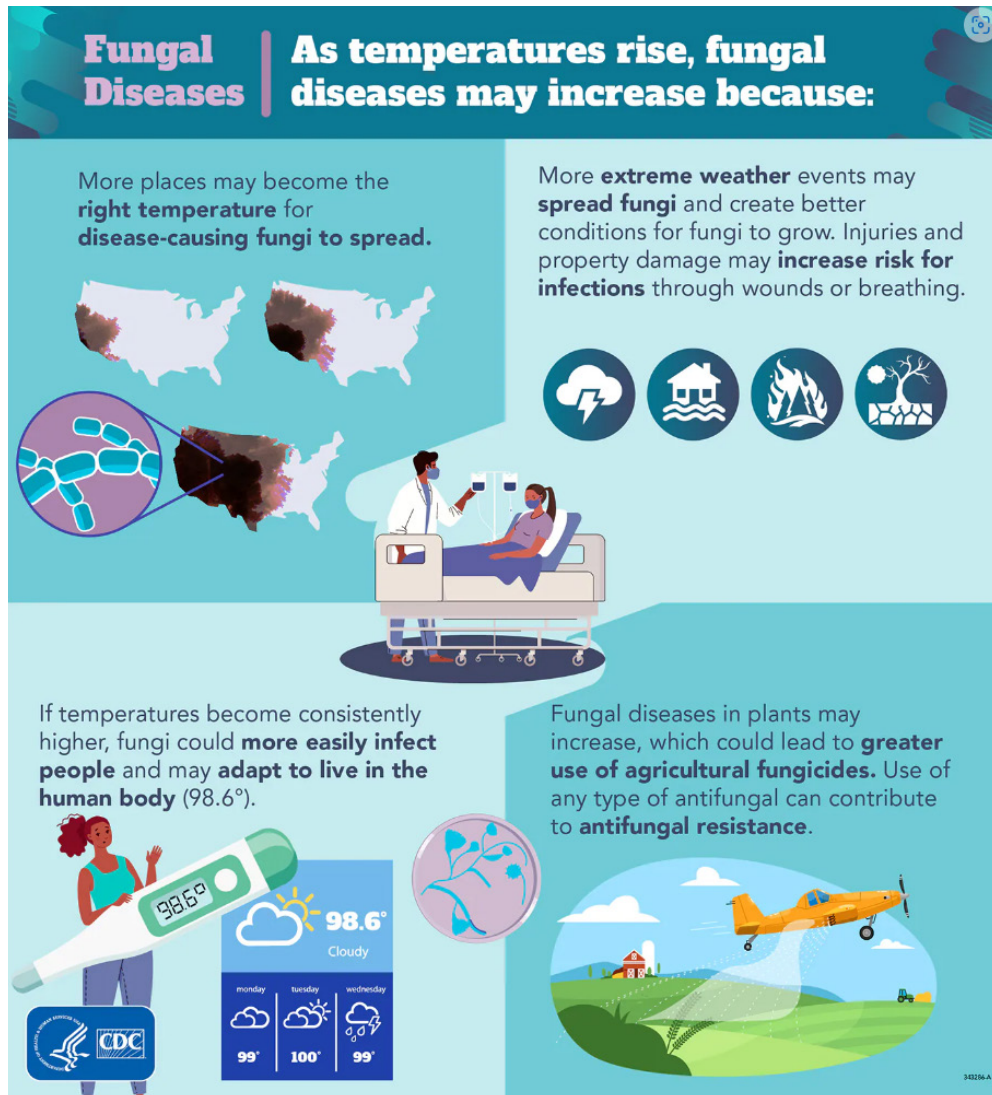


Figure: Fungal diseases may increase through a variety of mechanisms as temperatures rise worldwide (infographic by CDC). Valley fever is impacted by some, but not all, of these mechanisms as temperatures rise and its geographical range expands.

Prevention

Valley fever is difficult to prevent in areas where the fungus lives since the disease is acquired directly from the environment. There are currently no feasible methods to remove the fungus from the environment. To help [prevent](#) Valley fever, people can avoid spending time in dusty places and avoid participating in activities that disturb dust in areas where the fungus is endemic. If these activities are unavoidable, an [N95 mask](#) should be worn; in occupational settings, appropriate training and personal protective equipment should be provided to workers to help prevent illness and monitor for symptoms. Staying inside and closing windows during dusty days and using air filtration

indoors may also prevent Valley fever. Cleaning injuries exposed to dust or dirt well with soap and water is also useful to inhibit cutaneous infection.

Prompt diagnosis and treatment can prevent severe disease. Unfortunately, [Valley fever awareness is low, even in areas where the fungus lives](#). It is important to increase awareness so that people understand when to seek healthcare. Healthcare providers can use CDC's [clinical diagnostic algorithm](#) to assist in recognizing who and when to test for Valley fever.

Pollen

Spring 2024 has now arrived in all but the most northern and highest elevation parts of the U.S. Spring spread quickly in the central and eastern parts of the U.S., arriving up to three weeks early in some states, before it has slowed once again in the Midwest. Currently, spring is 3 days early in Duluth, MN, 7 days early in Marquette, MI, and 3 days early in Caribou, ME compared to a long-term average of 1991–2020. The Sacramento Valley, coastal areas of Northern California, Oregon, Washington, parts of the Great Plains, and southern Midwest are seeing the earliest start to 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. 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](#) indicate that on average, the start of spring has occurred earlier in the contiguous U.S. since 1984. Some of these changes in pollen due to climate change could have impacts on human health such as **increasing individuals' exposure to pollen and their risk of having allergy and/or asthma symptoms**.

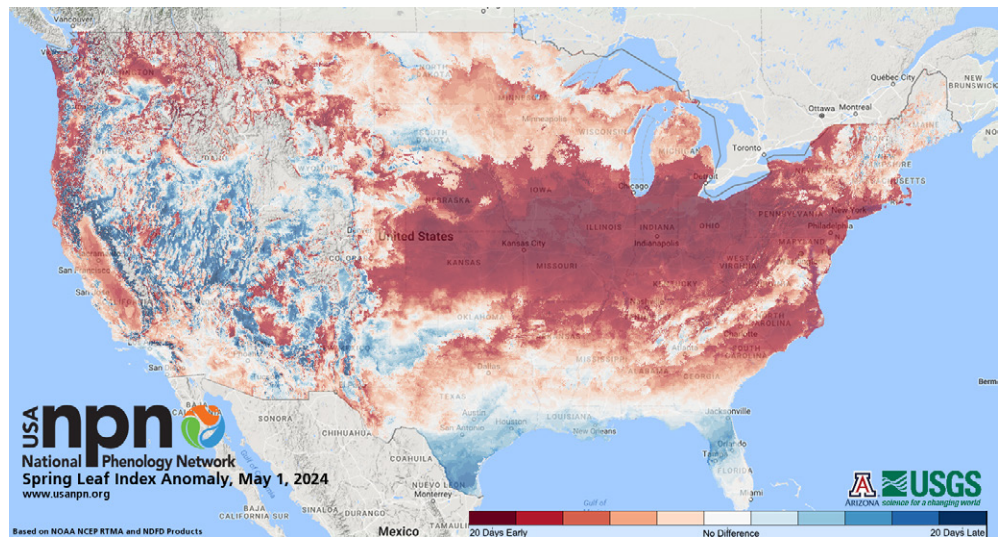





Figure: This map depicts where springtime biological activity has begun earlier than average (in red tones) and later than average (blue tones). Accordingly, we can expect an earlier start to the pollen season in these regions. For more information, visit the [USA-NPN Status of Spring page](#).

Pollen Affects Health in Many Ways

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

-  sneezing, runny nose, and congestion
-  red, watery, or itchy eyes
-  asthma or other respiratory illness exacerbation

[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.

Resources to Reduce Health Risks Associated with Pollen

- CDC provides guidance on [protecting those with allergies from pollen](#).
- The FDA provides information on [allergy medications and shots for children and how to avoid pollen](#) as well as [allergy medications for all ages](#).
- The NIH 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.

Spring Flooding

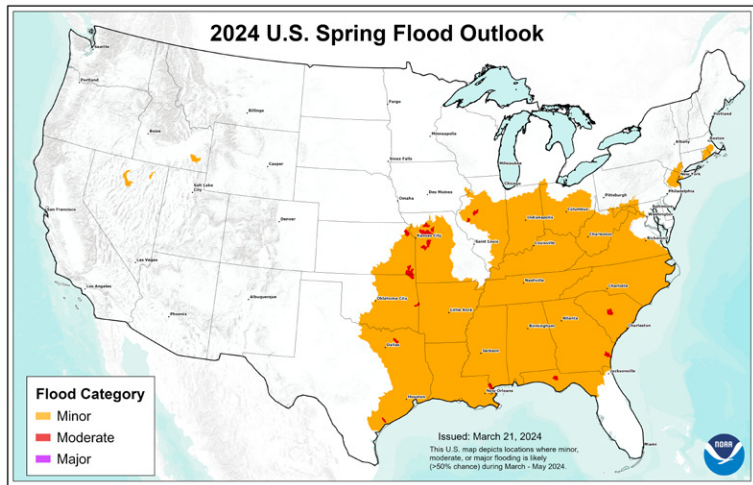


Figure: This map was developed by the [National Weather Service – Office of Water Prediction](#) and is reflective of forecast conditions on March 21, 2024. The map focuses on spring flood potential, using evaluation methods analyzed on the timescale of weeks to months, not days or hours. Heavy rainfall at any time can lead to flooding, even in areas where overall risk is considered low. For detailed hydrologic conditions and forecasts, go to [National Water Center Products and Services](#).

This spring season, approximately **133 million people** are at risk for flooding in their communities, with roughly 400,000 at risk for moderate flooding. No major flooding is expected this spring. The overall threat of significant flooding this spring is low due to above-normal temperatures and historically low snowpack. Moderate flooding is expected over tributaries to the Lower Missouri River in Kansas and Missouri, as well as tributaries to the Lower Arkansas River in Kansas and Oklahoma. Minor to moderate flooding will be possible over much of the southern U.S. due to typical spring rainfall. Above-normal snowpack in northern Nevada and southern Idaho will lead to the potential for minor flooding for higher elevation basins in those areas. In Alaska, spring ice breakup and snowmelt flood potential is forecast to be normal for the majority of the state, with the exception of portions of the Copper River Basin due to above normal snowpack.

Who Is at High Risk from Spring Flooding in the Counties with Elevated Potential for Moderate Flooding?

As indicated in the map to the left, **51** counties across **11** states are projected to have above-normal moderate flooding risk this spring. Of these counties:

- 7 (14%)** have a high number* of people aged 65 or over, living alone.
- 15 (29%)** have a high number of people without health insurance.
- 10 (20%)** have a high number of uninsured children.
- 10 (20%)** have a high number of adults with coronary heart disease.
- 5 (10%)** have a high number of people living in rural areas.
- 13 (25%)** have a high number of Black or African American people.
- 13 (25%)** have a high number of people living in poverty.
- 12 (24%)** have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.
- 16 (31%)** have a high number of people with disabilities.
- 6 (12%)** have a high number of people in mobile homes.
- 13 (25%)** 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.

Resources to Stay Safe During & After Floods

- The [CDC’s Floods site](#) provides resources to help individuals prepare for floods, protect themselves from floodwaters, and safely return home after a flood. The CDC also has information about [What You Need to Know When the Power Goes Out Unexpectedly](#).
- The [Ready.gov Floods site](#) includes information on preparing for a flood and staying safe during and after a flood.
- If you do not have health insurance and are in a federally identified disaster, ASPR’s [Emergency Prescription Assistance Program](#) can help you get the prescription drugs, vaccinations, medical supplies, and equipment you need.

Floods Affect Health in Many Ways

Floods increase the risk for a diverse range of health outcomes. For example:



Floodwaters pose **drowning risks** for everyone, including those driving in floodwaters.



Objects in floodwaters can cause injuries such as **broken bones, cuts, and electrocution**.



Exposure to floodwater contaminated with chemicals, sewage, animal waste, and various pathogens can cause **burns, rashes, skin and eye infections, and gastrointestinal and respiratory illnesses**.

Wildfire



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 slowly increased across western geographic areas in the US in April, while fire activity in the eastern and southern US decreased. In May, above normal significant fire potential is forecast for central Florida and parts of Arizona and New Mexico. A slow beginning to the peak fire season is forecast for California, with below normal potential forecast for portions of southern California. Above normal potential is forecast for the lee sides of Hawai'i, especially for Maui and the Big Island.

Who Is at High Risk in the Counties with Above Normal Wildland Fire Potential in May?




Some communities face greater health risks from wildfire smoke given various risk factors they face. These communities include people who: are elderly and live alone, have asthma or coronary heart disease, have poor access to health care, have disabilities, work outdoors, have low income, rely on electricity-dependent medical equipment, and live in poor quality housing.




Resources to Reduce Health Risks Associated with Wildfire

- The [Ready.gov Wildfires site](#), [CDC Wildfires site](#), and [EPA Smoke-Ready Toolbox for Wildfires](#) include information about how to prepare for wildfires, stay safe during a fire, and return home after a fire.
- Download the [FEMA App](#) to receive real-time weather and emergency alerts from the National Weather Service. The App can also help you find a nearby shelter if you need to evacuate to a safe space.
- The EPA and CDC continuing education program [Wildfire Smoke and Your Patients' Health](#) teaches the health effects of wildfire smoke and highlights actions to reduce exposure.
- If you have children, these resources may help: [CDC's Ready Wrigley Prepares for Wildfires & Smoke](#), [Helping Children Cope with Emergencies](#), and [Helping Teens Cope After a Natural Disaster](#).

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:

-  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.
-  Smoke from wildfires can travel downwind and affect air quality hundreds of miles away from the fire.

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

