We want to hear from you! Please send your feedback on ways to improve the Climate and Health Outlook to ocche@hhs.gov.

Climate and Health Outlook

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 month(s) by climate events and provide resources to take proactive action. An associated webpage includes additional resources and information.

Northern Great Plains: Drought is favored to persist or develop in Nebraska as well as parts of Montana, North Dakota, South Dakota, and Wyoming. Above normal wildland fire* potential is projected for western Montana.

Northeast: Drought is favored to persist in parts of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Drought is favored to develop in parts of Delaware. Above normal wildland fire* potential is projected for much of Idaho, southern and central Oregon, and central and southern Washington.

Northwest: One county in Idaho is projected to have more than 5 heat exceedance days in September 2022. Drought is favored to persist in parts of southern Idaho, southern and central Oregon, and central Washington. Above normal wildland fire* potential is projected for much of Idaho, southern and central Oregon, and central and southern Washington.

Southwest: Counties in California (10), Arizona (5), and Utah (2), are projected to have more than 5 heat exceedance days in September 2022. Drought is favored to persist in California, Nevada, and Utah as well as parts of Arizona Colorado, and New Mexico. However, drought removal is favored in southern and central Arizona and much of New Mexico. Above normal wildland fire* potential is projected for northern California and north-western Nevada.

Southern Great Plains: Counties in Texas (2) are projected to have more than 5 heat exceedance days in September 2022. Drought is favored to persist in Kansas, much of Oklahoma and northern Texas. However, drought removal and improvement is favored in most of Texas and eastern Oklahoma. Above normal wildland fire* potential is projected for much of Oklahoma.

Southwest: The Atlantic basin is forecasted to have an above-average hurricane season with 14 – 20 named storms with winds of 39 mph or higher, with 6 –10 of those possibly becoming hurricanes with winds of 74 mph or higher, and 3 – 5 possibly becoming major hurricanes with winds of 111 mph or higher. One county in Florida is projected to have more than 5 heat exceedance days in September 2022. Drought is favored to develop in parts of North Carolina and South Carolina. However, drought removal/improvement is favored in parts of Arkansas, Mississippi, and Tennessee.

*Smoke from wildfires can impact health hundreds of miles from site of the fire. A “heat exceedance day” is when the daily maximum temperature is above the 95th percentile value of the historical temperature distribution in that county. Developed with data from the Centers for Disease Control and Prevention, National Oceanic and Atmospheric Administration, and National Interagency Fire Center.
Who is at high risk in the counties with above-normal wildland fire potential in September?

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, 312 counties across 17 states are projected to have above-normal wildfire potential in August. In these counties, the total population at risk is 54,742,313 people:

- 68 (22%) have a high number of people aged 65 or over, living alone.
- 81 (26%) have a high number of people without health insurance.
- 84 (27%) have a high number of uninsured children.
- 60 (19%) have a high number of people with frequent mental distress.
- 103 (34%) have a high number of adults with asthma.
- 61 (20%) have a high number of adults with coronary heart disease.
- 48 (16%) have a high number of people living in poverty.
- 114 (37%) have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.
- 42 (14%) have a high number of people in mobile homes.
- 77 (25%) have a high number of people with one or more disabilities.
- 70 (23%) 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:

- 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.
Resources to Reduce Health Risks Associated with Wildfire and Smoke

The Ready.gov Wildfires site, Centers for Disease Control and Prevention (CDC) Wildfires site, and Environmental Protection Agency (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.

Pregnant people should take actions to reduce their exposure to wildfire smoke, which could affect the developing fetus. Other groups like young children, the elderly, those with pre-existing heart and lung disease, and outdoor workers also should take extra care to reduce their exposures to wildfire smoke. Monitor fires and air quality in your area through AirNow and follow instructions about exercise and going outside for “sensitive individuals.”
Who is at high risk in the counties projected to have drought in September?

As indicated in the map to the left, 1294 counties across 42 states are projected to have persistent/remaining drought or drought development in September. In these counties, the total population at risk is 157,164,458 people and, of those, 1,612,440 people work in agriculture. Of these counties:

- 368 (29%) have a high number of people aged 65 or over, living alone.
- 362 (28%) have a high number of people living in rural areas.
- 247 (19%) have a high number of people living in poverty.
- 200 (16%) have a high number of people with frequent mental distress.
- 195 (15%) have a high number of adults with asthma.
- 439 (34%) have a high number of people without health insurance.
- 519 (40%) have a high number of uninsured children.
- 187 (15%) have a high number of Black or African American persons.
- 320 (25%) have a high number of people with severe housing cost burden.
- 246 (19%) have a high number of people in mobile homes.
- 251 (19%) have a high number of people with one or more disabilities.
- 301 (23%) 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:

- **Low crop yields** can result in rising food prices and shortages, potentially leading to **malnutrition**.
- **Dry soil** can increase the number of particulates like **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** like mosquitoes as well as viruses and bacteria.
- Drought’s complex economic consequences can increase **mood disorders**, **domestic violence**, and **suicide**.
- Long-term droughts can cause **poor-quality drinking water** and leave inadequate water for hygiene and sanitation.

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The Distribution of Lyme Disease

Lyme disease occurs primarily in the upper midwestern, mid-Atlantic, and northeastern United States. It is transmitted by blacklegged or “deer” ticks, which also transmit the agents of anaplasmosis, babesiosis, and Powassan virus disease. The lack of dots in Massachusetts in 2018 is due to a difference in reporting standards, not an absence of Lyme disease.

An estimated 476,000 Americans are diagnosed and treated for Lyme disease each year. It is the most common vector-borne disease in North America. The incidence of Lyme disease in the United States has nearly doubled since 1991, from 3.74 reported cases per 100,000 people to 7.21 reported cases per 100,000 people in 2018. Maine, Vermont, and New Hampshire have experienced the largest increases in reported case rates. Climate is one of several factors that define when and where Lyme and other tickborne diseases are most likely to occur. Mild winters and warmer early spring temperatures are expanding the seasons when ticks are active, resulting in more weeks of the year that Americans are at risk of tick encounters. Expansion of the range of infected ticks puts an increasing number of communities at risk for Lyme and other tickborne diseases.

Resources to Reduce Health Risks Associated with Lyme Disease

The Centers for Disease Control and Prevention (CDC) Lyme Disease site has information on how to avoid Lyme Disease, common symptoms, and treatment. The Tick Bite Bot can assist you in removing attached ticks and seeking health care, if appropriate, after a tick bite. CDC’s Tickborne Diseases of the United States offers information on tick identification, tickborne diseases, and treatment.
THANK YOU to the partners who provide invaluable information, expertise, and data for the Climate and Health Outlook series:

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