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'Historic, dangerous, prolonged and unprecedented' heat wave swells over Pacific Northwest

Jason Samenow, Diana Leonard

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This article was updated Friday evening and Saturday morning with the latest forecast information.

One of the most extreme heat waves in the history of the Pacific Northwest is set to begin Saturday and peak between Sunday and Tuesday. Shockingly high temperatures are forecast, including the hottest weather recorded in Seattle, Portland and Spokane.

"Perhaps the most intense heatwave for our region since the late 19th century — or at least close to it — is beginning to take shape," the National Weather Service in Portland wrote early Saturday.

Heat began to creep into the region on Friday, sending the mercury over 100 degrees in Medford, Ore., and to 95 degrees, the highest on record, in Port Angeles, Wash., about 60 miles west of Seattle on the Olympic Peninsula.

"[T]his heat will be historic, dangerous, prolonged and unprecedented," wrote the Weather Service in Spokane. "We can't stress enough how impactful this heat will be to nearly every person and community in the Pacific and Inland Northwest region."

It added: "Unprecedented heat will not only threaten the health of residents in the Inland Northwest but will make our region

increasingly vulnerable to wildfires and intensify the impacts our ongoing drought."

Weather Service offices in Seattle and Portland are also using the word unprecedented to describe the heat, which is forecast to break scores of long-standing records. More than 25 million residents from Northern California through much of Oregon, Washington state and Idaho are under excessive heat warnings, starting Saturday and lasting into next week.

[Seattle](#), [Portland](#), [Spokane](#) and [Medford](#), along with other population centers in the Pacific Northwest, plan to open extra cooling centers as significant numbers of people lack air conditioning and may need to find relief from the sweltering temperatures.

Washington, Oregon and Idaho could all experience their hottest June weather on record, [according to the National Weather Service](#), seeing temperatures of at least 113 or 114 degrees. As heat surges north of the border, British Columbia and Alberta are also predicted to experience record-setting heat, and Canada's highest temperature observed of 113 degrees may fall.

"Even though we've had heat waves in June, they haven't been nearly as strong as this one is forecast to be," said Larry O'Neill, Oregon's state climatologist and a professor at Oregon State University. "Other past exceptional heat waves that we've had in the Pacific Northwest — they've all occurred after mid-July."

Just how hot?

Forecasters at the National Weather Service had previously predicted temperatures in Seattle would peak in the mid- to upper 90s on Saturday, Sunday and Monday. But they've since increased forecast highs to 98, 103 and 106 degrees during the three-day stretch, each of which would break the existing monthly record for

June (96 degrees).

The forecast highs above 100 on Sunday and Monday in Seattle would mark only the fourth and fifth instances of triple-digit heat in 76 years of records, while a high of 106 would exceed the city's highest temperature recorded of 103. Seattle's average high at this time of year is in the mid-70s. It's never seen even three days in a row at or above 90 in June, much less a trio in the upper 90s and low 100s.

Portland is forecast to see a high of 110 on Sunday, three degrees above its highest temperature on record, with highs of 106 and 108 on Saturday and Monday. This is an increase from earlier predictions as "model consensus has trended higher," according to the Weather Service in Portland.

Farther inland in both Washington state and Oregon, the heat will be even more intense and long-lasting.

Spokane is predicted to see temperatures hit at least 100 from Saturday through at least Friday. The mercury is forecast to peak around 112 degrees on Tuesday, which would break its record of 108 and potentially shatter its June record of 105 multiple times.

If triple-digit heat endures as long as predicted in Spokane, it will break the city's record for most triple-digit days in a row: six.

The Weather Service in Spokane wrote that this will "likely be one of the most extreme and prolonged heat waves in the recorded history" of the region.

Interior Oregon is also predicted to bake for an extended period. Medford topped the century mark on Friday, and the forecast calls for triple-digit highs continuing through July 2, with temperatures peaking between Saturday and Monday.

"The forecast high of 113 for Medford on Sunday would shatter the daily high of 104 set in 2015 (our last major June heat wave), break

the June high of 111 set on June 22, 1992, and approach our all-time high of 115 on July 20, 1946,” wrote the Weather Service in Medford.

Lack of air conditioning increases threat of heat-related illness

Because of the intensity and duration of the high temperatures, heat-related illness is a major concern throughout the Pacific Northwest. The problem is compounded in an area where the population isn't accustomed to such heat, especially so early in the season, and many residents lack air conditioning.

“Have your fans and damp towels at the ready if you don't have air conditioning and take care of yourself and check on your elderly neighbors — we just aren't used to this in Western Washington,” wrote the Weather Service in Seattle.

It's not just the blistering daytime temperatures that are problematic but also potentially record warm nighttime temperatures.

“For perspective, the forecast lows are similar to our average high temperatures this time of year,” wrote the Weather Service in Portland.

Parts of downtown and inner eastside Portland may “fail to fall below 80 degrees for a 60 to 72-hour period between Saturday morning and Monday night,” the Weather Service warned. “Those stuck in inland areas without access to air conditioning are in real danger of heat-related illness”

Populations most vulnerable to excessive heat are older adults, the sick, those experiencing homelessness and those who are socially isolated. Outdoor workers can also be in danger if not given frequent breaks.

“This won't just be one day in the 100s. Multiple days in a row of these temperatures will make heat illness all the more likely if

precautions aren't taken because the heat will continue to stress the body each day," wrote the Weather Service in Spokane.

What's causing the heat wave

Many factors are contributing to the severity of the upcoming heat wave, including climate change.

"In aggregate, we are seeing these types of extreme events occur more often, and climate change is contributing to that overall trend and is projected to continue doing so," O'Neill said.

Evidence suggests heat domes, or large sprawling domes of high pressure, which are the underlying cause of most heat waves, including this one, have become more intense over time.

This early heat wave may also be related to a disturbance in the jet stream set in motion by tropical cyclones in the Western Pacific.

"Tropical cyclone activity is ramping up earlier in the summer than usual, which indirectly impacts us by making the heat domes occur earlier in the summer than they have in our contemporary record," O'Neill said.

This weekend's high-pressure system will be oriented in such a way that it will cause winds to flow offshore, from east to west, bringing air from eastern Washington, through the Cascades and into the valleys, leading to further heating as air is compressed as it moves downslope.

Fire and drought implications

While the overall setup is similar to a heat wave and offshore pattern that occurred in the fall, it luckily won't be associated with strong winds that could drive fast-moving fires.

In September, roaring easterly winds combined with very dry vegetation to drive massive wildfires in Oregon's forests, some of

which had been ignited by lightning a few weeks prior. A record-breaking September heat wave, along with preceding summer heat, led to highly flammable vegetation west of the Cascades, a region that rarely sees severe fires.

In a [study](#) published on the Labor Day fires, O'Neill and his colleagues found that factors such as wind speed, fuel dryness and low humidity, which were extreme on their own, came together and "yielded conditions that were unprecedented in the contemporary data record."

But the excessively hot and dry weather could nevertheless still promote dangerous fire conditions.

This year, summer thunderstorms are arriving several weeks earlier than usual, which O'Neill called "very concerning" given drought conditions and the fact that these storms typically don't produce enough wetting rain to prevent wildfire ignitions.

Any wildfires ignited by lightning may not appear immediately.

"Embers can smolder in trees and pop up at random weeks later," he said. "Maybe we see them now, or they can flare up in a few weeks."

While grasses and finer fuels ignite easily and are especially flammable right now, heavier vegetation, which can fuel explosive fires, is running much drier than normal because of the drought. It will dry further during this weekend's heat wave. Nearly all of Oregon is in at least moderate drought, with 36.9 percent of the state in extreme to exceptional drought.

Dry lightning has also been recorded in parts of drought-stressed Northern California, which will experience extreme heat for the third time since late May.

"A heat wave followed by a few days of lightning and then followed by another heat wave on top of critically dry fuels is a recipe for

multiple ignitions and heightened potential for large fire,” a
Predictive Services fire weather [outlook](#) for Northern California
stated Thursday.

correction

A previous version of this article misstated the forecast for Portland.
Forecast temperatures are 106 on Saturday, 110 on Sunday and
108 on Monday. This version has been corrected.