

# Australia's wildfire disaster worsens in record-shattering heat

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Image 1. A burning wood chip mill in Eden, New South Wales, Australia, January 6, 2020. No significant rain is expected in the hardest-hit areas of New South Wales and Victoria for months. Photo by: Saeed Khan/AFP

As officials feared, Australia experienced a dramatic escalation of its wildfire crisis on January 3 and 4. The Australian state of New South Wales was hit the hardest. It was expected to take another day for the fires to ease as temperatures dropped but winds remained high.

However, the disaster facing the country is nowhere near over.

Strong, dry winds helped instigate new blazes, vaulting embers from fire lines into areas not already ablaze. The fires knocked out power and water in some communities and the government had to call up the military to assist with firefighting.

## **Ominous Warnings**

As of the morning of January 4, the Rural Fire Service of New South Wales was still issuing emergency warnings at the most severe level. "The fire is spreading quickly. If you are in Tallong,

Werai, Exeter, Manchester Square, Avoca, Fitzroy Falls, Barrengary or surrounding areas it is too late to leave. Seek shelter as fire approaches," said one warning.

A cold front was still making its way through the area of most intense fire activity, so the hottest part of the day came and went with little relief. This allowed temperatures to soar to what appears to be a record high temperature for Sydney, with Penrith, in the far west of the city area, hitting 120 degrees Fahrenheit (48.9 degrees Celsius). In addition, Canberra, the nation's capital, hit a record high of 110 degrees Fahrenheit (43.6 degrees Celsius). The previous record of 109 degrees Fahrenheit was set in 1939.

### **Smoke Transforms Into Clouds**

Many of the fires developed smoke plumes that arched high into the atmosphere. Some turned into what are known as pyrocumulonimbus clouds, which are thunderstorms caused by the rising heat, smoke particles and water vapor from a major fire. On January 4, Australia's Bureau of Meteorology issued a thunderstorm warning for storms generated by smoke plumes.

These clouds typically indicate that a fire is exhibiting extreme behavior since they help a blaze draw in more surrounding air and can shift surface winds. This can result in fire tornadoes. A young firefighter in Australia died when a fire tornado overturned his vehicle.

During the night before January 4, fires also erupted in other parts of Australia, including a destructive blaze on Kangaroo Island in South Australia. The island is home to a nature preserve with numerous unique species. Fires have devastated habitats for animals that are found only in Australia, including koalas and rare birds, though the toll on wildlife won't be fully known for some time.



The wildfires are expected to continue burning for months as Australia entered its dry season in a dangerously hot and dry state. However, the immediate fire weather forecast features cooler weather, which could help weary firefighters hold flames back.

### **The Driest Year On Record**

December turned out to be one of the top two hottest months ever recorded in the country, and 2019 was the hottest and driest year on record. December featured the country's hottest day on record as well. No significant rain is expected in the hardest-hit areas of New South Wales and Victoria for months.

Fires happen regularly during the Australian dry season. However, a combination of long-term climate change and natural variability is making the situation far worse.

Human-caused climate change is increasing the likelihood of and severity of extreme-heat events and adding to the severity of wildfires by drying the landscape, among other influences. One of the conclusions of climate studies has been that human-caused warming would increase the frequency and severity of heat waves. Another conclusion is that it would boost the occurrence of days with extreme fire danger.

Both trends are playing out in Australia. The country has recently seen other severe climate impacts in the form of marine heat waves that devastated parts of the Great Barrier Reef.

### **Weather Pattern Also Contributes**

The southern part of Australia has warmed by 2.7 degrees since 1950, said climate researcher Zeke Hausfather, climate and energy director at The Breakthrough Institute, a research center in California. This is consistent with the period of faster human-caused warming worldwide.

The unusually warm and dry year in Australia is also due in part to a weather pattern. It's known as the Indian Ocean Dipole, or IOD, which is an air circulation pattern in the Indian Ocean. When the IOD is in its positive phase, the water is cooler than average off the coast of Sumatra, Indonesia, leading to reduced atmospheric lift there and reduced rainfall over Australia. Meanwhile, there are warmer-than-average waters off the coast of Africa.

A positive IOD the past two years has meant drier-than-average conditions in much of Australia. The Bureau of Meteorology found that it's unusual to have back-to-back years with a positive dipole, which influences rain patterns across South Asia and Oceania.

This natural climate cycle is changing over time as temperatures rise in response to increased amounts of greenhouse gases in the air which largely come from the burning of fossil fuels for energy. This is expected to make back-to-back positive IOD events more common and make Australia more prone to drought and extreme heat.

"While the IOD is a natural mode of variability, its behavior is changing in response to climate change," the bureau said. Research suggests that positive IOD events, and consecutive events, will happen more often as global temperatures rise, the bureau stated.

### **Australians Fearful, Weary**

At least 12 million acres have burned so far in Victoria and New South Wales alone. That is equivalent to the burning of the entire state of West Virginia.

Smoke from the blazes has traveled 9,000 miles to South America and some of it may stay aloft for months, having a small effect on the planet's climate.

Australian residents in affected areas feel helpless, scared and weary.

Rebecca Butterworth, a house painter and journalist in Albury, a city in New South Wales, said it's been surreal to hear the names of tiny towns on national newscasts.

"The signal for 'leave' is a red rimmed triangle with a black interior, and a little traffic light guy" inside, she said. "It's just hanging everywhere," she wrote in an email.



## Quiz

1 Read these sentences from the article.

1. *The fires knocked out power and water in some communities and the government had to call up the military to assist with firefighting.*
2. *A cold front was still making its way through the area of most intense fire activity, so the hottest part of the day came and went with little relief.*
3. *However, the immediate fire weather forecast features cooler weather, which could help weary firefighters hold flames back.*
4. *However, a combination of long-term climate change and natural variability is making the situation far worse.*

Which two sentences, taken together, provide the BEST evidence to support the idea that efforts to put out the fires will depend on favorable shifts in weather and temperature?

- (A) 1 and 3
- (B) 1 and 4
- (C) 2 and 3
- (D) 2 and 4

2 Read the paragraph from the section "Smoke Transforms Into Clouds."

*During the night before January 4, fires also erupted in other parts of Australia, including a destructive blaze on Kangaroo Island in South Australia. The island is home to a nature preserve with numerous unique species. Fires have devastated habitats for animals that are found only in Australia, including koalas and rare birds, though the toll on wildlife won't be fully known for some time.*

What can be inferred from this paragraph?

- (A) The fires could potentially cause the extinction of some rare species.
- (B) The fires have never reached Australia's islands before now.
- (C) The caretakers of Kangaroo Island are already back on the island.
- (D) The habitats of koalas and birds are the only ones affected by fires.

3 How does the article develop the idea that climate change plays a role in Australia's severe wildfires?

- (A) by comparing the temperatures of Australia's fires with recent severe fires in other parts of the world
- (B) by outlining the process by which smoke plumes can cause storms called pyrocumulonimbus clouds
- (C) by explaining that fires happen regularly during Australia's dry season and predicting the season's length
- (D) by describing record heat in major cities and linking the activity of the IOD to rising global temperatures

4 Why does the author conclude the article by quoting the perspective of Rebecca Butterworth?

- (A) to indicate that warning signs for fires in Australia have had little effect on residents' actions
- (B) to illustrate that Australians are eager to share images of their favorite towns before they burn
- (C) to emphasize the overwhelming feelings of worry and shock being experienced by Australians
- (D) to elaborate on the efforts of journalists to cover what is currently happening in Australia