

Great Barrier Reef's third mass bleaching in five years the most widespread yet

Government's chief marine scientist says he fears people will lose hope for the future of the reef but it is a clear signal for action

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Mon 6 Apr 2020 20:00 BST
Last modified on Tue 7 Apr 2020 06:19 BST



Aerial surveys of more than 1,000 individual reefs show severe levels of bleaching occurred in 2020 in all three sections of the reef – northern, central and southern – the first time this has happened since mass bleaching was first seen in 1998. Photograph: Terry Hughes

The government's top **Great Barrier Reef** scientist says a third mass bleaching event in five years is a clear signal the marine wonder is "calling for urgent help" on climate change.

One quarter of the Great Barrier Reef suffered severe bleaching this summer in the most widespread outbreak ever witnessed, according to analysis of aerial surveys of more than 1,000 individual reefs released on Tuesday.

Dr David Wachenfeld, chief scientist at the Great Barrier Reef Marine Park Authority, told Guardian Australia: "My greatest fear is that people will lose hope for the reef. Without hope there's no action.

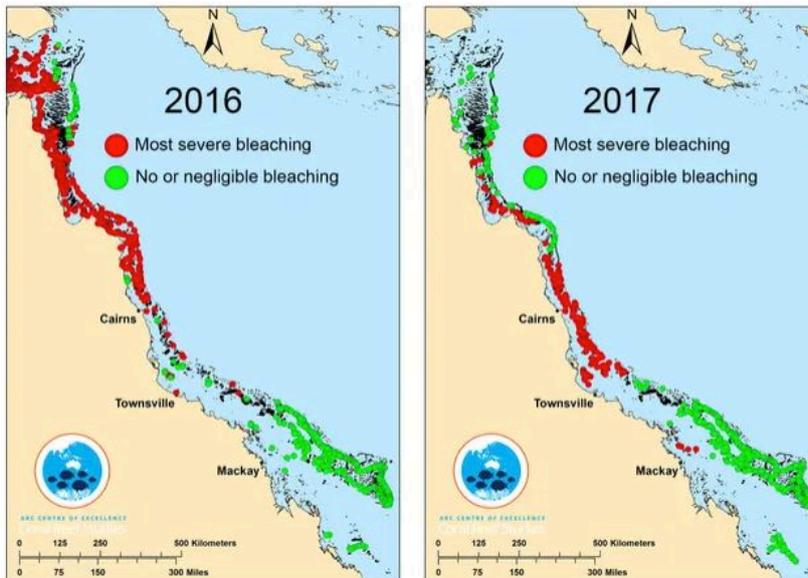
"People need to see these [bleaching] events not as depressing bits of news that adds to other depressing bits of news. They are clear signals the Great Barrier Reef is calling for urgent help and for us to do everything we can."

Prof Terry Hughes, director of the Centre of Excellence for **Coral** Reef Studies at James Cook University, surveyed 1,036 reefs from a plane over nine days in late March. The marine park authority also had an observer on the flights.

Hughes has released maps showing severe levels of bleaching occurred in 2020 in all three sections of the reef – northern, central and southern – the first time this has happened since mass bleaching was first seen in 1998.



A coral bleaching map showing the worst affected areas in 2020 highlighted in red. Photograph: ARC Centre for Excellence in Coral Reef Studies



A bleaching map showing the worst affected areas in 2016-17. Photograph: ARC Centre for Excellence in Coral Reef Studies

Some 25% of the reefs were severely bleached – meaning that more than 60% of the corals on each reef had bleached.

Hughes said previous observations had shown that bleaching at that extent leads to “high levels of mortality” of corals.



Rescuing the Great Barrier Reef: how much can be saved, and how can we do it?

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The Great Barrier Reef has experienced five mass bleaching events – 1998, 2002, 2016, 2017 and 2020 – all caused by rising ocean temperatures driven by global heating.

Hughes said there probably would not be the same level of coral death in the north and central regions in 2020 as in previous years, but this was partly because previous bleaching outbreaks had killed off the less heat-tolerant species.

Australian Academy of Science

(@Science_Academy)

The #GreatBarrierReef has experienced the third mass coral bleaching event in five years, explains @ProfTerryHughes@jcu @CoralCoE @MorganPratchett pic.twitter.com/nAQOQWcgq5

April 6, 2020

The 2020 bleaching was second only to 2016 for severity, Hughes said.

Corals can recover from mild bleaching, but scientists say those corals are more susceptible to disease. Severe bleaching can kill corals.

Hughes said severe mass bleaching had never before hit the southern section of the reef – from Mackay south. That area had high numbers of heat-sensitive corals that “light up like a Christmas tree” when viewed from the air.

“It’s not too late to turn this around with rapid action on emissions,” he said. “But business-as-usual emissions will make the the Great Barrier Reef a pretty miserable place compared to today.”

In February the reef was subjected to its hottest sea surface temperatures since records began in 1900.

Some scientists fear that rising levels of heat being taken up by the ocean have pushed tropical reefs to a tipping point at which many locations bleach almost annually.

Wachenfeld said the reef’s sheer size – it comprises about 3,000 individual reefs – made it resilient, “but climate change brings a new scale of impact unlike anything we have seen before”.

He told Guardian Australia: “Three mass bleaching events in five years is showing us the enormous scale at which climate change can operate.

“No one climate event will kill the Great Barrier Reef, but each successive event creates more damage. Its resilience is not limitless and we need the strongest possible action on climate change.”

The globe has already warmed by about 1C above pre-industrial levels, caused primarily by rising levels of greenhouse gases in the atmosphere from burning fossil

fuels.

Wachenfeld said: "We're at about 1C and we have just had three marine heatwaves in five years that have all damaged the reef."

Measures to improve the resilience of the reef include improving water quality, controlling outbreaks of coral-eating starfish, and research and development to improve the heat tolerance of corals.

"None of that is a substitute for strong action on emissions," Wachenfeld said. "Dealing with the climate problem is the underpinning for everything else to work."

Under the Paris climate agreement, countries agreed to deliver country-wide plans that would keep global heating well below 2C, with an aim to keep temperatures to 1.5C.

"That's the window we have to aim for," Wachenfeld said.

"As we approach and go beyond 2C, I don't see the tools we have today, and the tools that research and development is working on, will protect the reef.

"The world is heading for 3C of warming – we will not be able to protect coral reefs under those circumstances.



Great Barrier Reef world heritage values damaged by climate change, government admits

"The reef is, after this event, a more damaged ecosystem, but it can still recover. It needs more help from us and it needs it urgently. This is a call to action."

In a statement to Guardian Australia, the environment minister, Sussan Ley, said: "It is deeply concerning the reef has suffered another bleaching event and our focus has to be on the ways that we can reduce the pressure on the reef and strengthen its resilience.

"The Great Barrier Reef Marine Park Authority has been monitoring the situation closely and highlighting the concerns over temperatures.

"Thankfully, some of the most recognised tourism areas have been less impacted but that does not change the importance of the issue and the importance of coordinated global action on emissions reduction to reduce ocean temperatures."

Queensland's minister for environment and the Great Barrier Reef, Leeanne Enoch, said climate change, pollution from run-off and other threats "are testing the reef's ability to recover from major disturbances like mass bleaching events, severe tropical cyclones and crown-of-thorns starfish."

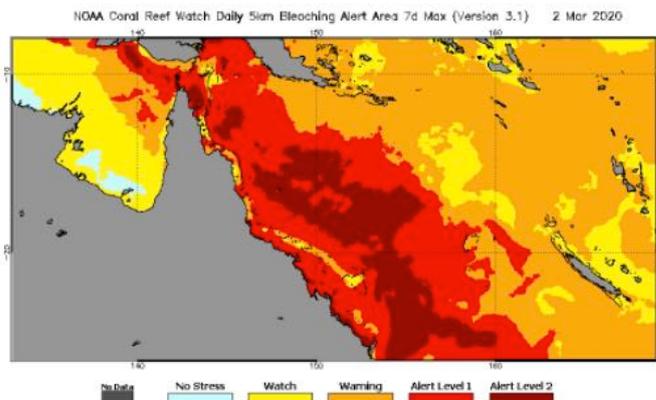
She said the Palaszczuk government had "committed to a zero net emissions target by 2050" and allocated more than \$427m for reef protection and resilience between 2015 and 2022.

"The missing piece continues to be leadership and action from the federal government on climate change," she said.

The Great Barrier Reef likely just experienced its most widespread bleaching event on record
CNN Digital Expansion 2016
Andrew Kann
By Drew Kann, CNN

Updated 1235 GMT (2035 HKT) March 26, 2020

Source: CNN



The Great Barrier Reef just experienced its most widespread bleaching on record 01:02
(CNN)Australia's Great Barrier Reef has likely experienced its most widespread bleaching event on record, according to a US government scientist who monitors the world's coral reefs.

This marks the third mass bleaching event on the reef in just the last five years.
Climate change could kill all of Earth's coral reefs by 2100, scientists warn

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And scientists say that the rapid warming of the planet due to human emissions of heat-trapping gases are to blame.

On the heels of severe bleaching events in 2016 and 2017 that left half of the coral on the Great Barrier Reef dead, scientists fear this one could be a devastating blow.

"If we do not deal with climate change quickly ... we are going to continue to see more severe and more frequent bleaching, and we are going to see the loss of coral reefs in much of the world," said Dr. C. Mark Eakin, coordinator of the National Oceanic and Atmospheric Administration's (NOAA) Coral Reef Watch.

The mass bleaching conditions were observed by Coral Reef Watch, which uses remote sensing and modeling to predict and monitor for signs of bleaching.

A file photo taken in October 2016 shows coral bleaching on the Great Barrier Reef in Australia. Scientists say that another mass bleaching event has occurred in 2020.

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Eakin says that the bleaching in 2016 and 2017 was extremely intense, but severe damage was concentrated in a few hotspots in the northern and central parts of the reef.

Early indications show that this latest event was not as damaging, but that a much larger area of reef experienced at least some bleaching.

Past bleaching events have typically occurred in years with a strong El Niño-Southern Oscillation, a climate phenomena that can increase the odds of a host of extreme weather events around the globe.

El Niño is characterized by warmer waters in the Pacific ocean, which makes bleaching events in the region more likely. But there is no El Niño currently, which Eakin says makes this bleaching that much more surprising -- and frightening.

"The upper ocean has absorbed a tremendous amount of heat in recent years, and it has really put coral reefs around the globe much closer to their upper thermal limits."

Why the Great Barrier Reef is so critical

Coral reefs are some of the most vibrant marine ecosystems on the planet -- between a quarter and one-third of all marine species rely on them at some point in their life cycle.

And none is more vital than the Great Barrier Reef.

Covering nearly 133,000 square miles, it is the world's largest coral reef and is home to more than 1,500 species of fish, 411 species of hard corals and dozens of other species.

It's also a vital resource to Australia's economy, contributing more than \$5.6 billion annually and supporting tens of thousands of jobs.

The abnormally hot ocean temperatures that led to this year's bleaching began in February and stretched all the way into early March. As you can see from the animation below, almost the entire reef was under a bleaching alert from mid-February until mid-March.

Temperatures have since cooled and the bleaching has subsided, but scientists in Australia are currently assessing the damage to the reef's health.

A fuller picture should come into focus in the coming weeks. Though initial reports indicate that this year's bleaching may not be as severe as in 2016 or 2017, Eakin says it appears few parts of the reef have been spared.

"This time it is not as intense, but it's much more widespread, so we're seeing it all over the Great Barrier Reef," he said.

The future of coral reefs looks grim

Warm ocean temperatures are the main driver of coral bleaching.

Corals turn white as a stress response to warm water temperatures by expelling the algae that grows inside them, which is their main energy source and gives them their color.

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Bleaching doesn't kill coral immediately. But if temperatures remain high, eventually the coral will die, destroying a natural habitat for many species of marine life.

"When they're bleached, corals are starving, injured and more susceptible to disease, so [recovery] is really a question of how long and intense the heat stress is and how healthy the coral was to begin with," Eakin said.

For the Great Barrier Reef to fully recover from bleaching that has occurred would take decades, Eakin says.

But because of the massive amounts of heat the world's oceans have already absorbed, the reef likely won't have the chance to recover before it bleaches again.

"If it takes decades for a reef to recover ... what chance do we have for reefs recovering when events are coming back this fast?" he said.

Though researchers around the world are exploring ways to revive reefs, Eakin says those efforts will not be enough if we don't address the root cause of their demise -- human-caused climate change.