Warm water temperatures have bleached coral off the Australian coast

The Great Barrier Reef is under attack from El Niño and climate change

BY JUSTIN WORLAND

The Great Barrier Reef is more than worthy of its name. Coral of all shapes, sizes and colors cover more than 130,000 sq. mi. off the coast of Australia, making it the world's largest reef system and supporting an astounding variety of marine life.

But today the Great Barrier Reef is dying. The temporary warming effect of a major El Niño event — combined with ongoing climate change — has heated the waters around the reef to nearly unprecedented levels. That warming has in turn driven a mass bleaching that has sucked the color — and the life — out of the coral. And the Great Barrier Reef isn't alone. "This is the *longest* bleaching event ever recorded," says David Kline, a Scripps Institution of Oceanography scientist. "It's truly global, and it's looking very severe."

Bleaching occurs when ocean disruptions — warm water, pollution, algae overgrowth — drive away the symbiotic organisms that live on the coral and give it color. Within weeks, the reef could die, leaving behind a forest of lifeless, bone white coral. Scientists believe the bleaching now under way may kill more than 15% of the world's coral.

It's not just a matter of aquatic aesthetics. Reefs act as natural barriers that protect coastal communities from storms and flooding. Marine life depends on coral reefs as habitats, while coastal towns depend on them as tourist draws.

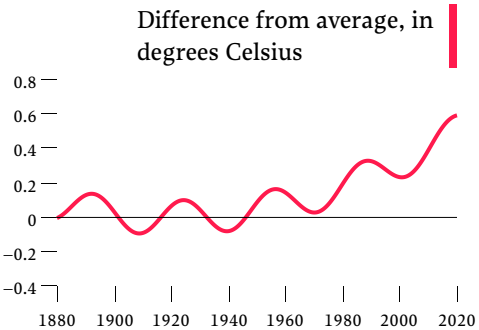
But a bigger worry may be what the bleaching suggests about future climate change. The rapid death of coral reefs demonstrates that climate change is irreversibly affecting the world right now, even as policymakers treat warming as something to be dealt with in the future. "Climate change may be slow-creeping sometimes, but other times it takes great leaps forward," says Steve Palumbi, an ocean scientist at Stanford University. "This is one of those leaps."

Local solutions — like reducing fishing and cleaning up pollution — can help slow reef loss, but scientists say a global problem requires a global solution. Nearly 200 countries agreed last year to work to keep global temperatures from rising more than 3.6°F by 2100, but that goal will be tough to reach. And if governments fail, coral reefs will be only the first victims.

TEMPERATURES

How El Niño heats the globe

2015 was on average the warmest year globally since record keeping began nearly 150 years ago — and the 2016 average is shaping up to be even hotter. A strong El Niño deserves the brunt of the blame. The unusually warm Pacific Ocean surface waters that mark an El Niño event amplify heat over land. Temperatures spiked around the globe as El Niño began last fall, leading to month after month of record-breaking heat. Global temperatures this past February were 2.2°F above the 20th century average, making it the most anomalously hot month on record. But man-made global warming is still playing a lasting role in the record heat. "That's how we will see the effects of climate change: the extremes will become more extreme," says Michael Mann, a climate scientist at Penn State University.



DROUGHT

1 million

That's the number of children in Africa — including in hard-hit Ethiopia — without steady access to food, largely because of El Niño. The weather phenomenon has helped trigger drought in many parts of the world, leaving millions hungry. And Africa isn't the only place affected by El Niño–influenced drought. In Papua New Guinea, drought has driven bushfires affecting millions. In Bolivia, nearly a million animals like sheep and llamas have died as pastureland dries out.