

HOT OCEAN WATER LED TO MASS EXTINCTION: STUDY

Relevant for: Environment & Disaster Management | Topic: Environmental Degradation - GHGs, Ozone Depletion & Climate Change

Scientists think they've figured out the falling dominoes that led to the earth's largest mass extinction and worry that human-caused climate change puts the planet on a vaguely similar path.

Some 250 million years ago, about 90% of sea life and 70% of land life went extinct, in what is now called the Great Dying. Scientists have long speculated that massive volcanic outbursts triggered the cataclysmic event, but how that worked was still a bit fuzzy. It wasn't the lava itself.

A new study in the journal *Science* used complex computer simulations to plot out what happened after the volcanoes blew: it led to ocean temperatures rising by about 11 degrees Celsius, which then starved the seawater of oxygen. That hot oxygen-starved water caused the mass marine die-off, especially farther from the equator.

After the volcanoes blew, the level of heat-trapping carbon dioxide soared to a level more than 12 times what it is today, said lead author of the study Justin Penn.

Water loses oxygen when it warms, much like a warm can of cola goes flat, Mr. Penn said. Scientists looked at dozens of modern species to see what happens to them in warmer, oxygen-starved water and that helped them to understand the past extinction. One of the keys in the research is that more species died away from the equator. That's because tropical species were more acclimated to low oxygen levels, Mr. Penn said.

While humans aren't warming the earth anywhere close to as much as what happened naturally 250 million years ago, "this puts our future into the category of contenders for true catastrophe," said study co-author Curtis Deutsch, an earth scientist at the University of Washington.

The study calculates that if heat-trapping carbon dioxide emissions continue at current levels, by the year 2300, the globe will experience 35% to 50% of the extinction level seen in the Great Dying.

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