Climate Change: Warming Oceans Set Heat Record in 2018

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A team of Chinese and U.S. scientists estimated that the world’s oceans are warming by up to 40% faster than previously thought.

The oceans are warming faster than previously estimated, setting a new temperature record in 2018 in a trend that is causing major damage to marine life, a Science article published Thursday warns.

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"How fast are the oceans warming?" was the main question addressed by a team of Chinese and U.S. scientists in a research which demonstrates that "global warming is here and has major consequences already. There is no doubt, none!"

New measurements, aided by an international network of 3,900 floats deployed in the oceans since 2000, showed more warming - since 1971 - than calculated by the 2013 UN assessment of climate change.

According to Lijing Cheng, a scientist from China's Institute of Atmospheric Physics, "2018 was the warmest year on record for the global ocean" as marine temperatures as far down as 2,000 meters rose about 0.1 degree Celsius.

"Observational records of ocean heat content show that ocean warming is accelerating," the team of scientists stated and also explained that greenhouse gas emissions warm the atmosphere, and a large part of the heat gets absorbed by the oceans.

The heat absorption process, in turn, changes the physical-chemical properties of marine ecosystems, which displaces marine like forcing them to flee to cooler waters.

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Deep ocean temperatures are less influenced by annual variations in weather and can take more than 1,000 years to adjust to changes like regions closer to the surface. "The deep ocean reflects the climate of the deep and uncertain past," Kevin Trenberth, a co-author of the study, said.

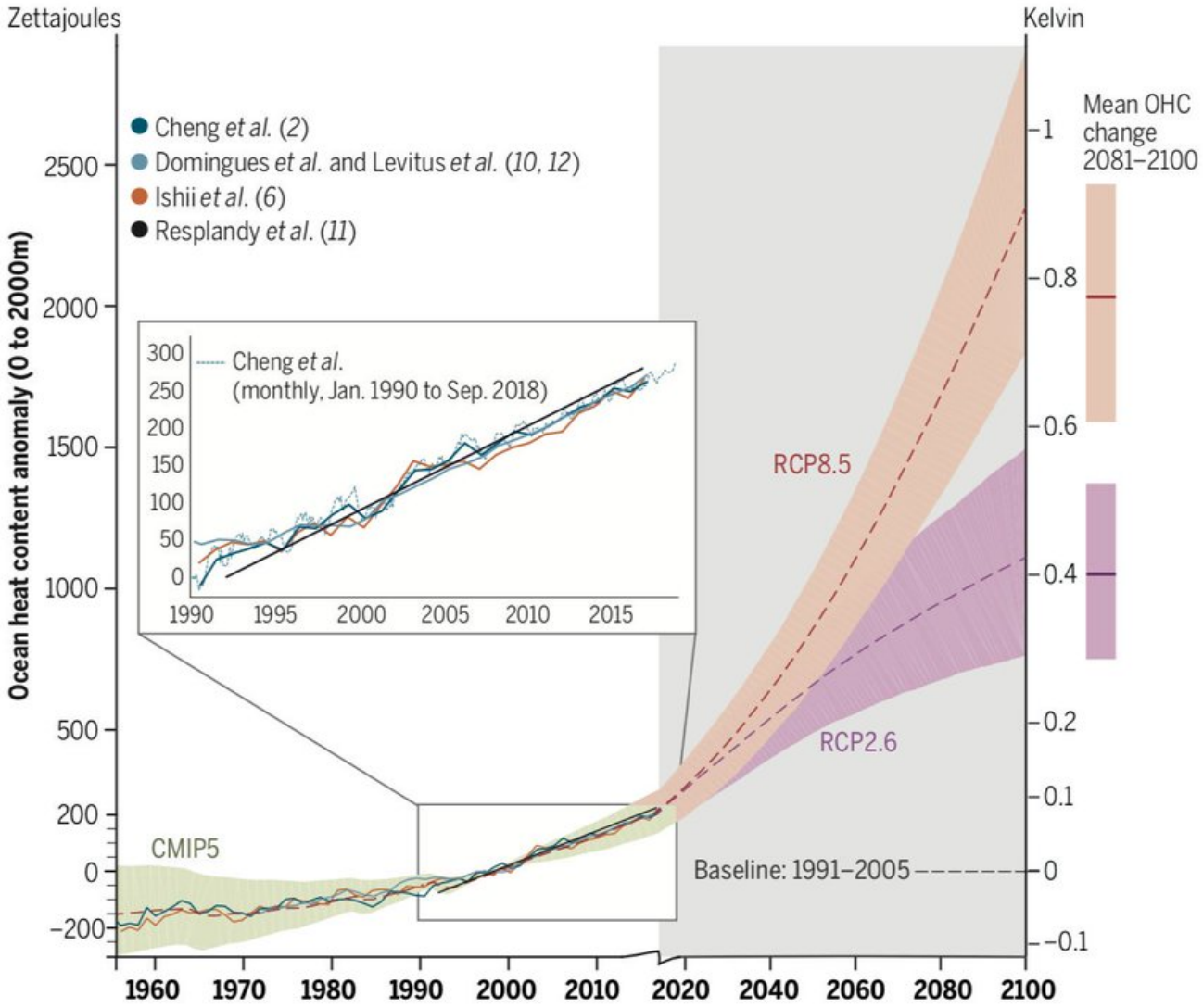
Among effects, extra warmth can reduce oxygen in the ocean and damage coral reefs that serve as nurseries for fish, the scientists said. While warmer seas release more moisture that can stoke more powerful storms.

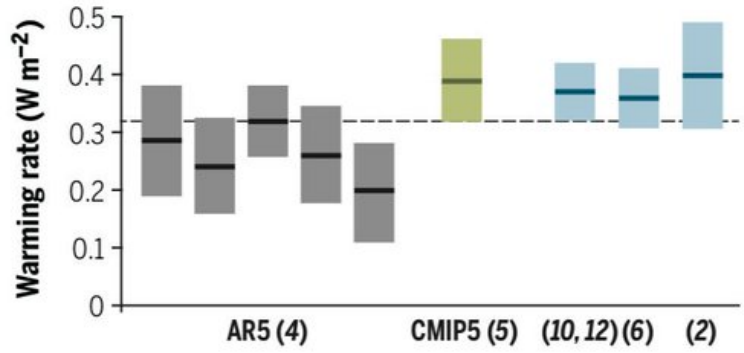
Despite growing evidence of the human-driven global climate change, some heads of state and government across the globe - mainly far-right administrations - deny the existence of a problem.

In that sense, for example, U.S. President Donald Trump and his allies, such as Brazil's President Jair Bolsonaro, have, recently, questioned and make advancements towards terminating some multilateral agreements and shuttering institutions that could help contain environmental threats to humanity.

Past and future ocean heat content changes

Annual observational OHC changes are consistent with each other and consistent with the ensemble means of the CMIP5 models for historical simulations pre-2005 and projections from 2005 to 2017, giving confidence in future projections to 2100 (RCP2.6 and RCP8.5) (see the supplementary materials). The mean projected OHC changes and their 90% confidence intervals between 2081 and 2100 are shown in bars at the right. The inset depicts the detailed OHC changes after January 1990 using the monthly OHC changes updated to September 2018 [Cheng *et al*. (*2*)] along with the other annual observed values superposed.





Updated OHC estimates compared with AR5. The three most recent observation-based OHC analyses give ocean warming rates (depths from 0 to 2000 m) for 1971 to 2010 that are closer to model results than those reported in AR5. This increases confidence in the model projections (see supplementary materials for more detail). The error bars are 90% confidence intervals.