



the weekly anthropocene



dispatches from the wild, weird world of humanity and its biosphere

By Sam Matey, January 22 2020

Corporate Action: Microsoft and BlackRock. Two recent corporations have independently announced expansive, in-depth plans to reduce their contributions to the climate crisis. First, there was the announcement from BlackRock, the world's largest asset investment management company and the world's largest investor in fossil fuel companies. BlackRock is a company of incredible power and influence: they're currently managing US \$7 trillion in assets worldwide. (For context, one major estimate holds that the sum of all money in circulation on Earth is about US \$80 trillion). They own more fossil fuel stock than any other entity on Earth. As climate expert Bill McKibben wrote, their money is "the oxygen on which the fire of global warming burns."

And on January 14th, BlackRock announced that they would "put climate change at the center of their investment strategy." This is *huge*. The actual policy changes initiated were big, but not enough: BlackRock will be adding lots of new funds that exclude major contributors to climate change (like fossil fuel companies) giving clients more ethical investment opportunities. Furthermore, they'll divest their actively managed funds (but not their index funds) from thermal coal (the kind burned for electricity), which will immediately lead to the sell-off of \$500 million worth of coal stocks-but won't do anything yet about oil or natural gas investments. It's a baby step forward. But given the size of BlackRock, the repercussions could be enormous. The big outcome here could be the effect on the financial market's conception of the risk involved in fossil fuel-era investments. BlackRock CEO Laurence Fink wrote a surprisingly clear-sighted letter, posted on BlackRock's website, about climate change. Among the highlights: "Climate change has become a defining factor in companies' long-term prospects... I believe we are on the edge of a fundamental reshaping of finance." And "Every government, company, and shareholder must confront climate change." And "Even if only a fraction of the projected impacts is realized, this [climate change] is a much more structural, long-term crisis. Companies, investors, and governments must prepare for a significant reallocation of capital." Wow, that sounds...reasonable. Like a smart person looking at the overwhelming scientific consensus and making decisions accordingly. To repeat, this is *BlackRock* saying this, the company that's funded climate vandalism for decades. This is the most powerful market signal yet that investing in fossil fuels is-shocker-a bad idea. The biggest guy on the financial-management block is saying that coal mines, oil tankers, and diesel-car factories will very shortly be stranded assets. In a rather extraordinary juxtaposition, a massive "shadow bank" with no purpose other than making money is now acting in a considerably more ethical manner than the executive branch of the federal government of the United States. These are indeed interesting times. Overall, though, this is great news! For more, see tinyurl.com/ur2tve9, and tinyurl.com/w4mcz3j. For Fink's letter, see blackrock.com/us/individual/larry-fink-ceo-letter.



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And then there's Microsoft, the omnipresent tech giant that created the software on which these words were written. Along with Saudi Aramco, Apple, and Alphabet (which includes Google) it is one of only four companies in the world valued at US \$1 trillion or more. Now, after a massive announcement on January 16th, they're the company leading the world in addressing the climate crisis. (Pictured: Microsoft President Brad Smith, CFO Amy Hood, and CEO Satya Nadella at the announcement).



Their new policies read like a climate activist's dream. Microsoft had previously pledged to run all of their data centers off renewable energy, and has now pledged to be completely carbon negative, sequestering more carbon dioxide than it emits, by the year 2030. Impressively, they're factoring in the emissions from everything their company does—from the direct consumption of electricity from their server centers to the emissions involved in making silicon computer chips to the electricity consumed when someone plugs in an Xbox at home, all adding up to about 16 million tons of carbon dioxide per year. Until CO₂-sucking technologies like direct air capture are mature, they're planning to do this primarily through forest restoration and afforestation. Next, they've created a new \$1 billion fund for new (sorely needed) carbon removal and reduction technologies and have pledged to lobby for the introduction of a carbon tax. Microsoft is also increasing their "internal carbon tax," charging their own business units for each ton of carbon emitted. Finally, there's the pledge to remove their historical carbon emissions by 2050. Microsoft is saying that they will retroactively draw down every molecule of carbon they've emitted over their entire company's lifespan, since their founding in 1975, making the overall lifespan impact of Microsoft carbon-negative. No company or country anywhere has done this before. "This is what science says we have to do, and we can't be the only ones. This can't be seen as 'ambitious' moving forward," said Lucas Joppa, Microsoft's Chief Sustainability Officer. With these new standard-setting actions, Microsoft has emerged as a true leader in the fight for a good Anthropocene. It may be impossible to overstate how awesome this is. Spectacular news! For more, see tinyurl.com/wma89fe. For Microsoft's own announcement, see news.microsoft.com/climate/. For the highly inspiring transcript, see tinyurl.com/v8to972.



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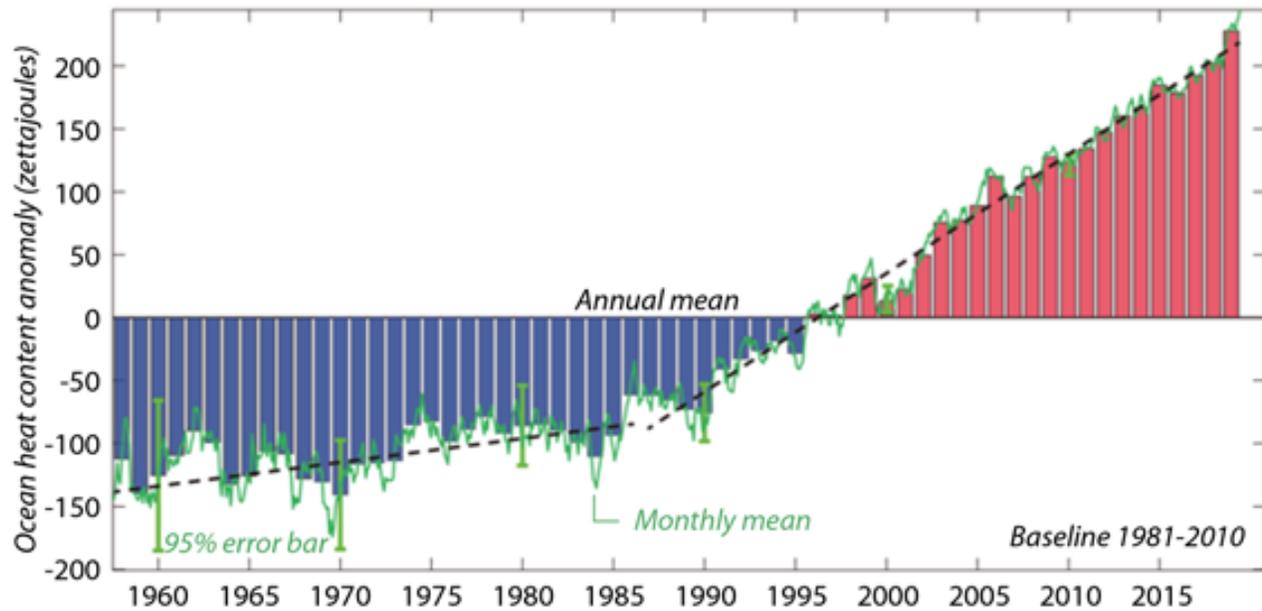
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Dramatic Rise in Ocean Heat

The oceans have taken in 228 sextillion joules of heat in the past 25 years, roughly equivalent to adding the energy of 3.6 billion Hiroshima-size atom bombs exploding in the oceans, said Lijing Cheng, the lead author of a new study showing changes in ocean heat.

GLOBAL OCEAN HEAT CONTENT CHANGE

In zettajoules, upper 2000 meters, 1958-2019



SOURCE: Cheng et al., 2020

InsideClimate News

New Climate Evidence: The Warming Oceans. A new study recently published in *Advances in Atmospheric Sciences* investigated the warming of the world's oceans over the last few decades. The researchers found that 2019 had seen the warmest oceans of any year since measurements began 60 years ago. (Notably, oceans warm faster than the world as a whole because the vast majority of heat trapped by greenhouse gases is absorbed by the oceans). Furthermore, they found that Earth's oceans have absorbed 228 sextillion joules (or 228 zettajoules) of heat over the past 25 years, a finding which lead author Dr. Lijing Cheng described as constituting on its own "irrefutable proof of climate change." This is a truly staggering amount of energy we're talking about-228,000,000,000,000,000,000 joules of heat, equivalent to the energy of 3.6 billion Hiroshima-sized atomic bombs. Dividing that over a 25-year period, what this study has found is that human-emitted greenhouse gases have trapped enough solar energy to warm the oceans by the equivalent of about four Hiroshima-sized atomic bombs per second. That's...simply staggering. For more, see tinyurl.com/s7zmhvj, tinyurl.com/wmpo6zf. For the full study, see tinyurl.com/uggmemm.



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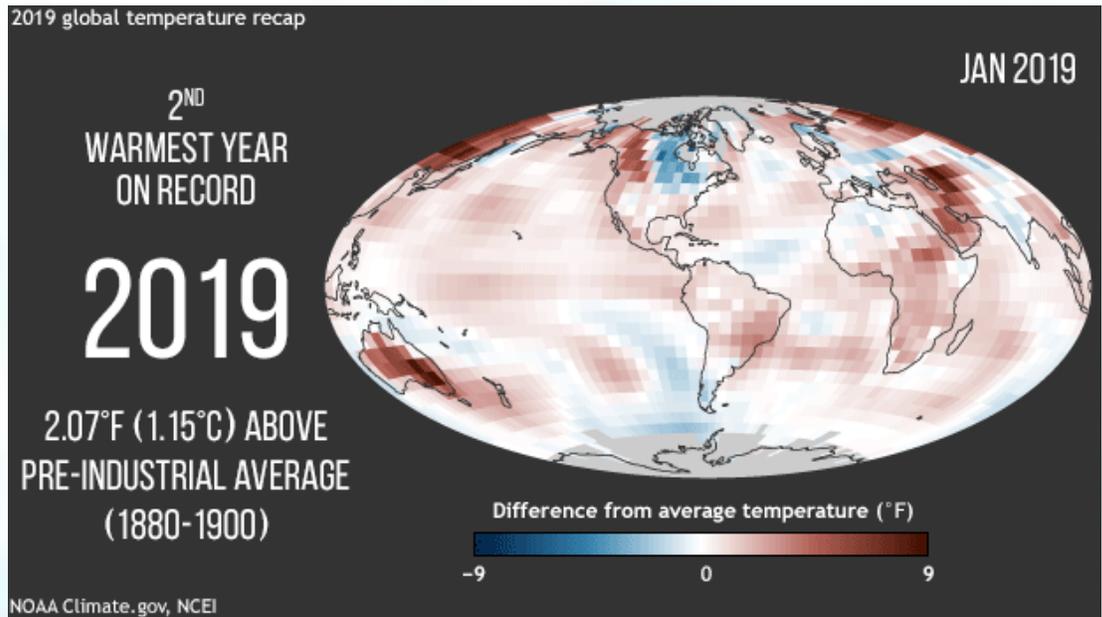
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New Climate

Evidence: The Warmest Decade since Records Began.

NASA and NOAA have reported that 2019 was the second-warmest year since records began in the year 1880 (2016 was the warmest, and all of the top five have been in the



past five years). According to NASA's dataset (based on temperature data from over 20,000 weather stations, ships and buoys, and Antarctic research stations) 2019 was 1.8 degrees Fahrenheit, or 0.98 degrees Celsius, warmer than the 1951-1980 average, and the 2010s have been the hottest decade since records began.

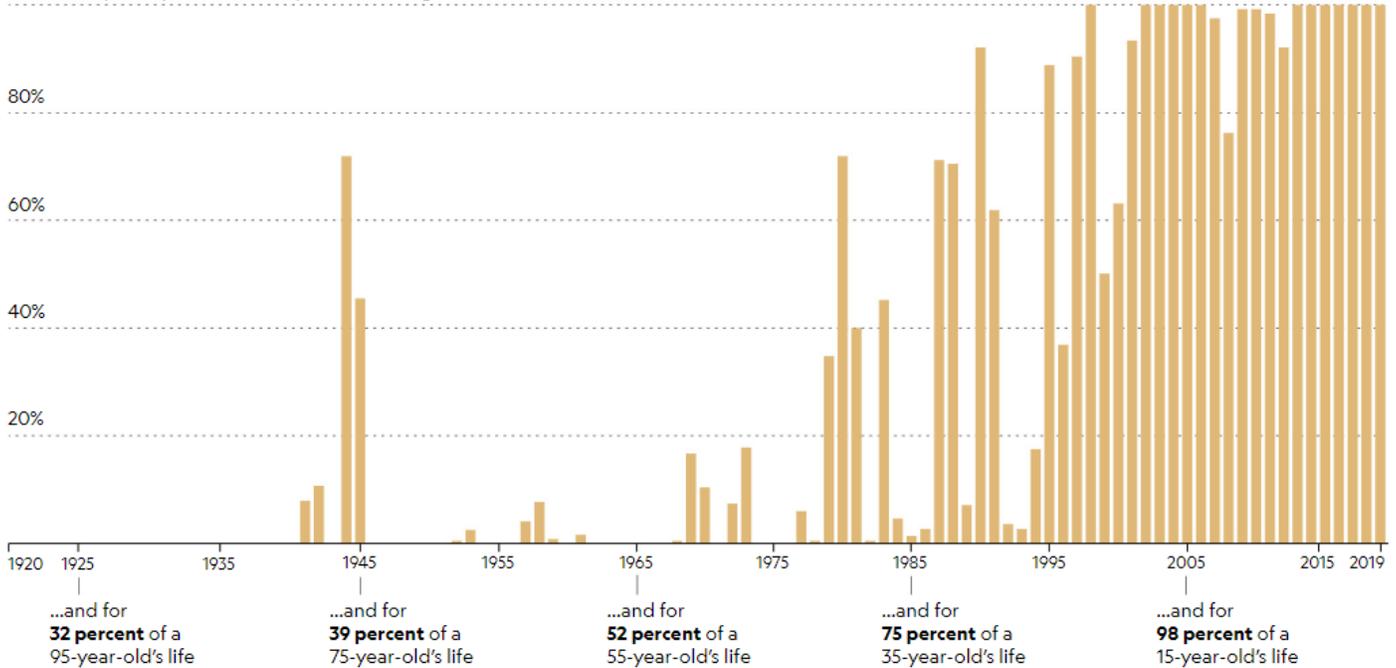
NOAA's analysis, which used much of the same data but with a slightly different statistical interpolation method, found that 2019 was 1.71 degrees Fahrenheit (or 0.95 degrees Celsius) above the 20th century average. NOAA also calculated that average global surface temperature is now 2.07 degrees Fahrenheit (1.15 degrees Celsius) warmer than in the 1880-1900 period. (At that time, the Industrial Revolution was only beginning to get under way, making it the closest data period we have to pre-industrial times). That may not seem like a lot, but the last Ice Age had an average global surface temperature only 10 degrees Fahrenheit colder than the pre-industrial period. "The decade that just ended is clearly the warmest decade on record," said Gavin Schmidt, director of NASA's Goddard Institute for Spatial Studies. "Every decade since the 1960s clearly has been warmer than the one before." Other notable data points: 2019 was the 43rd consecutive year with global temperatures above the 20th century average, and parts of Alaska, southern Africa, central Europe, and Australia had their hottest year on record, while no area had their coldest year on record. "We crossed over into more than 2 degrees Fahrenheit warming territory [from the 1880-1900 baseline] in 2015 and we are unlikely to go back. This shows that what's happening is persistent, not a fluke due to some weather phenomenon: we know that the long-term trends are being driven by the increasing levels of greenhouse gases in the atmosphere," said Schmidt. The science of climate change is more certain that it's ever been-the Anthropocene is truly a period of planetary change unprecedented in modern history. For more, see <https://tinyurl.com/t6uaj79> and tinyurl.com/rkne7sn.



By Sam Matey, January 22 2020

Climate change has altered global weather for almost the entire life of anyone 18 years old or younger (people born after 2002).

100% of days in a year affected by climate change



KENNEDY ELLIOTT, NG STAFF
SOURCE: SEBASTIAN SIPPEL, ETH ZURICH

New Climate Evidence: Every Single Day Since 2012. For years, climate scientists have educated the public on the difference between climate and weather: long-term trends like global warming can clearly be analyzed, but day-to-day weather is more complex and variable, and it's not quite possible yet to directly ascertain whether a particular day's weather is attributable to climate change. In the last 10 years, as the impact of climate change has grown larger and larger, that has stopped being true. A new study published in *Nature Climate Change* calculated the relationship between weather over the last few decades and major climate change indicators, such as rising global temperatures. The researchers found that the "fingerprint" of climate change can now be increasingly clearly discerned, and that since early 2012, the weather of every single day has been affected by climate change. "It's a signal-to-noise question," said Dr. Beena Balan Sarojini, climate scientist. "Weather, and things like El Nino, are the noise. So far, we've been able to find that climate signal in long-term records like temperature, precipitation, and Arctic sea ice extent. But once the big regional changes have been detected, what's useful is to talk about local places and day-to-day changes." What this means, to look at it from a human perspective, is that no child on Earth six years old or younger has lived a day of their lives in a world unimpacted by climate change. A fascinating and unsettling result. For more, see tinyurl.com/tmtbcdq. For the full study, see tinyurl.com/w38getu.