

Climate Disruption in Overdrive: Submerged Cities and Melting That “Feeds on Itself”

By [Dahr Jamail](#)

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As the presidential campaign circus dominates headlines across the US, glaring signs the planet is undergoing abrupt anthropogenic climate disruption (ACD) abound.

A major [study published in Nature Climate Change](#) shows that the planet is warming a stunning 50 times faster than when it comes out of an ice age. The implications of the rapidity of this warming, for those who care to digest it emotionally, are horrifying.

The study shows that even if carbon reduction targets are achieved and the planet’s temperature is kept below the 2 degree Celsius warming threshold, sea-level rise will still inundate major coastal cities around the world, forcing one-fifth of the total world population of humans to migrate away from the coasts. New York, London, Rio de Janeiro, Jakarta, Cairo, Kolkata and Shanghai will all be underwater.

As though to reinforce this point, [NASA recently released data](#) confirming that February was the warmest month ever measured globally, at 1.57 degrees Celsius above the preindustrial baseline temperature average. The new record easily smashed the old global temperature record, which was set just one month before, in January.

This means that while it took from the advent of the industrial age until October 2015 to warm the planet 1 degree Celsius, humans have managed to warm the planet another .57 degrees Celsius in just the next four months since then.

Let that sink in for a moment before reading further.

As if that isn’t enough, a study [recently published in the journal Nature Geoscience](#) revealed that carbon emissions are now the highest they have been since the age of dinosaurs, 66 million years ago. According to the study, the current pace of emissions is even beyond the highest-known natural surge of carbon that exists in fossil records, an event that occurred 56 million years ago that was believed by many to be caused by the release of frozen stores of greenhouse gases from the seabed.

That ancient release, which drove temperatures up 5 degrees Celsius, is now surpassed by our current surge of carbon release. “Given currently available records, the present anthropogenic carbon release rate is unprecedented during the past 66 million years,” the [scientists of the new study wrote](#).

Another ominous sign of escalating ACD: The entire Northern Hemisphere surpassed the 2 degree Celsius mark for the first time since human civilization began. Bear in mind that 2 degrees Celsius is the arbitrary, politically agreed-upon warming limit, above which warming

is considered “dangerous” to humanity. Former NASA scientist James Hansen debunked that goal over two years ago, when he [published a paper showing that 1 degree Celsius was the scientifically proven point of no return](#).

Parts of the Arctic were 29 degrees Fahrenheit warmer than normal in February, which even brought large portions of the Arctic above freezing and into temperature levels more common in June.

Dozens of countries across Europe and Asia set or tied [all-time temperature records](#), and cities across the United States saw [record warm temperatures](#), in which the 2015-2016 winter was the warmest ever recorded.

Winter in the US, according to meteorologists, technically takes place from December through February. This year, that winter was [4.6 degrees Fahrenheit warmer than normal](#), breaking the previous record, which was set in 1999-2000. This winter, all six of the states that comprise New England had their warmest winters ever. Meanwhile, every single US state had winters nearly [2 degrees Fahrenheit warmer](#) than normal, and Alaska’s winter was an incredible [10.6 degrees Fahrenheit warmer than normal](#).

Underscoring the severity of what is clearly a planetary warming crisis, the [New Scientist reported in early March](#) that earth had its highest-ever annual increase in carbon dioxide levels ever recorded, with atmospheric levels breaching 404 parts per million.

The Arctic is where warming continues to be the most blatantly obvious. In early March, the start of the famed Iditarod sled dog race looked more like something out of a dystopian science fiction movie, as snow-starved Anchorage had [snow hauled hundreds of miles down from Fairbanks](#) to cover the dry streets upon which the dogs would run. Then, the typically 11-mile long ceremonial start was [shortened to three miles](#).

Meanwhile, melting in Greenland is occurring so intensely and quickly that it is “feeding on itself,” according to a [recently published scientific study](#). Greenland alone contains enough ice to raise global sea levels by 20 feet.

This information is emotionally challenging to take in. It is understandable that people prefer to distract themselves with the minute-to-minute antics of the political and media charade that is the US election cycle, yet it has never been more important to understand what the planet upon which we live and depend is undergoing.



A flooded street sits unused in Elmhurst, Illinois, on July 24, 2010. (Photo: Clark Maxwell)

Earth

There are several indicators this month of how rapidly the planet is changing under increasing stressors from ACD.

In North America, [millions of acres of forests are struggling and under increasing threat](#), due to the fact that the speed at which the planetary climate is changing is now far, far ahead of the forests' ability to adapt to the hotter and drier conditions ACD has ushered in across vast areas of the United States and Canada. [New research shows](#) that all of the forests in the US are officially under threat from ACD.

And it's not just forests that are being impacted. The agricultural sector is in big trouble, as crops are being impacted dramatically by the rapidly changing climate.

For example, in Montana, a [recent study](#) shows that agricultural losses due to ACD could total up to \$736 million annually.

Panning out, [another recent study](#) shows that food scarcity caused by ACD would cause at least half a million deaths across the world by 2050, due to food production being impacted by the effects of ACD.

Making matters worse, a group affiliated with the UN recently [released a study](#) showing that an ongoing decline of pollinating species now poses a very dire threat to the global food supply. The [report warns](#) that the species responsible for pollinating and promoting the growth of hundreds of billions of dollars worth of crops are facing extinction.

[Another study](#), this one published in Nature Climate Change, shows that high-latitude

insects, like those in Scotland, face severe declines in population from ACD, due to the fact that they are far more sensitive to warmer temperatures than previously believed.

Even as far north as the Arctic, ACD's growing impact on insects is obvious. A recent study [published in PLOS ONE](#) shows that warming temperatures are impacting beetle populations, and hence the entire biodiversity of the Arctic. The temperature change is causing the insects to migrate into new habitats, which is having a domino effect that is upsetting the natural balance.

For humans in the far north, ACD's impacts are even more obvious. Intensifying heat is threatening the way of life of the Indigenous population in the Arctic. With the ice disappearing and temperatures continuing to rise, the life cycles and numbers of fish, marine mammals, caribou and polar bears are being altered, which is causing Indigenous communities to face [food shortages](#).

The leaders of First Nations and Inuit communities in the Arctic are now also speaking out about the mental health cost of ACD. The Native populations of the Arctic are dealing with growing despair over the effects of ACD on their lives and communities, and [observers are connecting this](#) to a growing array of mental health and social problems.

In addition to this, ACD has caused the onslaught of rising sea levels, melting permafrost and other impacts that have positioned residents of the Arctic in a [losing battle to stay in their homes](#). Housing shortages are now the norm as land is washing and melting away into the rising seas.

Meanwhile, across the lower latitudes, recent satellite images show that tropical rain forests ranging from the Amazon to the Philippines are vanishing far more abruptly than was previously believed, [according to recent research](#). As usual, ACD, drought, wildfires and deforestation are to blame.

Water

As usual, ACD-induced extremes of water, either far too much or far too little, are stark this month.

In Africa, at least 36 million people are facing hunger [due to record-high temperatures and drought](#), which have had a catastrophic impact on crops across the eastern and southern regions of that continent.

Meanwhile in the Arctic, February saw [alarming melting of Arctic sea ice](#), where record-high temperatures brought with them other records — including record lows for that month's extent and area of Arctic sea ice.

Until this year, the previous records for sea ice extent and area for February were set in 2011. Moreover, the total volume of the Arctic sea ice, which many scientists see as the most important factor determining the health of Arctic sea ice, reached its second-lowest level ever recorded that same month. The record low for sea ice volume was set in 2012, a record that could fall this year or next, according to scientists.

Global rainfall extremes continue to be elevated by ACD. A new study published in [Nature Climate Change](#) basically warns us to get ready for rain, and lots of it. The study shows that ACD is already driving increases in rainfall and snowfall extremes around the world, even in

arid regions. This trend, according to the [study](#), will continue, and likely amplify further.

In the oceans, things continue to look grim.

[Recent research](#) shows that coral growth is already being weakened by increasingly acidifying oceans. One-quarter of the carbon dioxide released as a result of human activities is absorbed into the world's oceans, where it alters their chemistry and reduces coral growth.

Meanwhile, a severe coral bleaching event in the most pristine portions of the Great Barrier Reef in Australia has [caused authorities there to raise an alarm](#) over severe local coral bleaching, caused by warm ocean temperatures.

[Another study shows](#) how ACD is pushing fish toward both poles, which means that traditionally poorer countries near the equator have even less access to one of their primary food sources. The fish migrations are due to global temperature increases in the oceans.

Meanwhile, sea levels continue to rise ahead of worst-case predictions. A study recently [published in Nature Climate Change](#) warns that in the continental United States alone, millions of people are already at risk of being forced out of their homes because of sea-level rise. The study shows that sea-level increases will cause the homes of 4 million Americans to be inundated during high tides with three feet of sea-level rise by 2100, although the pace of sea-level rise is consistently ahead of that projection.

“Once you take into account growth of population, the numbers end up being two to three times more in terms of overall population that's going to be impacted than if you just look at current populations,” said Stetson University landscape ecologist [Jason Evans](#), who contributed to the study. “Florida really pops out.”

With six feet of sea-level rise, which many scientists believe is inevitable, more than 4 million people, in Florida alone, will lose their homes.

Fire

In the Southern Hemisphere, ACD-fueled wildfires continue to burn apace.

In Tasmania, [bushfires have grown so severe](#) that 1,000-year-old trees are burning to ash while dried-out peat bogs are on fire. Experts there are warning that what is happening in Tasmania is a human-caused calamity as severe as the razing of the temples in Palmyra by ISIS.

It's also worth noting that in the United States, wildfire season is already underway (albeit earlier than normal of course), with one massive wildfire having [already burnt more than 72,000 acres](#) across Oklahoma and Kansas.

Air

This month, there are many bright neon warning signs in the Air category.

Atmospheric carbon dioxide levels have [reached new heights](#), signaling an alarming increase. February 2015 to February 2016 saw the highest year-to-year growth ever recorded.

Pieter Tans, lead scientist of the National Oceanic and Atmospheric Administration's Global Greenhouse Gas Reference Network, said the new record accompanied four straight years of increases of over 2 parts per million in the atmosphere. Of this, Tans said, "We've never seen that. That's unprecedented."

Temperatures across the globe continue to escalate.

Melbourne, Australia, saw its [hottest March night ever recorded](#), breaking the previous record by more than 1 degree Celsius. The previous record was set only three years prior.

Moving northward, the rapidly increasing temperatures in the Arctic prompted climate scientist Dr. Peter Gleick, president of the Pacific Institute in California, [to warn](#) that this accelerated increase could have a "catastrophic" effect on the planet's climate. He explained that the higher temperatures are driving the creation of dangerous storms across the Northern Hemisphere, and that since early February, the area of the Arctic covered by sea ice has been lower this year than any of the last 30 years.

Gleick posted a graph of the diminishing sea ice on Twitter [with the message](#): "What is happening in the Arctic now is unprecedented and possibly catastrophic."

In parts of the Arctic, February [shattered all previous temperature records](#) as the entire month reached a staggering 18 degrees Fahrenheit above normal in some regions. Fort Yukon, Alaska, a place that has recorded the lowest temperature on record in that state, is experiencing record warm temperatures, [causing people there to say](#) that the warming trends "have robbed the Arctic of its winter."

To make matters worse, methane, a greenhouse gas 100 times more potent than carbon dioxide on a 20-year time scale, [spiked in February](#) to more than 3,000 parts per billion in the atmosphere. This was the largest spike of methane ever recorded.

Denial and Reality

Apparently, impending catastrophe doesn't mean much to some of the United States' wealthiest people. Once again a [report has arisen documenting how fossil fuel millionaires pumped](#) more than \$100 million into Republican presidential super PACs last year. That means that \$1 out of every \$3 donated to Republican candidates coming from hyper-rich individuals came from people who made their fortunes from fossil fuels. In boosting GOP politicians, these funders were simply acting to protect their cash cows from those of us who happen to give a damn about the planet.

A [recent report](#) by the Center for American Progress Action Fund shows that more than six out of every 10 Americans are represented by someone in Congress who denies the reality of ACD. According to the [report](#), 59 percent of the Republican House caucus and an amazing 70 percent of the Republicans in the Senate deny ACD is real. The [report](#) also reveals that, according to the US Census, 202,803,591 Americans are represented by an ACD denier.

Florida, a state notorious for having a government led by ACD deniers, faces yet another reality check from ACD. Fort Lauderdale, which is a boomtown of growth and construction, and also expects its population to grow by one-third in the next 15 years, is [hurtling headfirst toward the reality of ACD](#). Sea-level rise will eventually cause the city to be abandoned to the ocean.

Another blow for deniers came in the form of [recent polling data](#), which shows a record number of Americans now see ACD as a threat. According to Gallup polling, 41 percent of US adults believe ACD poses a “serious threat” to them during their lifetimes — a 4 percent increase over 2015, and the highest level ever recorded by Gallup.

[Gallup data also shows](#) that 64 percent of those polled worried about ACD “a great deal” or at least “a fair amount,” which is the highest level recorded since 2008. Meanwhile, only 36 percent of Americans said they did not worry about it, or only worried about it a little. Additionally, 65 percent of Americans now believe ACD is due to greenhouse gases released by human activity, a 10 percent increase on this topic over last year.

Another reality check came from Dr. James Hansen, who [declared recently](#), “We have a global emergency” due to ACD. Hansen noted that ACD is poised to render large parts of the world essentially uninhabitable by 2100 due to extremely hot temperatures.

[Recent data](#) from the National Oceanic and Atmospheric Administration revealed that the planet saw an “explosive” amount of annual carbon dioxide growth in the atmosphere during 2015, as the amount of carbon dioxide saw its largest single annual increase since record-keeping began.

A [recent study by the University of Queensland](#) gave yet another sobering warning, stating that global temperatures could rise much faster than expected, possibly even breaching the 2 degree Celsius mark much sooner than predicted (thus missing the politically agreed-upon goal of keeping warming below 2 degrees Celsius).

The final reality check for this month’s dispatch comes in the form of a cruise ship. For the first time ever, the Arctic passage that connects the Atlantic and Pacific Oceans is going to be [opened up to cruise liners](#) this summer. The first of them, the Crystal Serenity, will take more than 900 passengers paying over \$100,000 each through the perilous route that at one time foiled most explorers, due to there being too much thick ice throughout the summer — given that it is, after all, the Arctic.

Not anymore.

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Dahr Jamail, a Truthout staff reporter, is the author of [The Will to Resist: Soldiers Who Refuse to Fight in Iraq and Afghanistan](#), (Haymarket Books, 2009), and [Beyond the Green Zone: Dispatches From an Unembedded Journalist in Occupied Iraq](#), (Haymarket Books, 2007). Jamail reported from Iraq for more than a year, as well as from Lebanon, Syria, Jordan and Turkey over the last ten years, and has won the Martha Gellhorn Award for Investigative Journalism, among other awards.

His third book, [The Mass Destruction of Iraq: Why It Is Happening, and Who Is Responsible](#), co-written with [William Rivers Pitt](#), is available now on Amazon. He lives and works in Washington State.

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