

Climate Change: Saving the Planet, Saving Ourselves

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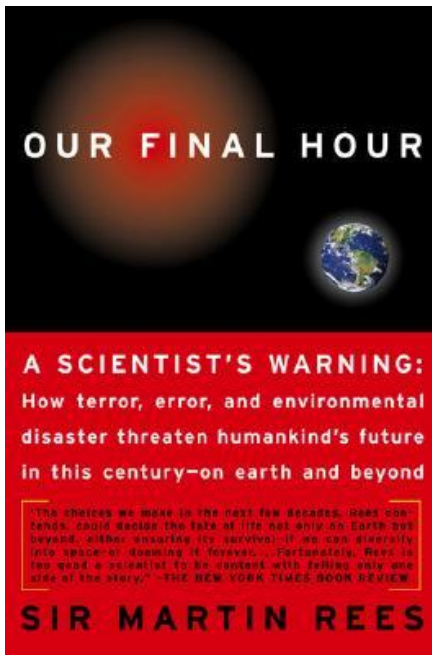
In-depth Report: [Climate Change](#)

The year 2017 was a record-breaking year for extreme weather and environmental catastrophes since records started to be kept in the 19th century. The Arctic experienced temperatures up to 70 degree F above normal. Many countries were baked in unusual heatwaves killing thousands. Incidents of droughts, extreme typhoons in the Pacific and hurricanes in the Atlantic, flash floods, and wildfires erupted daily in international news headlines. As recent as 2014, the World Meteorological Organization (WMO), following an analysis of NASA satellite footage of carbon dioxide movement around the planet, concluded that our warming planet has entered “unchartered territory at frightening speed.” But 2017 was also the year when the statistical figures came in for 2016.

The WMO reported that CO2 concentrations in the atmosphere rose at record speed. Currently it is at its highest level in 800,000 years. If anyone held any doubt that climate change is unreal, a fiction or fantasy, 2017 should have been wake up call to the most obstinate denialist. Scientists have warned about our current days of climate for several decades. For those who jumped on the bandwagon years ago when atmospheric and geological scientists voiced serious concerns about global warming and its dire consequences, it was a year with no huge surprises, except for the rapid acceleration of warming trends.

It is time that people, and more crucially our entire species, to accept the fact that climate change is the single most important threat to humanity’s survival. Certainly, a nuclear confrontation with North Korea or Russia is a horrifying scenario that could eliminate tens or even hundreds of millions of people. However, it is within humanity’s means to avoid nuclear war.

On the other hand it is highly improbable whether we can do much to deter climate change. Natural forces are far beyond our technological know-how and methods to control powerful planetary forces regardless of how many efforts to advance geoengineering or a dramatic shift to renewable energies are made. Perhaps it will slow the pace of global warming a little, but it too has its own destructive blowback. The Earth’s history is a long story of numerous species birthing, evolving and eventually going extinct. There is no manifest destiny for our species. There is no divine promise that humanity may not in the future follow in the footsteps of the dinosaurs. Our lives are not transcendent to Nature nor the multitude of other natural forces, animals, plants, microbes and other life forms and molecules upon which our existence depends. This is a simple truth we must learn. And it must be learned quickly and without further delay.



In a July issue of *New York Magazine*, journalist David Wallace-Wells published a worst case, doomsday scenario of climate change's impact upon human society and the environment before the end of this century. His essay, "The Uninhabitable Earth," was based upon many private interviews with unnamed scientists who were willing to voice their deeper concerns about catastrophic events and eroding conditions humanity will face unless a concerted global response to reduce greenhouse gases is not launched immediately. Aside from several of Wallace-Wells' factual errors, this was the first featured article to appear in a mainstream publication that focused on climate change's darker side. It became the most read article in *New York Magazine's* history. However, earlier in 2003, Cambridge University astrophysicist and philosopher Martin Rees released his influential *Our Final Hour* warning that the pace of humanity's destructive activities presents a 50:50 chance for our civilization to survive past the end of the 21st century. Carcinogenic and unhealthy foods and high levels of deadly toxic chemicals in common everyday products are only minor risks compared to many other postmodern technologies impacting our lives. Climate change, combined with the genetic engineering of new viruses, synthetic biology, artificial intelligence, and rape of the planet for its last remaining natural resources, according to Rees, is a recipe for certain disaster and will likely end in the extinction of our species. While many scientists and most of the general public who acknowledge the facts about anthropogenic climate change continue to hold enormous blind faith on human ingenuity and modern technology to prevent global warming's "end game," Rees and a distinguished, multi-disciplinary consortium of scientists at the Cambridge Center for the Study of Existential Risks acknowledge a darker side behind our over-reliance upon technological solutions—nuclear power, geoengineering, genetic manipulation of nature, etc.

Rees's 50:50 survival prediction was largely ignored after its publication over a decade ago. Nobody wants to accept that our survival is predicated upon a flip of a coin. Today, his predictions are being reevaluated and his supporters are increasing. And this is why Wallace-Wells' *New York Magazine's* article is so important. There are more than ample reasons to fear the consequences of climate change on our health, food security, our livelihoods, well-being, and the survival of future generations, including our children. Extinction is forever, whether it be in a hundred, as the more pessimistic scientists suggest, or a thousand years or more. It is only a matter of time before killer heat waves become the norm, chemical-based industrial agriculture collapses, national economies are devastated,

new plagues and health epidemics emerge, and climate and resource conflicts and wars increase.

All of these have been previously predicted over the years, and each is already starting to cast its shadow over the planet. Fear combined with hope is a powerful motivating factor to embrace change in personal habits and lifestyle. Therefore, it is critical today for humanity to become afraid, to become intensely afraid without becoming paralyzed. We condemn ourselves only by our failure to wake up while clinging to faux optimism, and by refusing to take upon ourselves the appropriate actions when confronted with an immediate emergency.

Climate change science poses certain obstacles difficult for the average person to accept. Perhaps most evident is that the science and predictions appear too abstract. They can seem too foreign and impersonal. The calving of an enormous ice sheet in Antarctica or rapid Himalayan glacier melt do not set off alarm bells that threaten our cozy lives in American and European cities and suburbs. The events are too distant. We know that sea levels are rising. Everyone in Miami is aware of this fact because flooded areas in the city are now commonplace. The citizens of the Maldives and Solomon Islands certainly know this because their nations are already sinking under rising sea levels. But to imagine one's home or condominium along the coast being partially submerged permanently in the Atlantic Ocean is a time too far off to think about. Consequently, real estate developers continue their frenzy to build more residences up and down the Florida coast, and people continue to flock to the Sunshine State to purchase a sunny place to retire. It is almost obscene to imagine that four of the top ten cities witnessing the largest influx of migrants within the United States are also the most compromised by more immediate climate change and extreme weather conditions: Houston (No. 1), Miami (No. 2), Phoenix (No. 7) and Orlando (No. 10). In August 2017, Hurricane Harvey submerged over 100,000 homes throughout the greater Houston metropolitan area. While the storm itself cannot be attributed to humanity's contribution to global warming, the hurricane's intensity and power is certainly related. Rising sea levels and warmer sea surface off the Texas coast — 7.2 degrees F above average making it the hottest spot of ocean surface in the world — are the two major factors that made Harvey so catastrophic and deadly. And similar extreme tropic storms are only going to increase as the Earth gets warmer. As the planet's surface heats further and sea levels rise, climatic events become increasingly more extreme. Consequently our lives become more stressed, miserable, insecure and uncertain.

The British philosopher poet G.K. Chesterton wrote,

“It isn't that they cannot find the solution. It is that they cannot see the problem.”

Individually, nobody can initiate the kind of grand massive change in collective humanity's relationship to the environment being demanded today. However, each of us can make determined and immediate changes in our personal lives and repair our personal rapport with the earth, nature, the ecology around our homes, neighborhoods and towns. No honor is gained by sitting and waiting for government to take concerted action to lessen greenhouse gas emissions and overhaul the federal regulatory system to hold private industries and polluters accountable. The corruption of Washington is beyond reform because government has itself become a private enterprise. Likewise, Americans are

waking up to the realization that their votes are useless. Those who need to change the most-elected officials and legislators, corporate CEOs and Chairmen, professional institutions- will not find the solutions until it is too late. In the meantime, they refuse to see the problem. And this is clearly evident by the fact that the fossil fuel industry is expanding rather than receding.

This chapter will lay out the fundamental problem humanity faces as climate change and global warming accelerate. Although a popular awareness of climate change is growing rapidly, most people still have difficulty connecting the dots between dramatic climate-related crises and calamities happening in far off regions of the planet and the impact these very same events have upon their personal lives. Therefore, I will be presenting the climate science in simple lay language, providing crucial examples, in order to make global warming a more personal affair. Unless the threats the Earth faces are understood and perceived as a threat to our personal well-being and that of our immediate families, loved ones and friends, the constructive, necessary change so direly needed will not unfold. Nevertheless, we must begin with ourselves because each of us possesses in her or his power the capacity to live in harmony with life and the greater whole of Nature. And then we must serve as an example of a conscientious, ecological lifestyle to those we meet.

In August 2017, the 900-plus foot tanker *Christophe de Margerie* set sail from Russia's North Sea to South Korea. The cruise's novelty was that for the first time in recorded history a sailing vessel crossed the Arctic's Northern Sea Route without the need for icebreakers. The ship traveled freely, unencumbered across the broken, melting ice fields. This small incident regarding a tanker carrying natural gas half way around the world may seem incidental and insignificant, barely newsworthy. But for climatologists and Arctic ecologists it was an unexpected and disturbing event. It was another indication that the planet is racing faster towards an ice free Arctic. It was also a warning that global warming is accelerating beyond expectations. Back in 2013, the University of California was predicting that ships would be incapable of traveling freely across the North Pole before 2050. However, the *Christophe's* passage over the Arctic's southern frontier in under seven days holds a record. And this voyage would have never been possible without the acceleration of anthropogenic climate change.

As the Russian vessel made its way across the crown of the planet, at the opposite pole another surprising event occurred. On July 12, 2017, an iceberg, approximately 2,200 square miles or roughly the size of the state of Delaware, broke free from the Larsen C icesheet in Western Antarctica. This was the third gigantic Antarctic icesheet to collapse since 1995, and the largest to date. Glaciologists were startled because the speed of the sheet's disintegration was miscalculated. Although the break, commonly known as "calving," had been predicted several years prior, it was the suddenness that was disturbing. A week later, glaciologists' predictions were proven wrong a second time. It had not been a clean split as calculated earlier. Instead, like a stone hitting an auto's windshield, the break triggered a network of fissures indicating that the entire icesheet was quickly fragmenting and more sheets would be calving in the near future. Antarctica is often viewed as the last place on Earth that will be touched by global warming due to human activity. However, 2016 observed a record low of sea ice, according to the University of Washington, and 2020 is now targeted as the turnaround point when the degradation of the southern polar icesheets will be directly the result of human activity. Already, atmospheric temperatures in the Antarctic have been rising annually by 4-6 C. As warming seasons lengthen, ice sheets melt and calf faster and eventually the shelves thin further and

disappear.

For the twenty-first century, these two geological events, and many others, are indicative of the greatest threat to humanity: global warming and climate change. For the first time in human history, our species has entered an era of extraordinary and anxious uncertainty. Many are bewildered when they hear about the loss of an Antarctic ice sheet, prolonged droughts, temperatures reaching above 50 degree Celsius, flash floods, and uncontrollable wildfires. What does it mean when we hear that 2016 was the third year in a row to set a new record for average global temperatures? Is this simply a fluke? An aberration in the usual climate patterns we have become accustomed to? Will it continue or end?



The international scientific community is nearly unanimous in confirming that global warming is accelerating and human activity is its primary driving force. There is also near unanimous certainty the course we are following to reach catastrophic benchmarks is inevitable and completely outside our civilization's control. Those scientists who resist the international consensus are far and few between. The majority of dissenters lack a professional background in the Earth and Space sciences, climatology, glaciology and other disciplines directly associated with measuring and observing changes in the atmosphere and the Earth's geology. For several decades, scientists the world over have been running simulated climate models repeatedly to determine whether increased warming is anthropogenic or caused by human activity. And repeatedly whenever human-generated greenhouse gases-CO2, methane, nitrous oxide, water vapor, dust, etc.- are removed from their equations, they are unable to account for the sudden rise in the Earth's temperature as the result of natural phenomena alone. Already the Earth is warmer than it has been for the last 120,000 years. However, when these same models introduce greenhouse gases into their equations, they accurately correlate with the actual temperature trends being witnessed. Long-term, 90% of planetary warming is linked to the actions of our species. The remaining 10%, according to Konrad Steffen, director of the Swiss Polar Institute, is "unexplained.

It is not uncommon for climatologists to underestimate the swiftness of climate-related events. The statistical and computational models to portend timelines for certain climate tipping points, although highly sophisticated, are unable to account for all variables and trends, particularly unforeseeable catastrophes such as mammoth biomass emissions from wildfires and other natural and human calamities. For example, researchers would not predictable calculate the explosion of BP's Deep Horizon facility that discharged up to 520,000 tons of methane into the atmosphere, the equivalent of burning upwards to 3.1 million barrels of crude oil. Consequently dire findings are either found wanting or too sober as new observations upgrade earlier forecasts. Very soon the Arctic region will be ice free throughout the year. Conservatively the Arctic will lose all its ice during the warmest

months before 2030. We still don't know precisely many of the long-term consequences to the polar region and the planet's biosystems once this tipping point is reached. However, there are approximately four million people living along the Arctic Circle, including hundreds of thousands of indigenous people. Very likely, most of the coastal communities will be forced to migrate in the near future as shorelines dependent upon ice, freezing temperatures and colder seasons start to crumble and disappear. Acceleration is also exasperated by the thawing permafrost and tundra, and the massive release of methane and nitrous oxide, in the Arctic North. In point of fact, the polar North is collapsing.

The loss of the Arctic's albedo, the white world of ice that reflects the Sun's radiation back into space, has already passed its tipping point. For as long as humans have been on the third planet from the Sun, we will never return to a time when polar bears and seals thrived on frozen ocean surfaces. We can no longer prevent the Western Antarctic icesheets, including the Larsen and Ross sheets, from slipping away into the dark oceanic waters. The rush of fresh water from melting glaciers in Greenland are beyond our technological means to prevent the disruption in the Atlantic Ocean's conveyor belt. Based upon satellite data feeds, the Greenland sheets, according to David Barber at the University of Manitoba, are now melting six hundred times faster than the current modeling trends suggest.

Similarly, due to many complex and unknown factors, it is exceedingly difficult to ascertain exactly how high the oceans will rise if all Antarctic ice melts. For example, one of the largest Antarctic icesheets rests on solid ground below sea level. On the one hand, this makes the sheet far more unstable and geologists continue to try to determine its global impact following its last breath. Nevertheless the loss of the Ross icesheet in West Antarctica alone could raise sea levels 10-13 feet (3-4 meters). In 2014, NASA's Jet Propulsion Laboratory at the University of California at Irvine determined that the loss of the West Antarctic sheet is unstoppable. The circulation of the ocean's warmer waters beneath the ice continues to thin and melt the shelf. No technology nor even a drastic reduction in greenhouse gas emissions can prevent it. As if a warhead missile had already been launched, we can only sit and wait to experience the consequences befalling us upon impact.

For many years, scientists were not terribly concerned about a rapid melt of Antarctic icesheets. The southern pole has always been thought to be the last place on earth to experience global warming. For the past 40 years, winter ice has actually increased—until recently. In 2016, University of Washington researchers noted a perfect storm of conditions that, if repeated annually, will increase Antarctic ice melts and possibly trend towards declining ice buildup during the winter months. One of the causes the university scientists identified was a change in El Nino patterns that are now reaching the Antarctic.

In May 2014, Climate Central provided a probable scenario of American land lost due to a 10 foot increase in sea levels. Approximately 28,800 square miles of land mass would disappear with rising waters and force the dislocation of over 12 million people, primarily along the US eastern seaboard. Twenty-seven cities in Florida would be the most seriously affected. The report determined that the cost of lost property would be upwards to \$950 billion—a very conservative figure. The majority of the loss would be in the southern states but also a third in New York and New Jersey.

The complete loss of 5 million cubic miles of ice now blanketing the Earth, including large mountain glaciers, could raise sea levels by 216 feet. San Francisco Bay Area would be a cluster of small islands. Along with Los Angeles and San Diego, the American East Coast

would vanish. Bye bye London, Venice, Netherlands and most of Denmark. From Bangladesh across Southeast Asia to the Cardamom Mountains in Cambodia, only small islets would remain. Mt Fuji would remain as a standing volcano bulging monolithically out of the Pacific. Four out of five Australians would be displaced and vast regions of Africa would be uninhabitable. Scientists are hopeful that a complete ice free planet is over a thousand years down the stretch. But without doubt humanity has entered uncharted territory on the geological map. Our technological tools and modeling systems, albeit highly sophisticated, are still incapable of the daunting task to establish precise timelines. Unpredictable events and catastrophes affecting feedback loops, such as wildfires, volcanic eruptions, oil fires or industrial plant explosions—such as the Arkema chemical plant explosion near Houston after Hurricane Harvey—and the numerical increase in extreme weather events cannot be accurately calculated into greenhouse gas simulations. Harvey’s rainfall is estimated to have been the worst in US history and the most devastating storm to hit Houston. Nineteen trillion gallons of water. For five days, the “capitol” of America’s fossil fuel industry was flooded with torrential rains and wave surges, shutting down and damaging oil refineries and chemical plants along Texas’ eastern coast. Over one million pounds of toxic pollutants and greenhouse gases were released. Such events fall outside the realm of computerized simulations and cannot be accurately included in predictive climate models. For this reason, scientific conclusions are often far more conservative than the actual state of the planet. Therefore we must start to realize that there is no precedent on the Earth’s 4.6 billion year geological timeline to serve as a reliable baseline to accurately calculate climate-related events in the Anthropocene Age.

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