

“All hell will break loose” — Bleak vision of planet’s future predicted by climate scientist James Hansen

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“If Greenland fresh water shuts down deep water formation and cools the North Atlantic several degrees, the increased horizontal temperature gradient will drive superstorms, stronger than any in modern times. All hell will break loose in the North Atlantic and neighbouring lands.” —Dr. James Hansen

So says Dr. Hansen in the 15-minute video, *Ice Melt, Sea Level Rise and Superstorms Video Abstract*, embedded at the bottom of this post. A full transcript of the video is available at [Ice Melt, Sea Level Rise and Superstorms: The Threat of Irreparable Harm](#) by James Hansen, Climate Science, Awareness and Solutions, March 22, 2016. Hansen says this about the video: *“The main point that I want to make concerns the threat of irreparable harm, which I feel we have not communicated well enough to people who most need to know, the public and policymakers. I’m not sure how we can do that better, but I comment on it at the end of this transcript.”*

According to Common Dreams’ article about Hansen’s new report:

“The peer-edited report examines growing ice melt from Antarctica and Greenland and studies how that melting has historically amplified “feedbacks that increase subsurface ocean warming and ice shelf melting.” Taking into consideration “rapid, large, human-made climate forcing,” the study predicts a much more accelerated rate of sea level rise of several meters, beyond that which humanity is capable of adapting to.”

To read Common Dreams’ original short piece about the report and watch Hansen’s 15-minute video, click on the following linked title. Optionally, below is a repost of the story, along with the embedded video. As well, there is a SEE ALSO link to Hansen’s abbreviated version of the original paper – “abbreviated” but still long and highly technical. In addition, this link also provides links to 3 newspaper stories about Hansen’s latest research.

[James Hansen's Climate Bombshell: Dangerous Sea Level Rise Will Occur in Decades, Not Centuries](#) by Lauren McCauley, Common Dreams, March 22, 2016

Even scientists who question findings say ‘we ignore James Hansen at our peril.’

Dr. James Hansen, the former NASA scientist who is widely credited with being one of the first to raise concerns about human-caused global warming, is a co-author of a new report predicting that the world will undergo devastating sea level rise within mere decades—not centuries, as previously thought.

The [report](#), published Tuesday in the open-access journal *Atmospheric Chemistry and Physics*, paints an even bleaker picture of the planet’s future, positing that continued high fossil fuel emissions will “increase powerful storms” and drive sea-level rise of “several meters over a timescale of 50 to 150 years.”

Hansen, who now serves as the director of the Climate Science Awareness and Solutions program at Columbia University Earth Institute, published the findings along with an international team of 18 researchers and academics.

As the abstract states, the predictions “differ fundamentally from existing climate change assessments.” For example, the United Nation’s Intergovernmental Panel on Climate Change (IPCC) in 2013 [predicted](#) three feet of sea level rise by 2100 if greenhouse gas emissions continue unabated.

A [draft version](#) of Hansen’s paper [released](#) last year [provoked](#) wide debate among climate scientists. Nonetheless, Michael Mann, a renowned climate scientist with the University of Pennsylvania, who is among those questioning some of the report’s “extraordinary” claims, [told](#) the *New York Times*, “I think we ignore James Hansen at our peril.”

The peer-edited report examines growing ice melt from Antarctica and Greenland and studies how that melting has historically amplified “feedbacks that increase subsurface ocean warming and ice shelf melting.” Taking into consideration “rapid, large, human-made climate forcing,” the study predicts a much more accelerated rate of sea level rise of several meters, beyond that which humanity is capable of adapting to.

Or, as Hansen put it, “We’re in danger of handing young people a situation that’s out of their control.”

These staggering claims come as climate scientists continue to reel from the [frightening speed](#) at which the Earth is warming. On Monday, the World Meteorological Organization (WMO) issued a report [warning](#) that climate change is occurring at an “alarming rate” and that world leaders must act to curb greenhouse gases now, “before we pass the point of no return.”

In a video released alongside the new report, Hansen, who [left](#) his position at NASA in 2013 so that he could fully commit himself to fighting climate change, says that the paper explores the consequences of continued greenhouse gas emissions. **These include “superstorms stronger**

than any seen in modern times,” sea level rise that will erase “all coastal cities,” and, finally, “how soon we will pass points of no return.”

[*Ice Melt, Sea Level Rise and Superstorms Video Abstract*](#) (15-min)

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Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming could be dangerous

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Abstract. We use numerical climate simulations, paleoclimate data, and modern observations to study the effect of growing ice melt from Antarctica and Greenland. Meltwater tends to stabilize the ocean column, inducing amplifying feedbacks that increase subsurface ocean warming and ice shelf melting. Cold meltwater and induced dynamical effects cause ocean surface cooling in the Southern Ocean and North Atlantic, thus increasing Earth's energy imbalance and heat flux into most of the global ocean's surface. Southern Ocean surface cooling, while lower latitudes are warming, increases precipitation on the Southern Ocean, increasing ocean stratification, slowing deepwater formation, and increasing ice sheet mass loss. These feedbacks make ice sheets in contact with the ocean vulnerable to accelerating disintegration. We hypothesize that ice mass loss from the most vulnerable ice, sufficient to raise sea level several meters, is better approximated as exponential than by a more linear response. Doubling times of 10, 20 or 40 years yield multi-meter sea level rise in about 50, 100 or 200 years. Recent ice melt doubling

times are near the lower end of the 10–40-year range, but the record is too short to confirm the nature of the response. The feedbacks, including subsurface ocean warming, help explain paleoclimate data and point to a dominant Southern Ocean role in controlling atmospheric CO₂, which in turn exercised tight control on global temperature and sea level. The millennial (500–2000-year) timescale of deep-ocean ventilation affects the timescale for natural CO₂ change and thus the timescale for paleo-global climate, ice sheet, and sea level changes, but this paleo-millennial timescale should not be misinterpreted as the timescale for ice sheet response to a rapid, large, human-made climate forcing. These climate feedbacks aid interpretation of events late in the prior interglacial, when sea level rose to +6–9 m with evidence of extreme storms while Earth was less than 1 °C warmer than today. Ice melt cooling of the North Atlantic and Southern oceans increases atmospheric temperature gradients, eddy kinetic energy and baroclinicity, thus driving more powerful storms. The modeling, paleoclimate evidence, and ongoing observations together imply that 2 °C global warming above the preindustrial level could be dangerous. Continued high fossil fuel emissions this century are predicted to yield (1) cooling of the Southern Ocean, especially in the Western Hemisphere; (2) slowing of the Southern Ocean overturning circulation, warming of the ice shelves, and growing ice sheet mass loss; (3) slowdown and eventual shutdown of the Atlantic overturning circulation with cooling of the North Atlantic region; (4) increasingly powerful storms; and (5) nonlinearly growing sea level rise, reaching several meters over a timescale of 50–150 years. These predictions, especially the cooling in the Southern Ocean and North Atlantic with markedly reduced warming or even cooling in Europe, differ fundamentally from existing climate change assessments. We discuss observations and modeling studies needed to refute or clarify these assertions.

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SEE ALSO

[Abbreviation of Ice Melt Paper](#) by James Hansen et al., Climate Science, Awareness and Solutions, March 22, 2016 – This is a shorter, but still highly technical version, of the *Ice Melt, Sea Level Rise & Superstorms* paper, largely extracted from the original report. In addition, this source provides: Link to Hansen’s *Ice Melt* paper; Link to video discussion; Link to Hansen’s web page; and Links to 3 newspaper articles about Hansen’s *Ice Melt* study.