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## 3 Ways the Arctic Meltdown Threatens the Whole World

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By Kassie Siegel

Director, Center for Biological Diversity's  
Climate Law Institute

This is how an ecosystem dies. The extent of summer sea ice across the Arctic recently reached the lowest point on record, according to satellite measurements from the National Snow and Ice Data Center.

If the polar meltdown continues at this pace, some experts say, the Arctic sea could be ice-free for a day or more by 2020. For polar bears and many other amazing Arctic animals, this is the beginning of the end. They depend on sea ice for survival. If we allow the ice to vanish, they will go with it.

But as devastating as those extinctions will be, the consequences won't stop there. The death of the Arctic is likely to affect you personally -- whoever you are and wherever you live.

That's because, while Arctic sea ice is a victim of global warming, it's also one of the planet's most important defenses against the climate change that results from pumping more than 30 gigatons of man-made carbon dioxide pollution into the atmosphere every year. And that defense is about to fail.

The exact consequences are hard to predict. But here are three possible outcomes that could wreak havoc from Boston to Bangladesh:

### 1. More extreme weather.

Call it the Earth's air conditioning. Or the planet's sun hat. Whatever metaphor you use, Arctic sea ice plays a critical role in regulating the world's climate and ocean by reflecting most of the sun's energy back into space and keeping the polar region cool.

As the ice pack melts, more of the sun's energy is absorbed by the underlying seawater, spurring the Arctic to heat up at an ever-faster pace. Recent studies (like this one and this one) have linked melting sea ice and accelerating Arctic warming to changes in the jet stream that increase the frequency of extreme weather events in the United States and other mid-latitude regions of the Northern Hemisphere. That means more droughts, more floods, more heat waves and more extreme snow events.

The United States has already suffered an onslaught of recent weather weirdness - including a devastating drought that has destroyed thousands of acres of crops - attributed by prominent scientists to climate change. As the Arctic melts and the jet stream changes, we can expect more and worse.

The harm to our economy, our infrastructure and even our personal safety will be severe. And because North America is a breadbasket to the world, our rising risk of crop failures will have global consequences.

### 2. Massive new oil and gas drilling.

Until now, the Arctic Ocean has mostly been off limits to offshore drilling. But in a dire sign of what's to come, the Obama administration just gave initial approval to Shell Oil's plans to begin controversial and dangerous oil drilling in Arctic waters near Alaska.

The Arctic contains massive oil and gas deposits. As the sea ice melts, more and more will become accessible to oil companies around the world.

That's especially disturbing because carbon dioxide levels over the Arctic recently reached 400 parts per million (or ppm). For perspective, consider that scientists say we need to reduce atmospheric carbon levels to 350 ppm to avoid catastrophic climate change.

That requires transitioning quickly to clean energy sources - not rushing to extract every last drop of carbon-rich fossil fuel buried in the dying Arctic.

### **3. Unleash the clathrates!**

They lie deep beneath the surface of the Arctic Ocean -- small, icy structures called “clathrates” that collectively contain a huge volume of methane, an incredibly potent greenhouse gas.

That methane is safely caged -- for now. But as the Arctic sea ice melts, the ocean warms. And eventually that warming will release the methane. A related danger: As the Arctic warms, we may see massive permafrost melt leading to releases of huge amounts of methane and carbon dioxide.

How quickly these vicious “climate feedbacks” will develop is no easy thing to predict. But methane is already being emitted from thousands of sites in the Arctic, according to research published earlier this year in the journal *Nature Geoscience*. And a new study in *Nature* finds there may be far more carbon escaping from permafrost in Arctic Siberia than previously thought.

Such methane releases have been linked to massive climate changes in the earth’s past. These “climate bombs” have the potential to trigger runaway climate change. Their fuses may be long or short. But by melting the Arctic sea ice, we are launching a high-stakes climate experiment. The results could be devastating.

### **A Wake-up Call**

None of this is inevitable. This year’s unprecedented sea ice decline could be the wake-up call our society badly needs.

Despite the posturing and inaction of politicians, Americans realize that climate change is a growing threat. But we need to help our leaders understand that it’s time to move from debating the climate crisis to doing something about it. We should demand, for example, that the Environmental Protection Agency move much more quickly to use the Clean Air Act to cut greenhouse gas pollution.

We have to act fast. If we don’t, we’ll have even more to mourn than the death of the Arctic.