

My name is Maren Cooke, and I live in Pittsburgh. I'm a planetary scientist by training, but am now doing mostly environmental education and activism — because it's necessary.

Last week, Ophelia made landfall on the mid-Atlantic, and dumped almost nine inches of rain on Jacksonville, North Carolina. Philippe is brewing in the Atlantic, as are a few other systems yet-unnamed in this unusually active storm season.

Last month, we saw Florida get hammered by Hurricane Idalia, described as a once-in-a-lifetime storm for the Gulf Coast. Idalia gathered more strength because of the elevated water temperature in the Gulf of Mexico, similar to a **hot tub**. I can only imagine what that's doing to the marine life there!

Back in graduate school, I did a research project on atmospheric vortices, inspired by the discovery of dust devils on Mars. So I can tell you that storms are created and strengthened by hot areas on the surface: warm air rises, and more air comes in to replace it — and like an ice skater pulling in their arms, the conservation of angular momentum spins it up. Plus, the warmer water puts more moisture into the air, meaning more rain!

Also last month, Maui was devastated by unprecedented wildfires. All this year (since late winter!) northern Canada has been on fire — and the climate connections are clear. High temperatures and low humidity mean dry soil and dying vegetation, and increased storms mean more lightning to set that

tinder aflame. This has led to terrible air pollution all across our region — though for the most part, conventional air pollution is caused more directly by fossil fuel combustion, so if we solve climate, we solve air pollution.

With 5% of Canadian forest burned already this year, the amount of carbon released is astronomical — over 2 billion tons, three times the typical carbon budget of the entire country. Normally, Canadian forests are a carbon **sink**! Climate change is causing these unprecedented fires, and they are in turn exacerbating the problem.

A similar feedback mechanism involves polar sea ice. Ice at the poles naturally waxes and wanes with the seasons, but each year the annual maximum is less. This leaves more dark ocean water exposed,

The relatively stable climate we've had for millennia is being violently disrupted because of the rapid redistribution of fossil carbon, millions of years of deposition being extracted and emitted into the air in just a couple of hundred years, more than half in the last three decades. After a slight dip at the start of the pandemic, fossil energy use, especially coal, rebounded with vigor in 2021. This is the wrong direction!

Pennsylvania is woefully behind the eight-ball, ranking 45th in the nation in renewables. Basically, the more emissions we can cut sooner, the better!

While continued technological innovation will be able to help, carbon capture & sequestration and “blue hydrogen” are not the answer. They are energy intensive, and thus very expensive, and result in more fossil carbon being released than if we just burned fossil gas in the first place, which we obviously can’t afford to do. It comes down to TANSTAAFL — There Ain’t No Such Thing As A Free Lunch. We’re going to have to stop relying on fossil fuels, and the quicker we can phase them out, the better it’ll be for everyone. We could have done this slowly, at a mere 1% a year or so, if we’d taken action when climate change became well-understood; Jules Charney presented the National Research Council report to Congress in 1979. But we’ve allowed ourselves, nationally and locally, to become enmeshed in the goals of the fossil energy industry. We need to break free, and that means a comprehensive greenhouse gas inventory (because you can’t control what you don’t measure), and swift, aggressive action to transition off of fossil fuels!

People don’t want natural gas; we want our homes warm in winter, and our dinners cooked. We don’t want gasoline; we want to get from one place to another. If fossil fuel companies can transform into energy companies, if public transportation can be prioritized, everyone benefits. Fossil methane was sold to Pennsylvanians on the promise of jobs and economic prosperity, but those were false promises. In fact, shale gas production correlates with economic decline and population loss in most of the Marcellus shale play (not to mention the terrible toxic burden borne by people living there).

And in general, there are more jobs to be had in a renewables-based economy than in our current fossil-based economy; we just have to do the work to get from here to there. And we need to ensure a just transition that looks out for displaced fossil workers as well as communities impacted by climate change.

I have two children, now in their twenties. Many of you have kids, and maybe grandkids. What kind of a world is their generation inheriting?

Maren Leyla Cooke, PhD
6745 Forest Glen Road
Pittsburgh 15217

References:

<https://www.eenews.net/articles/record-warm-waters-power-hurricane-idalias-path-to-the-coast/>

<https://www.washingtonpost.com/weather/2023/09/25/atlantic-hurricane-season-ophelia-philippe-october/>

https://en.wikipedia.org/wiki/2023_Canadian_wildfires

<https://www.cbc.ca/radio/ideas/world-on-fire-canada-s-worst-wildfire-season-on-record-1.6946472>

<https://www.worldweatherattribution.org/climate-change-more-than-doubled-the-likelihood-of-extreme-fire-weather-conditions-in-eastern-canada/>

<https://www.theguardian.com/world/2023/sep/22/canada-wildfires-forests-carbon-emissions>

<https://nsidc.org/arcticseaicenews/>

<https://ieep.eu/news/more-than-half-of-all-co2-emissions-since-1751-emitted-in-the-last-30-years/>

<https://why.org/articles/pennsylvania-renewable-energy-rank/>

<https://ohiorivervalleyinstitute.org/fracking-counties-economic-impact-report/>

<https://www.wnycstudios.org/podcasts/takeaway/segments/ohio-plastic-pollution>

<https://citizensclimatelobby.org/remi-report/>

<https://www.ihrb.org/explainers/what-is-just-transition>