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Month in Review • May 2025
woodwellclimate.org



Momentum in the face of uncertainty

Dr. Max Holmes President & CEO

When it comes to climate science and policy, recent news has been grim—withdrawal from the Paris Agreement and Intergovernmental Panel on Climate Change, dismantling of the National Climate Assessment, discontinuation of NOAA's Billion Dollar Disaster tracking, the threat of major cuts to science staffing and funding across multiple federal agencies, and more.

These moves cede U.S. leadership on the world stage and put American communities at increased risk, and we will continue to speak out on these issues.

However, it is also important to remember that there is good and important work that continues. Over the course of the past several weeks, Woodwell Climate's scientists and experts have:

- Produced a policy brief and participated in a Congressional briefing about the need for insurance regulation to evolve to meet the challenges of climate change;
- Delivered a country-wide climate risk assessment for Ethiopia to scholars and government officials in Addis Ababa;
- Put Arctic change front and center with a building-sized mural of maps in Telluride, CO that is expected to be seen by more than a million people over the coming year;
- Submitted public comment to the Department of Homeland Security emphasizing the impact and value of FEMA investment and programs in helping communities prepare for and respond to climate-fueled natural disasters;
- Highlighted the importance of Indigenous leadership in land management at a "power-packed symposium" at Mountainfilm festival;
- Traveled to Toolik Field Station to install a greenhouse gas monitoring station and begin work on EvOME, an NSF-funded institute aimed at understanding how species and ecosystems are evolving in response to rapid Arctic warming.
- Installed new laboratory instrumentation secured through a Congressional appropriation that will improve our ability to measure key nutrients in water samples and soil extracts;
- Participated in a panel discussion "Brazil's strategic role in building a resilient and sustainable global food system"

at Financial Times' Brazil Summit: Balancing Growth, Sustainability and Global Influence.

- Hosted a workshop for local researchers involved in DIY development of environmental sensors.
- Welcomed the first of more than a dozen interns who will join our science teams in Falmouth and in the field this summer.

This list is long, but it is far from exhaustive. The point is, while we are seeing damaging impacts across the science ecosystem—and starting to feel some close to home—we are not hamstrung, stalled, or paralyzed. We are forging ahead relentlessly, with more determination than ever.

We are gearing up for a busy field season and meetings in D.C. regarding boreal wildfire, as well as significant participation at the UN's June Climate Meetings in Bonn and TED Countdown in Nairobi.

In less than two weeks, we will welcome former Presidential Science Advisor Dr. John Holdren to campus for an important conversation about enduring impact in the face of political turbulence—please join us in person or on the livestream. And we will have another very special guest to celebrate our 40th anniversary at our July Climate Conversations event (details coming soon).

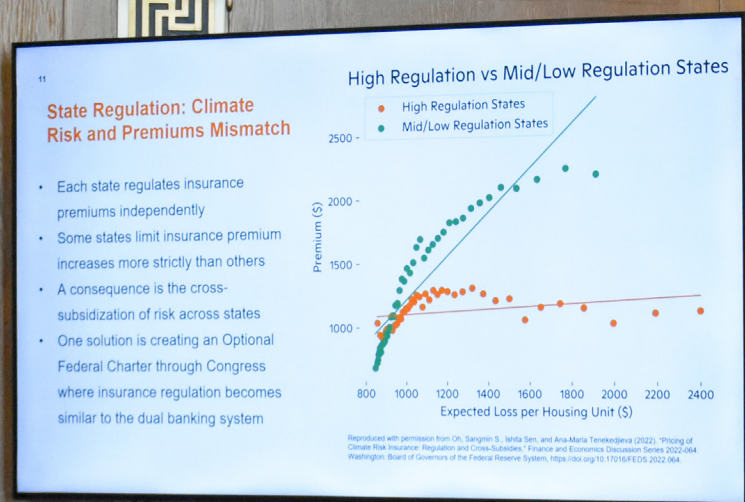
I cannot and will not pretend that everything is smooth sailing right now. Far from it. We have been in this fight for four decades—since the beginning—and in many ways the challenges have never been greater. But we remain committed and determined to do everything we can to overcome the obstacles, to hold true to our values, and to chart the course to a positive future for all.

As part of Team Woodwell, thank you for all you do to make this difficult but essential work possible. Now, more than ever.

Onward,

Max





Briefing drives home impacts of climate change on the insurance industry

Insurance policy needs to change with the climate to better protect people

Sarah Ruiz Science Writer and Editor

With stronger storms, higher seas, and hotter days, climate change is disrupting the assumptions on which most of our modern systems were established. The insurance industry is feeling the acute impacts of increasingly extreme weather and disaster events, and regulatory policy has failed to keep up—putting communities and companies at risk of huge financial losses.

That's the message Woodwell Climate Research Associate Dominick Dusseau carried to policymakers during a congressional briefing in Washington DC on May 6. Woodwell Climate has conducted an extensive analysis of climate-caused vulnerabilities within the insurance industry. In a recent policy brief, Dusseau and Policy Analyst Jamie Cummings outlined major risks, as well as proposed regulatory solutions.

One of the chief concerns is the use of “catastrophe models.” Insurance companies calculate potential financial losses from natural disasters based on these models, which estimate the likelihood of something like a category 5 hurricane occurring in a particular year based on historical data. What these catastrophe models generally do not take into account are increases in the frequency and intensity of such events due to climate change. Additionally, population expansion in risk-prone areas continues to increase the potential for damage.

“Climate change is making extreme weather events less predictable and that uncertainty makes it harder for models to get it right,” says Dusseau.

This means the cost of existing insurance policies in high-risk areas like coastal or wildfire-prone communities may not reflect the actual risk to life and property. Alternatively, those insurers who do account for climate change might raise premiums out of the range of affordability or be unable to price high-risk areas appropriately due to regulation and decide an area is altogether uninsurable—a trend being felt acutely in California in recent years.

Catastrophe models are also proprietary, meaning the price of similar insurance policies can vary widely depending on which one a company uses, and lack of transparency leaves the public in the dark on what's accounting for those differences.

“Depending on which model insurers use, the premiums could be significantly different,” says Dusseau. “This is one of the reasons that greater review and regulation of these models is necessary, so that the risks associated with those premiums are calculated accordingly.”

Solutions, Dusseau and Cummings propose, lie in coherent federal regulation. The brief proposes a national public catastrophe model and rules around fair and appropriate pricing, as well as more accessible public information about insurance. The report also proposes we explore alternative methods of insurance, like parametric policies that cover lost income when a certain metric, like temperature, breaches a threshold, like heat that makes working conditions unsafe.

To get this information into the hands of policymakers, Dusseau participated in a panel briefing for congressional staff hosted by the Environmental and Energy Study Institute (EESI). The briefing identified areas where Congress should play a role in bolstering the long-term resilience and insurability of communities. Dusseau highlighted areas of Woodwell's report, speaking on the shortcomings of catastrophe models, as well as areas for improvement within the National Flood Insurance Program.

Senator Sheldon Whitehouse of Rhode Island provided opening remarks at the briefing. Whitehouse is the Ranking Member of the Senate Environment and Public Works Committee and former chair of the Senate Budget Committee. Through both his current and former leadership positions, he has been a steadfast champion of climate mitigation and adaptation, underscoring the economic ramifications of climate change.

“The insurance industry makes trillion dollar bets anticipating what's going to happen in the real world, and it also has a fiduciary duty... to get it right,” said Whitehouse.



Woodwell Climate releases country-wide climate risk assessment for Ethiopia

The 100-year flood event currently impacts more than 840,000 structures and causes greater than \$1.47 billion (2025 USD) in building damages across Ethiopia, according to a country-wide climate change risk assessment from the Woodwell Climate Research Center. The report, titled “Climate Risk Assessment: Ethiopia,” will be released on May 14 and offers granular projections on risk factors that will impact Ethiopia's communities over the coming decades.

“Ethiopia faces big climate risks like droughts, extreme rainfall, unreliable stream flows, and floods, but they're not impossible to overcome. By using robust data, focusing on communities, and taking a joined-up approach (like Woodwell Climate Research Center suggests), Ethiopia can become more resilient and create a sustainable future for everyone. The time for action is now,” said Professor Engdawork Assefa with the Center for Environment and Development at Addis Ababa University.

“The climate risk assessment enhances Ethiopia's capacity to take targeted action, boosting its national climate goals under NDC 3 and supporting its case for equity in Loss and Damage frameworks. By offering a scientific foundation, it enables Ethiopia to strategically direct investments, policies, and partnerships toward a resilient future,” said Abbas Mohammed with the Ethiopian Ministry of Planning and Development.

The assessment, completed in collaboration with the Addis Ababa University and Ministry of Planning and Development, reveals that climate change will reshape weather patterns across Ethiopia, posing challenges to water availability for agriculture and flooding in the built environment. Key findings include:

The country faces big climate risks like droughts, extreme rainfall, unreliable stream flows, and floods

Jamie Cummings Policy Analyst

- **Drought risk:** Extreme drought risk is projected to increase moderately in southeastern Ethiopia by 2050 and significantly in northwestern Ethiopia by 2070, with some communities seeing a 10-year drought becoming a 5-year drought.
- **Streamflow changes:** Mean annual streamflow volumes in north central Ethiopia are projected to more than double, with the annual 7-day mean maximum flows projected to be 2-2.5 times larger at key measurement points by 2050.
- **Extreme precipitation:** The historical 100-year rainfall amount is projected to increase 20%-30% by 2050 and 30%-40% by 2070 for the majority of Ethiopia, with the probability of the current 100-year event at least doubling by 2050.
- **Flood impact:** The 100-year flood currently impacts more than 840,000 structures and causes greater than \$1.47 billion (2025 USD) in building damages, with risk concentrated in the central Rift Valley and Somali region.

“Climate shocks threaten food security, yet targeted investments in closing the yield gap—through improved seeds, irrigation, livestock practices, market access, and insurance—can help mitigate crisis impacts,” said Dr. Abay Yimere, CEO of African Climate Center for Adaptation and Mitigation and Woodwell collaborator.

The report underscores that while Ethiopia has established a strong policy landscape for climate action through several strategic initiatives, including the National Adaptation Plan (NAP) and the Climate Resilient Green Economy Strategy (CRGE), localized data insights are crucial for evidence-informed approaches to resilience.

“Ethiopia has done excellent work on climate research and resilience, and it is an honor to be able to support those efforts with our science,” said Woodwell President Dr. Max Holmes. “We hope that this risk assessment will help our Ethiopian government partners prepare for additional climate change impacts and invest in adaptation.”

Upcoming workshop to share climate analysis skills

In conjunction with the report launch, Woodwell will host a capacity-sharing workshop after the report delivery in Addis Ababa. The workshop will provide participants with technical skills in climate data analysis fundamentals, including QGIS exercises and Google Earth Engine techniques.

“Knowledge sharing and growing capacity is a crucial part of building climate resilience,” said Dom Dusseau, Lead Author on the report who will be facilitating portions of the workshop. “I am very excited for the bi-directional skill transfer that will be taking place.”

The full-day workshop will include hands-on exercises, discussions on climate analysis methodologies, and resources for continued learning.

DIG DEEPER

Read the full climate risk assessment:
[woodwellclimate.org/
 climate-risk-assessment-ethiopia](https://woodwellclimate.org/climate-risk-assessment-ethiopia)





Cartographer Greg Fiske selected to create mural at Mountainfilm

Fiske's "Cartographies of Arctic Change" shows the beautiful side of climate data

Sarah Ruiz Science Writer and Editor

Each year at the Mountainfilm documentary film festival a mural is erected on a coffee shop in downtown Telluride, Colorado—a mountain mining town turned world-class winter sports destination. The festival showcases films with thought-provoking themes including environmental justice, Indigenous sovereignty, racial equity, and our collective responsibility to care for the natural world. These murals carry those themes year-round, becoming an integral part of Telluride's main avenue and vibrant art culture. Past murals have been commissioned from artists including Shepard Fairey and Banksy.

This year, Woodwell's lead cartographer Greg Fiske was selected to display his maps as art for the mural wall. The resulting piece, "Cartographies of Arctic Change," will remain in place until next spring, and shows the rapidly changing Arctic landscape as seen by Fiske during the process of turning satellite imagery into data used by the Center's climate scientists. Here, Fiske talks about his process and thinking behind the creation of this mural:

SR: How did this opportunity come about?

GF: It kind of came out of nowhere. I certainly wasn't expecting it when they said, "we think your stuff would look great on this wall. What do you think?" And I said sure!

Of course, I've never created a map this size (26.5 by 36 feet), so I was eager to experiment. We had to go back and forth about which of the maps would best suit the space, yet also tell a story that leads viewers to our science here at Woodwell.

SR: How did you decide on the final image?

GF: I was told that whatever you put on the wall tends to influence the feeling that you get while you're sitting there, having your coffee. [The shop owners] said that they made a mistake one year putting up an image of something cold like an iceberg, and it kind of made the whole place feel cold and dreary. So when we selected the maps, we had to make sure that they didn't make people feel awkward while sitting there enjoying the outdoor space.

We came up with the idea of multiple maps in strips instead of one big map to be able to have each map show something different, but could all have a single theme and tell a story.

SR: What is that story?

GF: "Cartographies of Arctic Change"—it's what we look at on a regular basis within our geospatial analyses, modeling, and science here at Woodwell that indicates rapid change in the Arctic.

Each one of these slices in the mural, in addition to being beautiful art, are also actually the data that goes into the models that drive Woodwell's Arctic science.

The Arctic is one of the fastest changing landscapes on the planet—melting ice, thawing ground, lakes forming or draining, less snow and more fires—and you get a unique view of those changes when you spend so much time looking at geospatial data and satellite imagery.

I'm one of the people who pull in this raw data and prepare it for others who may be creating models or mapping some element of a landscape. I look at this data and make sure it's the right format, quality, and resolution to satisfy the needs of models, but in doing so, there are many cases where I'm like, "Wow, this is really beautiful. Other folks should see the data at this stage, instead of just the final product." So some of those images are what ended up in the mural. I hope it can give the many viewers who will see it a new perspective on the impacts climate change is having on one of the most beautiful regions of the world.

SR: What does it mean to you to have been selected to showcase that beauty through this mural?

GF: Of course it's an honor. It's interesting to think about something that I've seen so many times at screen size or social media size now being amplified to building size. I'm super thankful to the folks at Mountain Film and Telco for displaying our work. I've never seen any of my maps in mural format and I won't actually know how it'll look until I get to Telluride and see it in person. I'm super excited!



Dr. Max Holmes



Dr. John Holdren

WOODWELL CLIMATE CONVERSATIONS SERIES

Enduring impact Navigating science, politics, and resilience at Woodwell Climate

Join us for a conversation led by Max Holmes, President and CEO of Woodwell Climate, and Dr. John Holdren, Former Chief Science and Technology Advisor to President Obama, on adapting with purpose and the lessons learned from political turbulence. Learn more: woodwellclimate.org/holdren

Selected news coverage

FEDERAL CUTS

Grist quoted Dr. Max Holmes about the international importance of America's leadership in science. The article was also published in *Philanthropy News Digest*.

In an article about job prospects for science graduates in Massachusetts, *WBUR* quoted Dr. Max Holmes on the potential impacts of federal funding cuts and staffing reductions to the environmental science career pipeline.

WBUR quoted Dr. Jen Francis on the consequences of cuts to NOAA staffing and funding.

Commonwealth Beacon cited a Woodwell Climate Just Access risk assessment's storm surge statistic in an article covering how Chelsea, MA lost funding support for a local flood resilience project due to cuts to the Building Resilient Infrastructure and Communities (BRIC) program.

A Woodwell map of erosion was part of a story about the community of Kipnuk, AK grappling with the loss of \$20m in federal funds for riverbank stabilization.

CLIMATE IMPACTS

Edward Alexander led the development of a special issue of *Wildfire Magazine* focused on wildland fires in the Arctic. He is also featured in a storymap by GRID-Arendal, Arctic Council Secretariat, and Gwich'in Council International titled "The Arctic is on Fire," which draws on findings from a publication led by Dr. Anna Virkkala.

Alaska Beacon quoted Dr. Anna Liljedahl on the significance of her recent collaborative research showing the rising costs of permafrost-related infrastructure damage. The article was also published in *Anchorage Daily News* and *KYUK*.

A quote from Dr. Jen Francis in *The Boston Globe* emphasized how wind tends to drive volatile May weather.

EurekAlert published a press release covering new research which found that a warming climate is making fine particulate matter from wildfires more deadly, and its impacts more

expensive. Dr. Christopher Schwalm and David Byrne collaborated on the research, which was also covered in an article from *ScienMag*.

THIS Magazine interviewed Brooke Woods about the significant cultural impacts of Chinook salmon declines caused by climate change and the warming Yukon River, and Edward Alexander was interviewed in a podcast episode from Study of Environmental Arctic Change about the salmon crisis in the Yukon River.

Dr. Foster Brown contributed to a MAP alert on flooding and drought for the region, which was published in three languages (Spanish, Portuguese, and English) and covered in a number of news outlets, including *AC 24 Agro* (Portuguese).

CLIMATE SOLUTIONS

An article from IPAM reports that CONSERV has just signed seven new contracts with large and medium-sized rural producers in Maranhão, protecting more than 3,000 hectares of land.

Info Environment covered a workshop in Kinshasa, DRC, facilitated by Woodwell Climate scientists to introduce MAPBIOMAS to the region, allowing for much faster generation of high-quality land cover maps (French).

A widely syndicated press release from Cornell University mentions Woodwell Climate co-authorship (Dr. Jon Sanderman) on a new *Nature Climate Change* paper about the trade-offs of cover crops as climate solutions.

GEOENGINEERING

A news article from *Nature* about recently-funded geoengineering experiments quoted Dr. Peter Frumhoff reinforcing that geoengineering cannot be a substitute for serious emissions reduction efforts.

Dr. Jen Francis emphasized the rapid pace and global ramifications of Arctic sea ice loss in a MSN story about the potential benefits and perils of geoengineering.

cover: A two-stories tall mural of maps highlighting Arctic change was installed on the side of a building in Telluride, CO, for Mountainfilm, and will remain up for a year. / imagery by Greg Fiske

Donations play an important role in securing the future of Woodwell Climate Research Center's work—and help safeguard the health of our planet for generations to come.

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