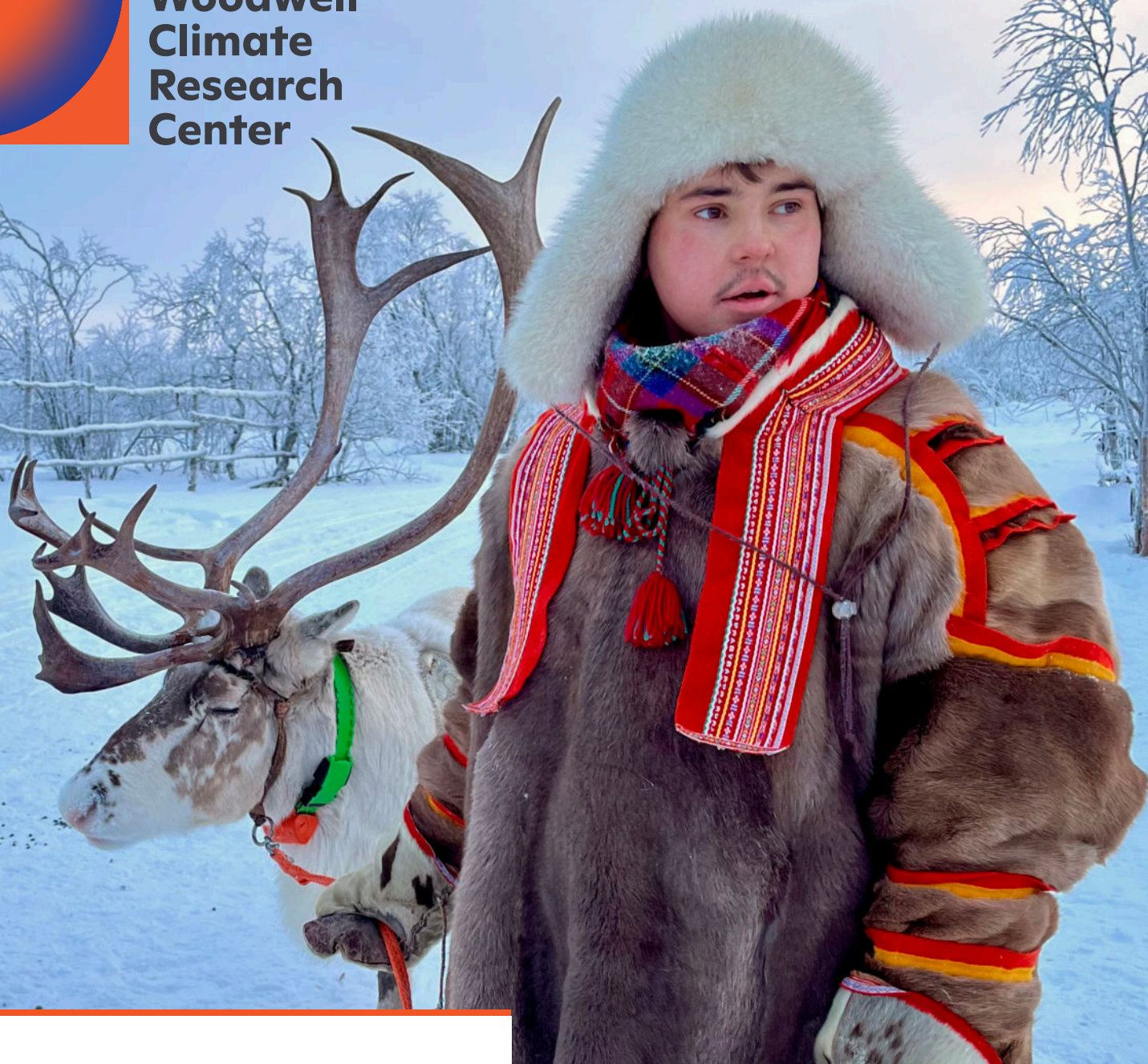




**Woodwell
Climate
Research
Center**



Down but not out / 02

**The insurance industry isn't built
to keep up with rising floods / 03**

**In the Toolik sauna, a powerful
tool for climate resiliency / 07**

**Winter 2026: Fund for Climate
Solutions awards five new
grants / 09**

Selected news coverage / 11

Notes from the Field

Month in Review • February 2026
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Down but not out

In 1963, at Wembley Stadium in London, a young Muhammad Ali (then Cassius Clay) was dropped hard by Henry Cooper. Cooper's left hook sent him to the canvas, and for a moment, the crowd believed the fight was over. But Ali shook off the fog, regained his feet, and the fight went on.

Recent headlines describing efforts to dismantle U.S. climate regulation have the same dramatic tone. Moves targeting the government's authority to regulate greenhouse gases are framed as a "knockout punch." At first glance, it feels decisive—game over.

But the larger trajectory is unmistakable. Renewable energy wins. Fossil fuels lose. The only question is timing: does the fight go the distance, or do renewables deliver a knockout of their own before the final bell?

For those striving to preserve the dominance of fossil fuels, the economics are unrelenting. Solar and wind are already among the cheapest forms of new electricity generation in much of the world. Battery storage continues to improve. Electric vehicles are scaling rapidly. Once renewable infrastructure is in place, its fuel is free, whereas fossil fuels must be continually extracted, shipped, and burned.

In that context, recent efforts by the executive branch of the federal government to block the energy transition—repealing the Endangerment Finding, forcing the military to secure long-term contracts to purchase coal-generated power, halting solar and offshore wind projects—do not signal strength. Quite the opposite. If fossil fuels were winning cleanly on cost and performance, they would not require extraordinary policy intervention to preserve demand. The need to mandate purchases or block competing technologies suggests an industry struggling to keep pace with cheaper, faster-growing alternatives. It is starting to look less like dominance and more like desperation.

Yes, political setbacks can slow the clean-energy transition, and slower progress carries real costs. But delay is not defeat. States, cities, corporations, investors, and global markets continue pushing forward. Ultimately, the energy transition will be won not by regulation, but by technological advantage and economic reality. And by all of us.

For those who want to fight back, there is much that you can do. Voice your support for pro-climate policies and interventions. Engage at the state and local level, where many crucial decisions are made. Electrify your homes and vehicles when you make your next purchasing decision. Improve efficiency. Reduce personal fossil-fuel demand where practical. In all these ways, in all our lives, we can punch back.

Just as important is strengthening climate's corner team. Supporting research and science-based organizations such as Woodwell Climate Research Center ensures that rigorous climate science remains visible, actionable, and influential. Data, analysis, and public engagement are the equivalent of coaching between rounds.

Ali went on to win that 1963 fight, scoring a technical knockout in the very next round. And we—those striving for an equitable, healthy, and sustainable world—will assuredly win as well. So pick yourself up, shake off the fog, and push forward.

Today's headlines may sound like a final blow. They are not.

Onward,



Max

Dr. Max Holmes
President & CEO



The insurance industry isn't built to keep up with rising floods

Climate change is raising your flood insurance rates, but not how you might think

Sarah Ruiz Editorial Manager

Flooding is a hallmark of the climate-changed world. Rising sea levels, extreme rainfall, and aging infrastructure systems have left communities across the U.S. facing increasing damages from flooding, making flood insurance an expensive necessity for more and more Americans.

But U.S. flood insurance policy was created on the assumption of a more stable and predictable climate and has struggled to keep up with the rapid pace of change. Two new papers led by Research Associate, Dominick Dusseau shine a light on vulnerabilities within the American flood insurance system that will only be exacerbated as climate change advances.

You may be paying for your neighbor's discount

The National Flood Insurance Program (NFIP), a program of the Federal Emergency Management Agency (FEMA), was created to help property owners secure affordable flood insurance and encourage communities to manage their flood risk.

One of the ways the NFIP encourages floodplain management is through the Community Rating System. The system rewards communities with discounts on their premiums for implementing certain actions. These actions range from building

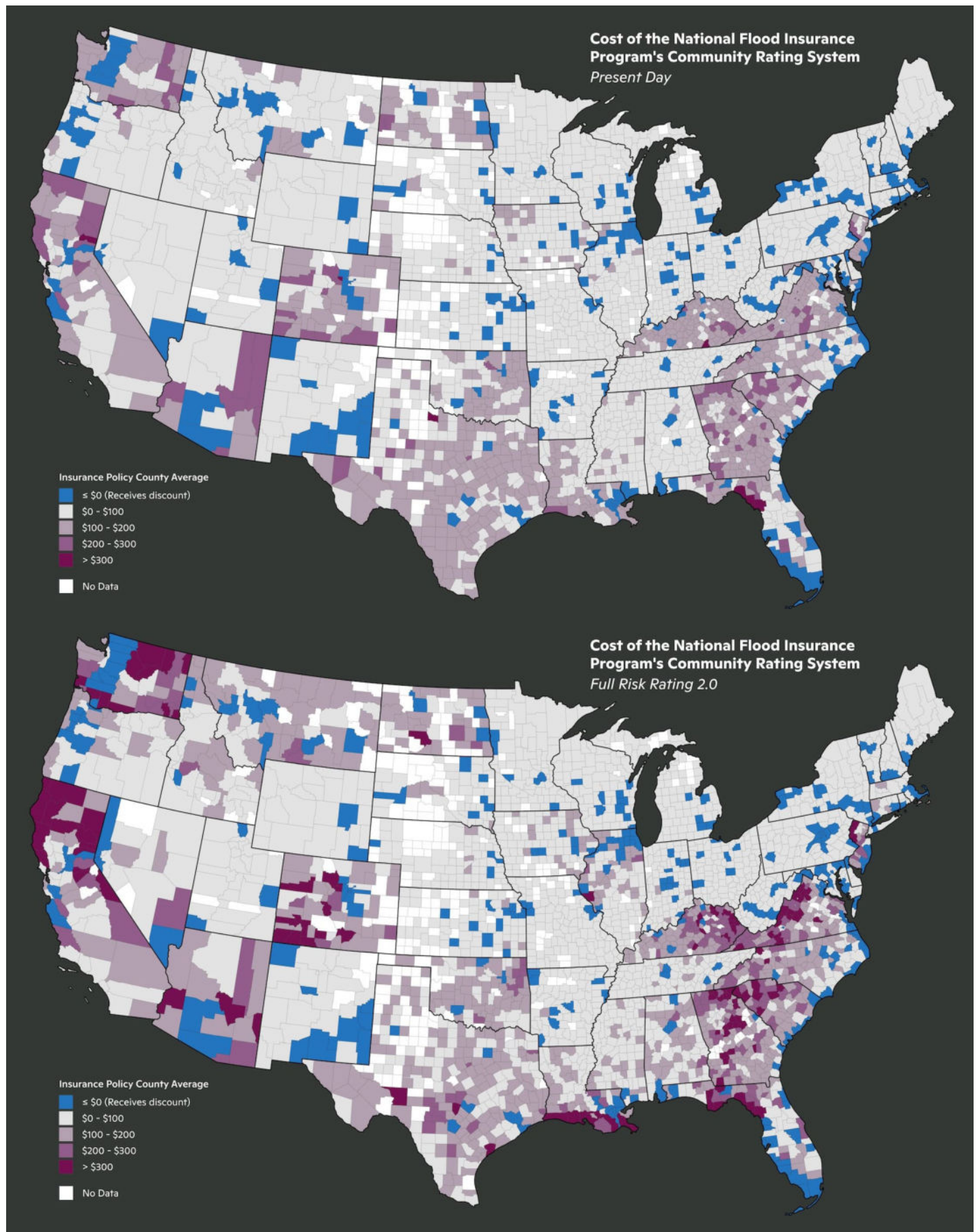
up the elevation of ground within a floodplain to making local flood maps publicly accessible. Actions are assigned points and the number of points determines how much of a discount the community will receive.

This reduction in price is not a true discount however, because the NFIP adjusts state-wide premiums to make up the difference. The NFIP calculates the average percentage discount for the entire state and increases all premiums by that amount. This means policyholders in towns that are not even participating in the Community Rating System may be paying more than their risk level requires to subsidize their neighbor's discounts.

"It's basically a way for the NFIP to actuarially pay for the Community Rating System," says Dusseau. "Because otherwise they'd be foregoing that revenue from the discounts. To recoup the lost income they do this cross-subsidization by putting it back into each policy by state."

Climate change will exacerbate inequalities

A study from Dusseau, published in the journal *One Earth*, shows that through the Community Rating System, roughly half



top: Current day costs by county of the Community Rating System. / maps by Dominick Dusseau
bottom: Costs under the Risk Rating 2.0 framework.

of NFIP policy holders subsidize the discounts of the other half. In theory, subsidization ensures the NFIP is collecting enough revenue to pay out all their future obligations. But in reality, this framework presents two flaws. First, not all Community Rating System actions—publishing flood maps, for example—reduce damages. While the action may be beneficial to community awareness, it doesn’t translate directly to dollars saved.

Additionally, existing disparities between communities result in unequal distribution of the burden of subsidization.

“One of the big takeaways that we found was that it’s largely under-resourced rural counties that are subsidizing the more affluent, well-resourced urban counties,” says Dusseau.

States with the greatest level of inequality now will experience even worse disparities in the future.

Dominick Dusseau

Even though many rural communities would be eligible for discounts themselves, they may not have the capacity available to take advantage of them.

“There’s a bureaucracy involved here. There’s paperwork. You have to document all of these things

that you’re doing. You have to submit the application. You need someone that’s a certified floodplain manager,” says Dusseau. “Not every town has that capacity, so it just falls through the cracks.”

This means that already resource-strapped communities may be paying more than required for their true risk level.

Dusseau’s study points out that these inequalities will be exacerbated by climate change. The NFIP has long underpriced policies. The rising sea levels and more extreme precipitation caused by climate change has only widened the gap between the program’s revenue and obligated pay-outs. In 2021, FEMA implemented a new framework, called Risk Rating 2.0, that takes the impacts of climate change to date into account, gradually raising premiums year over year to more closely align with the actual risk of damages.

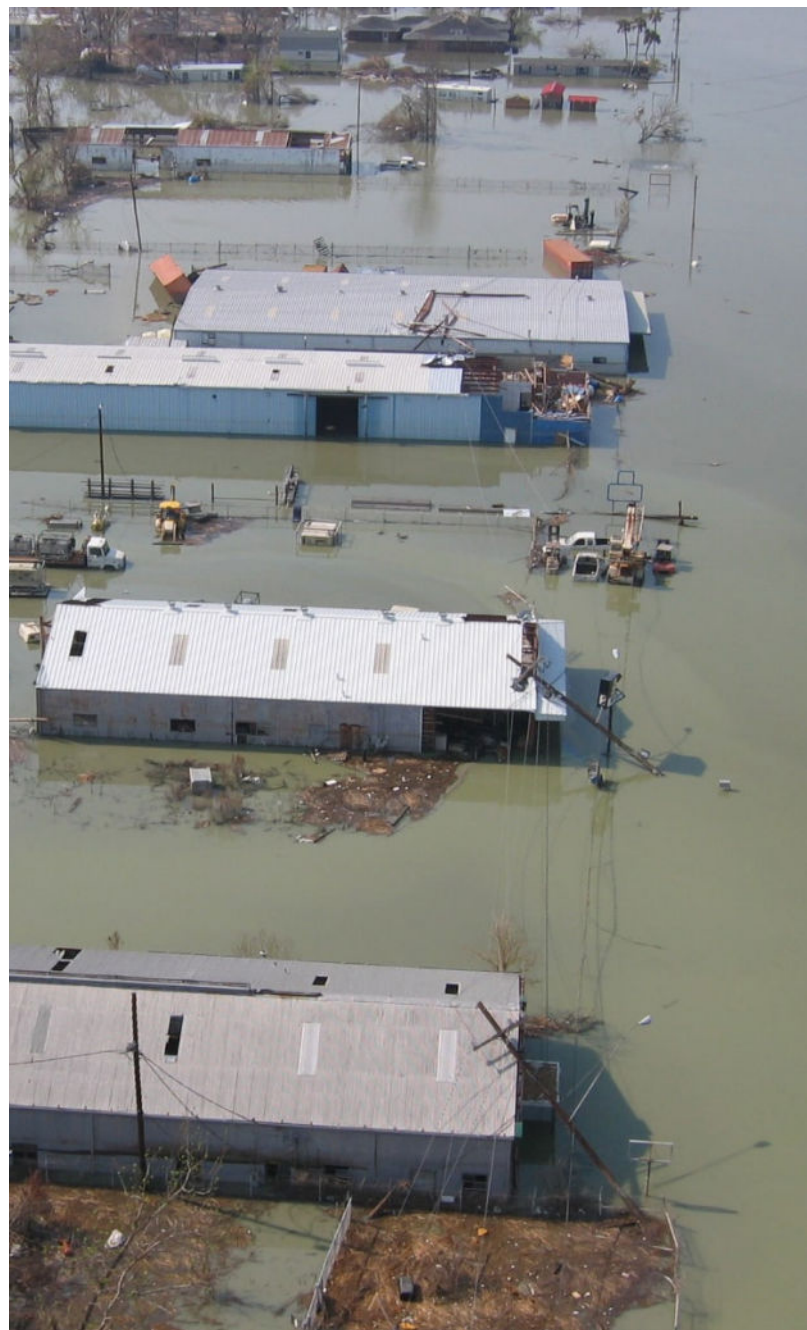
“And what we see is that states with the greatest level of inequality now will experience even worse disparities in the future,” says Dusseau.

How accurate are flood models?

In addition to inequity, flood insurance suffers from a frustrating lack of transparency, with each company and the NFIP employing a proprietary combination of models to decide premium prices. A second paper led by Dusseau, published in the *Journal of Catastrophe Risk and Resilience* in February, generates some much needed transparency around the data underlying the insurance industries assumptions.

One type of model employed by insurers is called a catastrophe model. These models can estimate the likely damages from both natural and man-made hazard events like wildfires, terror attacks, and hurricanes. Dusseau’s study evaluated the accuracy of seven flood-specific catastrophe models, including three commonly used by the NFIP.

“Insurers rely heavily on these models that have historically been very ‘black-box’—nearly impossible to evaluate their methods,” says Assistant Scientist Zach Zobel, a co-author on the paper. “Without proper independent review of these models, insurers will continue to misrepresent the risk catastrophes pose on local communities.”



The study found that model accuracy varied widely. Some models overestimated flood losses, while others underestimated losses—by up to 13 times in the most extreme case. This has major implications for the ultimate cost of flood insurance.

“There is a non-trivial difference in the premiums that would be passed on to consumers based on these assumptions,” says Dusseau.

Catastrophe models are also still based upon historical data. Many have not been updated to account for the impacts of climate change, let alone cast forward to how flood risk may change in the future.

“The insurance industry drives using only the rearview mirror. Yesterday’s data to price tomorrow’s risks doesn’t work in a world of more extremes, says Vice President of Science, Dr. Christopher Schwalm who also contributed to the paper. “The past is no longer a reliable guide for the future. To stay ahead, we have to stop guessing based on what happened years ago and start modeling the ‘new extremes’ we are seeing right now.”



Informing policies that protect people

Dusseau along with Woodwell’s risk and policy experts have made science-backed contributions to conversations about improving flood insurance. Dusseau and Senior Policy Analyst Jamie Cummings authored a policy brief last April that advocates for NFIP reforms that help property owners access affordable flood protection, including the creation of a standard national

catastrophe model. Dusseau has also briefed congressional staff, highlighting areas where Congress could play a role in bolstering the long-term resilience and insurability of communities.

However, aligning pricing more closely with the realities of climate change is much more complicated—and for many property owners, emotional—than simply incorporating the right data. The increases brought on by Risk Rating 2.0 have already pushed flood insurance out of the range of affordability for many policy holders, forcing them to drop their coverage. The pricing framework is a sticking point in lawmakers’ debates over reauthorizing the NFIP in the long term. The program is currently funded through September 30, 2026.

“How do you balance updating policies to reflect true climate risk with affordability, in a political context? Yes, you want people to know that they’re in a flood zone, but if you price them out of the market, are you really helping them?” says Woodwell Climate Vice President of Policy and Government Relations, Laura Uttley. “That’s why the work Woodwell’s risk team does is so vital. The science and modeling they provide adds context for the development and implementation of new policies. We are very pragmatic about the ways we recommend change.”

Additionally, federal policy changes happen much slower than climate ones, making it a challenge to build policy that is both durable and versatile.

“Policy change at the federal level can be incredibly slow. We need to consider policy proposals that build durable systems that enable adaptability, recognizing the urgency posed by rapidly changing conditions,” says Uttley.

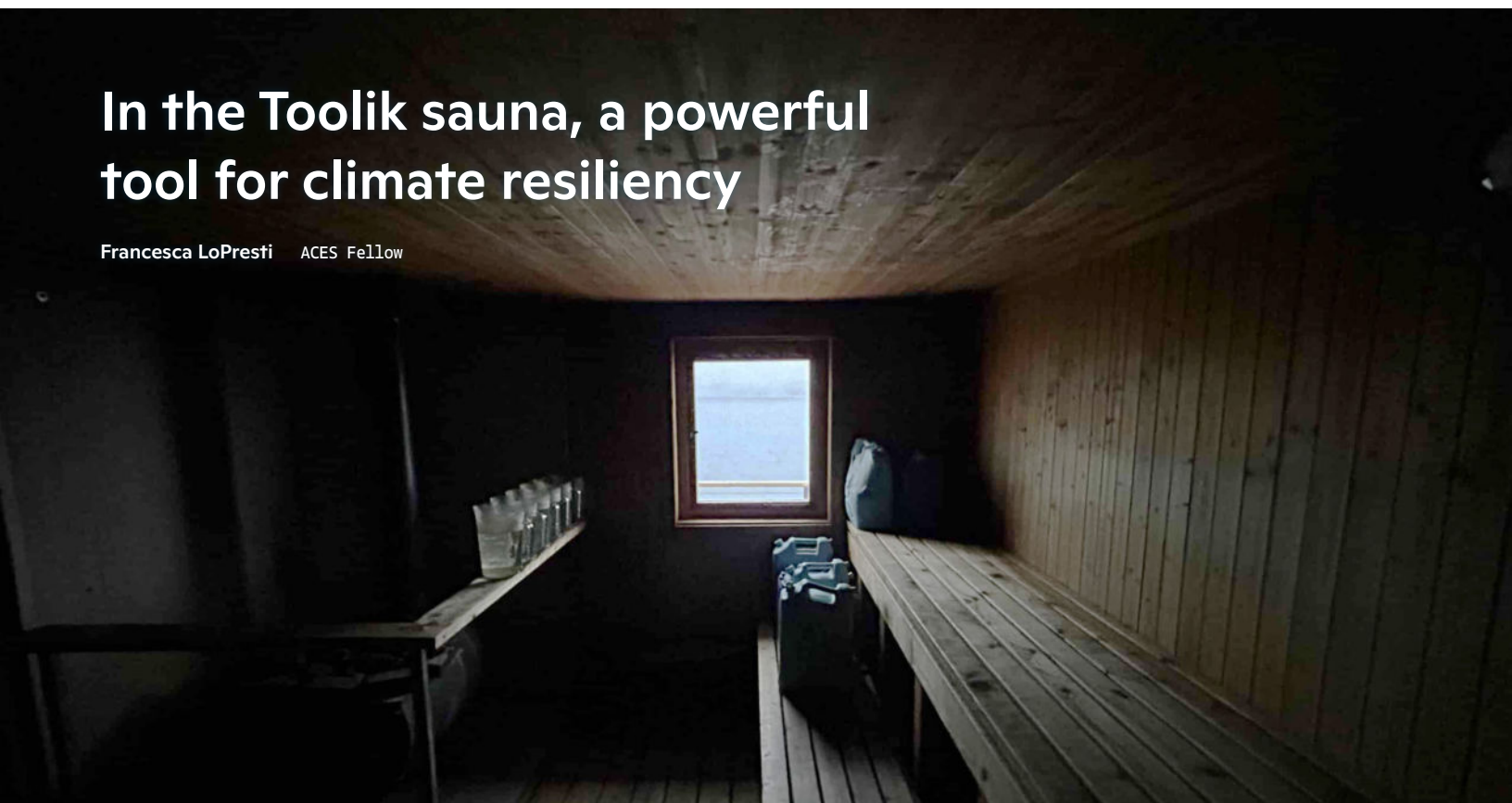
Woodwell Climate has been involved in advocacy around the inclusion of flooding from extreme rainfall—called pluvial flooding—in FEMA’s regulatory maps. These maps identify “flood hazard zones” in which property owners are required to have flood insurance. Currently they only represent coastal and riverine flooding hazards. This has led many property owners to mistakenly believe their homes are not at risk.

Though improved data and transparency might ultimately translate to higher costs for some, Dusseau says the alternative, not knowing, hurts people in the long run.

“If people don’t know that they’re at high risk, they won’t know what to do about it so they won’t do anything about it,” says Dusseau.

In the Toolik sauna, a powerful tool for climate resiliency

Francesca LoPresti ACES Fellow



There are few things that can lift the heads of the busy Toolik scientists away from their work. But on certain weekdays, behind the maze of dark green storage containers-turned-laboratories, a soft plume of fragrant smoke rises. The tell-tale sign of the awakening Toolik sauna never fails to pull a relieved smile from weary scientists. “Sauna tiiiime,” they whisper underneath their breath, while others let loose a shrill “Yesssssss!” as we hurry to finish the last task of the day. This wooden oasis, tucked into a slope leading into Toolik Lake, is one of the most beloved features of the Toolik Field Station—and a vital community space shaped by the art of storytelling.

On sauna nights, scientists saunter over to the edge of the station, towels draped around our necks. Walking into the mud room, we brace ourselves for the stifling heat we are about to enter. As we walk into the wall of heat we grimace, and then slowly let our shoulders loosen, opening our lungs to the heat—eyes closed, breath heavy, body relaxed.

There is a gentle silence at the beginning of every sauna session as we settle into the damp heat of the room. But soon, conversations start to flow and meander, the sauna filling with the sound of overlapping chatter. People lament their torn-up hands from readjusting rusty bars, muse over the absence of darkness, and fiercely debate the proper name for fish nests (the conclusion, “redds”). I listen to the tale of a soil scientist, swearing that she nearly joined a pack of wolves on a recent



top: The view of a foggy day on Toolik Lake from inside the sauna. / photos by Francesca LoPresti
bottom: The first view of the Toolik sauna, from inside the mud room.



data-collection trek. We weigh the strange dependency of this climate research station on the road that was built to expand oil production. And I listen as an older scientist, one who has been coming to Toolik for almost thirty years, recounts how much he has seen this landscape, which he has come to love so deeply, change so much.

In these moments, I cannot help but think, “This is what it’s all about.” Scientists—across disciplines, countries, generations—sharing the weight and joy of their lives of work. An ecologist’s work, not unlike the heat that we choose to sit in every time we walk through the sauna’s doors, can be heavy and at times, suffocating. But under this pressure, in these spaces of relaxation and healing, we inspire celebration, reflection, and resolution with the stories we tell.

We bask in our love for science—a shared love for adventure, mystery, the land, and a dedication to protect and heal it.

For younger scientists, listening to the stories of older scientists bends time, reminding us of what has been lost—and the urgency with which we must continue to defend these changing ecosystems.

Once we leave the sauna, these stories become incredibly special tools. Global change can be insidious, its effects hiding beyond

our daily lives. But by sharing these stories, we have the power to reach out and envelop others in our world, finding that perfect heartstring to tug.

We need people working from every angle, from both within and beyond the scientific community, to understand, mitigate, and adapt to the consequences of our rapidly changing world. And while the Toolik sauna is an incredibly unique ecosystem of human beings, sweat, and laughter, I—and many of my fellow scientists—happily hold the responsibility of disseminating the words that are shared in that space with all of our communities so that everyone can take a turn basking in the sauna at the top of the world.

DIG DEEPER

This story is from the Evolving Meta-Ecosystems Institute, which brings together experts from across biological disciplines to generate new insights at every scale of biology, from genes to landscapes.

Learn more: woodwellclimate.org/evome



Winter 2026: Fund for Climate Solutions awards five new grants

The funding supports community partnership, international policy engagement, and modeling winter weather patterns

Margaret Lin Communications Manager

Thanks to the generosity of the Woodwell donor community, the first round of 2026 Fund for Climate Solutions (FCS) awardees has been announced. The FCS supports innovative, solutions-oriented climate science through a competitive, cross-disciplinary process. With more than \$10 million raised to date, donor support has already fueled 84 research grants and leveraged millions of dollars in additional research grants since the program's launch in 2018.

This most recent round of grants is supporting Woodwell experts working directly with communities to generate climate insights, bringing quality data on landscape carbon to international policy venues, and investigating links between climate change and winter weather.

Tracking water quality and empowering communities in the Amazon's Arc of Deforestation

LEAD: ALLIE CUNNINGHAM



The Kayapó people, Mëbêngôkre (“People of the Water Hole”), are internationally recognized for their leadership in stewarding more than 9 million hectares of intact Amazon rainforest within a region known for rampant deforestation. This territorial defense is coordinated through the Kayapó Project (KP), an alliance of three Indigenous nongovernmental organizations which provides holistic governance and supports Kayapó communities with border patrols and community monitoring systems. Despite this extraordinary stewardship, a critical scientific gap persists, and KP has invited Science on the Fly and Woodwell Climate to help fill it. This FCS-supported project will **establish a territory-wide, Indigenous-led scientific platform for water quality monitoring**. Woodwell researchers and Kayapó community members will then use the baseline measurements taken to identify threats to the Xingu river ecosystem and Kayapó lands to understand other potential long-term, collaborative community science research.

Assessing the carbon cycle health and risk of global rangelands systems

LEAD: DR. JENNIFER WATTS



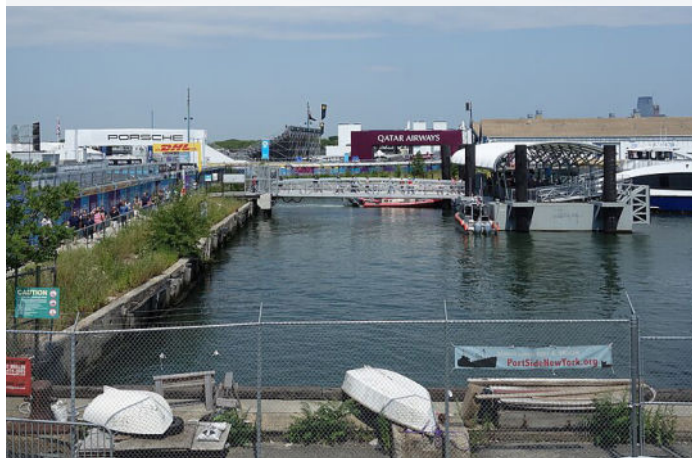
Rangelands' soils and plants store large amounts of carbon, and millions of people directly depend on the goods and services these lands provide for well-being and survival. Rangeland ecosystems are also threatened by warming temperatures and land degradation, for example through overgrazing. However, the impacts of these changes on rangeland carbon is poorly understood, and science-informed data hasn't been available to guide decision makers. The project team will **model where rangelands are releasing or storing carbon**, and where those lands are at heightened risk from future climate change impacts. This work will produce actionable insights for land management and policymaking at local, regional, and global scales. The team will also present their results at an official side event of the UN Convention to Combat Desertification, representing Woodwell at the conference for the first time.

top: Allie Cunningham takes a river water sample. / photo by John Land Le Coq

bottom: Dr. Jonathan Sanderman talks to land managers at a rangeland carbon workshop hosted by Woodwell. / photo by Andrew Mullen

Red Hook Climate Resilience Partnership: A collaborative initiative to strengthen community preparedness and adaptive capacity to climate risks

LEAD: DR. NIGEL GOLDEN



Climate change is making extreme weather events more intense across New York City, but some communities experience greater impacts than others. Red Hook, an area burdened by environmental, social, and economic inequities, was also one of the hardest-hit neighborhoods during Superstorm Sandy—floodwaters reached nearly every block. Despite state initiatives and city resilience plans, residents say their needs continue to be overlooked, and their voices go unheard. Through a partnership between Resilient Red Hook, Woodwell, and CUNY John Jay College of Criminal Justice, residents are leading the charge to change that. With community members as co-researchers, the team will **assess climate risks at the neighborhood level** and use the assessment to **identify adaptation opportunities**, with a focus on equity. With the partnerships, baseline data, and findings generated through this work, the team will be able to compete for larger, multi-year grants that can support real action on Red Hook's terms. The project will also produce a research and engagement framework that other community-science partnerships can draw on.

From Arctic greenhouse gas budgets to policy: An opportunity to translate science to action

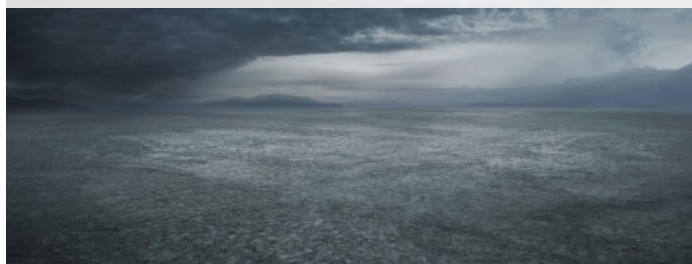
LEAD: DR. BETHANY SUTHERLAND



The United Nations Framework Convention on Climate Change (UNFCCC) has a well-recognized issue: its carbon accounting focuses on emissions and uptake due to human activity, without adequately considering natural lands. The Arctic region, which stores vast amounts of carbon, is a critical part of this accountability gap—many regions in the Arctic are already shifting to become net carbon emitters and emissions are projected to continue to rise. Previous Woodwell research has generated carbon budgets for the Arctic by evaluating modeled emissions against observations. With this FCS funding, the project team will amplify those findings and **bring Arctic carbon budgets to international policy venues**, including the Global Carbon Project and the UN's Global Greenhouse Gas Watch. The grant will support travel to visit partner institutions and conferences, as well as a workshop hosted at Woodwell. In-person collaboration will strengthen the team's connections with the global carbon accounting and reporting efforts that inform UN decision making.

Hot blobs, cold blobs, and crazy weather: How are greenhouse gas-fueled SST anomalies affecting Northern Hemisphere weather patterns?

LEAD: DR. JENNIFER FRANCIS



Climate change is causing shifts in regional ocean temperatures—both heating and cooling—as the water absorbs extra heat trapped by greenhouse gases while accelerated melting of the Greenland Ice Sheet adds buoyant fresh water to the North Atlantic. When differences in temperature between ocean regions change, wind patterns shift, affecting the jet stream and weather. This project will **use artificial intelligence to compare patterns in sea surface temperature and winter weather regimes** over North America as well as the North Atlantic and Pacific Oceans. Recognizing and understanding how changing ocean temperatures are affecting weather patterns will improve seasonal weather forecasting and help decision-makers prepare for increasingly extreme weather conditions.



Since its launch in 2018, the **Fund for Climate Solutions** has funded 80+ projects that push the boundaries of scientific knowledge, influence decision makers, and attract additional funding for critically important work.

Multiply your impact even more with a gift to the Fund for Climate Solutions—through June 30, for every \$3 contributed, an additional \$1 will be unlocked by an anonymous donor, up to \$250,000.



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from the frontlines of climate action

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MOUNTAINFILM ON TOUR

MARCH 18 ■ 5-7 pm

Join us for an evening of film, discussion, and connection as we explore the challenges ahead and use the power of film, art, and ideas to inspire audiences to create a better world. Featured films will include *Arctic Alchemy*, *Let My People Go Skiing*, and *This is a Story About Salmon*.



Learn more & register:

woodwellclimate.org/mountainfilm-on-tour

Selected news coverage

A *Financial Times* article about Arctic rivers turning orange, a phenomenon sometimes connected to thawing permafrost, quoted Dr. Christina Schädel on the significance of permafrost thaw for our global climate.

Schädel was also interviewed on *Radio Ecoshock* for a segment on how permafrost thaw means we have to limit carbon emissions even more to stay below 2 °C.

Brooke Woods authored a powerful op-ed published in *The Alaska Beacon*, calling for hard bycatch limits and adherence to subsistence law to protect Alaska salmon and the communities that depend on them.

Dr. Jon Sanderman was interviewed on WCAI about recently-approved congressionally directed spending, which will provide \$800,000 to Woodwell Climate for the development of a soil carbon research lab.

Edward Alexander and Dr. John Holdren were featured on a *Swedish Radio* podcast episode about permafrost thaw and Arctic fires.

An article from the University of Alaska Fairbanks reflected on 20 years of NOAA's *Arctic Report Card*, quoting Dr. Brendan Rogers on 2024's finding that far northern regions had shifted to a small net source of carbon emissions.

Live Science covered new research showing that tropical deforestation leads to nitrogen depletion in the landscape, quoting Dr. Rich Birdsey about how this experiment confirms longstanding observations. Rich also emphasized the importance of recovering tropical forests as a global carbon sink.

Journalists sought Dr. Jen Francis's perspective on the recent cold weather in the U.S.:

AP News quoted her about how people experience a "normal" cold spell more acutely when they're less used to cold weather.

For *The New York Times*, she used a metaphor of flicking a jump rope to describe the behavior of the polar vortex between high and low-pressure areas.

USA Today quoted Francis in two different stories, one about the connection between climate change and the polar vortex, and one about how cold can be deadly when communities aren't prepared.

Francis also talked to *The Cool Down* about how big swings of the jet stream can create persistent and extreme weather conditions.

She was quoted extensively in a *Climate Forward* newsletter from *The New York Times*, explaining how climate change connects to extreme heat, storms, and winter weather.

Phys.org quoted Francis on how the polar vortex causes extreme cold in North America.

She provided quotes to *CNN* and *Inside Climate News* on the connections between climate change and extreme winter weather.

cover: Researcher Jackie Dean, and cartographers Christina Shintani and Greg Fiske, traveled to Norway to facilitate a mapping workshop in Kautokeino (Guovdageaidnu) in partnership with colleagues from the International Centre for Reindeer Husbandry (ICR). The sessions were tailored for participants from the Sámi reindeer herding community, focusing on how maps can help communicate challenges to their traditional ways of life. / photo 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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