



**Woodwell
Climate
Research
Center**



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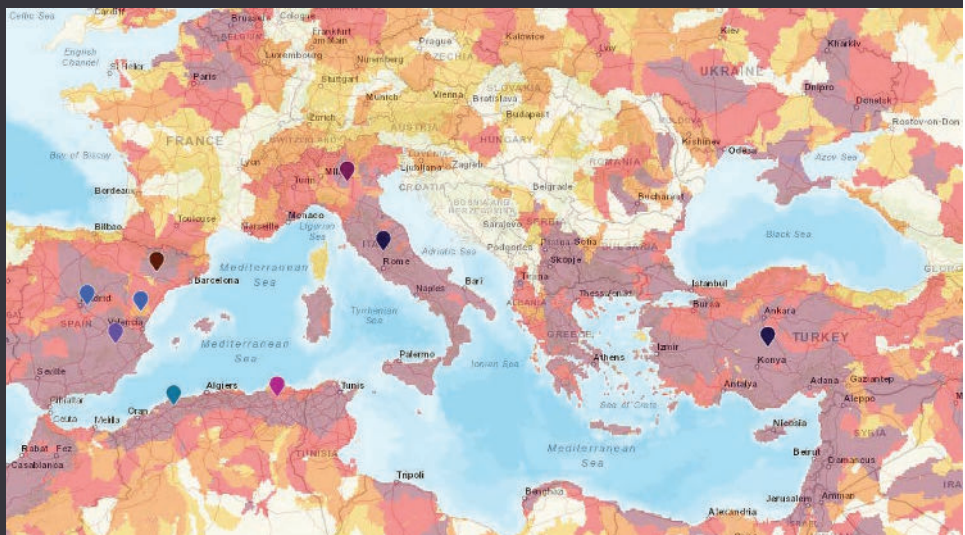
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Notes from the Field

Newsletter • June 2021
woodwellclimate.org

Woodwell and partners weigh in on climate risk disclosure

by Dr. Heather Goldstone
Chief Communications Officer



In March, the SEC issued a request for public input on potential regulation of corporate climate risk disclosure. In the intervening months, Woodwell staff have been working alongside our partners to share the insights we have gained from years of working on corporate climate risk, and to ensure that federal regulators and policymakers understand the

An array of parties offered input—investment firms, energy companies, green groups and plenty in between. But one stood out from the crowd: the Woodwell Climate Research Center.

Andrew Freedman, *Axios*

an update to our 2019 guidelines for corporate climate risk disclosure that recommends the disclosure of time horizon and key assumptions (including climate data) used in assessing risks, as well as the physical attributes of the company's business.

"As we continue to expand our climate research, it is becoming increasingly clear that our investors and clients will benefit from deeper climate-related information at the company level," said Jean Hynes, incoming CEO of Wellington. "We encourage companies to facilitate access to their physical location data as this is a critical component that will help us incorporate deeper

importance of ensuring scientific integrity in such disclosures. The results of that work have been made public over the past week.

On June 10, 2021, Woodwell Climate and Wellington Management jointly launched P-ROCC 2.0,

physical and transition risk climate analysis on behalf of our clients."

Both Woodwell and Wellington also submitted public comments to the SEC emphasizing the need for federal regulators to create a framework that ensures corporate climate risk assessments are rigorous, standardized, and transparent.

In particular, Woodwell's comments called for requiring that data and methodologies be publicly accessible and that climate models be published in mainstream peer-reviewed scientific literature.

"As a climate science organization, we see a clear need for a standardized and transparent climate risk disclosure framework," wrote Dave McGlinchey, Woodwell's Chief of External Affairs. "A rigorous and properly constructed framework can provide investors with key material information necessary to evaluate their investments."

This message was echoed in a public briefing co-hosted by Niskanen Center and Woodwell Climate, a story in *Axios*, and finally, in an op-ed in *The Hill* authored by Woodwell President Dr. Phil Duffy, Woodwell Board member Bob Litterman, and Niskanen Director of Climate Policy Joseph Majkut.

"It is critical that risk disclosure be based upon transparent and publicly accessible models and data. Without this requirement, disclosures may be inaccurate, misleading, or impossible to interpret and compare between firms," the three warned.

MORE

Read P-ROCC 2.0, an update to our 2019 guidelines for corporate climate risk disclosure, at: <http://bit.ly/P-ROCC2>

Corporate climate risk assessment should be standardized and transparent

Woodwell responds to SEC's request for input on climate change disclosures

by Dave McGlinchey
Chief of External Affairs

The following was provided to Commissioner Allison Herren Lee of the United States Securities and Exchange Commission on June 11, 2021.

Climate Change Is a Material Risk to Public Companies

Climate change risk to business includes transition risks as well as current and future physical climate risk. The SEC should ensure that any disclosure framework addresses all of these categories. Our comments will address the materiality of physical climate risk.

The average global surface temperature has already increased by 1.2°C above the pre-industrial baseline level. That temperature increase makes previously unlikely extreme heat events much more likely, and also sets in motion a wide variety of related impacts, from changes in wildfire risk to advancing sea level rise. Climate change hazards pose a significant physical threat to business infrastructure and supply chains.

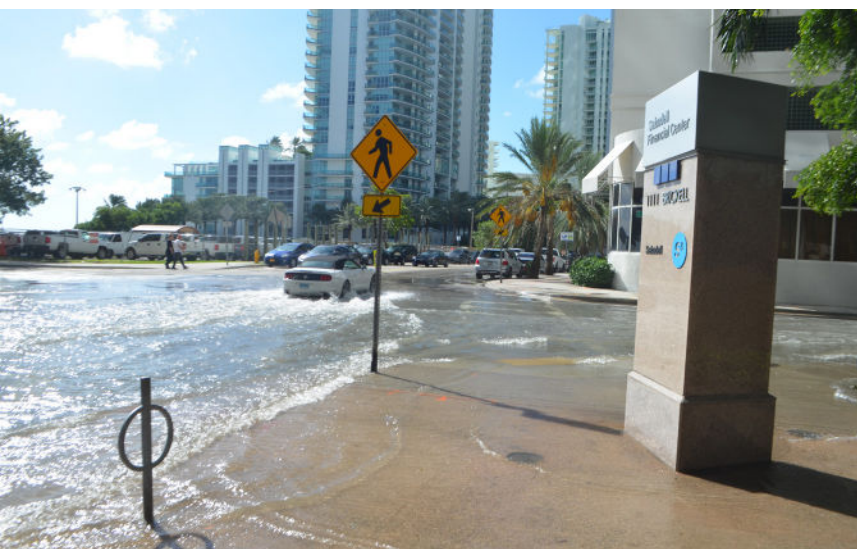
investments. Our work on quantifying the scope and scale of impending climate change impacts has made it clear that climate change impacts are a material risk for issuers of public securities and other businesses.

Physical Climate Risk Disclosure Should Be Standardized, Transparent, and Rigorous

The science of physical climate risk modeling is growing and evolving rapidly, with academic and non-profit researchers vigorously advancing the state of knowledge, and a wide spectrum of for-profit service providers offering risk assessments. Without clear standards from the SEC, many companies will seek the cheapest or easiest available option available to meet risk disclosure requirements. Without transparency around risk assessment methodologies, investors, regulators, and others will have no assurance that the information they are receiving is scientifically sound.

Clear standards around the disclosure of material climate risks should be supplemented by clear and consistent standards around the evaluation process of climate risks. Different parties may have different judgments about which physical climate risk could be considered material, and also about how to measure and assess those risks. A standardized risk assessment and evaluation process will allow for comparison across different companies and will aid investors in their analysis.

Standards for assessment of physical climate risks should cover choice of risk models, selection of appropriate time horizons, and choice of scenario for future emissions of greenhouse gases (and other climate drivers). Models should be restricted at a minimum to those which have been published in mainstream peer-reviewed scientific literature, and more specific restrictions may additionally be advisable. Choice of time horizon is important and is discussed below. Choice of scenario for future greenhouse gas emissions becomes important on longer time horizons (e.g. 30 years). We suggest that in order to illustrate near-worst case risks, that use of the most carbon-intensive scenario adopted by



Because of our extensive work with Wellington Management and other large private sector partners, we know that business leaders want and need climate risk information for their decision making and planning. Asset managers, for example, want to consider climate risk in evaluating potential



the Intergovernmental Panel on Climate Change (IPCC) be mandated. To illustrate the impact of aggressive climate-control policies, the use of a lower-emissions scenario is also warranted.

Quantifying the cost of inaction (no climate policy) is necessary to address opportunity costs and provides necessary information for each business entity to understand their

own risk appetite. It is important to note that while physical and transition risk are often assessed separately (see, for example, Network for Greening the Financial System guidance), quantifying physical climate risk is foundational. Scenarios focused on disorderly vs orderly transitions to a low-carbon future will not provide insight on physical risks. Using “business-as-usual” and aggressive climate-control scenarios from the IPCC canon alone ensures actionable climate intelligence on physical risks.

The perils of a non-standardized approach to assessing climate risk are particularly acute for the issue of time horizon. As the Commodity Futures Trading Commission report “Managing Climate Risk in the U.S. Financial System” states, disclosure in SEC filings have

been inadequate because “materiality under U.S. law is often interpreted as limiting required disclosure to short- and medium-term risks.” Companies should

be transparent about the time horizons they are using to assess climate risks and aim to disclose those risks across standardized and consistent time horizons as to address investors with varying fiduciary duties

(current risk, 10 years from present day, and 30 years from present day).

In June 2021, Woodwell and Wellington released the P-ROCC2 framework, which advises companies on how to disclose their physical climate risks prior to materiality assessment. We recommended the disclosure of time horizon, key assumptions (including climate data and assumptions), and physical attributes of the company’s business.

We also believe the SEC should require companies to disclose their approach to transition risks in accordance with the Task Force on Climate-Related Financial Disclosures (TCFD). The sector-specific supplemental guidance provided by TCFD also provides clarity about what is expected from investors.

Information on Climate Risk That Can Be Quantified and Measured

Information related to physical climate risks that can be quantified and measured includes:

- Projected future physical climate change risks to company operations, using standardized and publicly available physical climate risk models, emission scenarios, time horizons, methods and data.
- Physical climate change risk for critical supply chains or supporting infrastructure, using standardized and publicly available scenarios, methods and data.
- Past losses and disruptions from weather and climate events.
- Energy and water usage attributed to different production locations.
- Disclosure of insurance coverage associated with different locations.
- Changes in revenue associated with climate risks and opportunities.
- Locations of important physical assets.

Companies are vulnerable to a wide variety of climate change driven hazards—both in their specific locations and because of the systems that they rely on. The SEC should require risk assessments that reflect this localized vulnerability as well as systemic risk originating from supply chains both up and downstream.

As a climate science organization, we see a clear need for a standardized and transparent climate risk disclosure framework.

To ensure robust and rigorous climate risk assessments, the SEC should require that these risk assessments are conducted using a standardized approach and publicly available methodology and data.

Through our physical climate work with Wellington, we've found that the availability of company location data is the most important limiting factor in understanding the climate exposure of companies. In our recently published P-ROCC2 report, we call for companies to disclose their physical locations.

Similarly, we believe that disclosure of the energy, water use, insurance coverage, and historical impacts of climate change at different operating locations will also enable users to have a better understanding of the physical climate risk exposure of companies. We also believe that disclosure of business continuity plans in the face of acute climate risks is important.

We acknowledge that extensive climate disclosure requirements will penalize smaller and newer firms. For this reason, we support giving more phase-in time to smaller issuers to disclose on metrics that may not be as accessible.

Climate disclosure is instrumental for investors like Wellington to enable effective engagement with management and credible implementation of investment and asset allocation decisions based on climate issues. In the same vein, climate disclosure is also instrumental for companies that hope to access lower costs of capital, because clear climate disclosure is becoming a prerequisite for investors as sustainability objectives move to the forefront of investing.

We appreciate the Commission's initiative in reviewing issuer climate risk disclosure. As a climate change science organization, we see a clear need for a standardized and transparent climate risk disclosure framework. A rigorous and properly constructed framework can provide investors with key material information necessary to evaluate their investments.



Harnessing passion: The rapid growth of Science on the Fly

by Anneka Williams
Communications Intern

In 2019, fly-fishers with the Telluride Angler Fly Shop in Telluride, Colorado began sampling water when they went out to different fishing spots. Some key introductions followed from this initial group of fly-fishing citizen scientists, and Science on the Fly was officially founded by the Woodwell Climate Research Center and Fishpond, a Colorado-based fly-fishing and outdoor recreation company. Jumping quickly from 40 to 300 sites in its first year, Science on the Fly has been growing exponentially since its creation in 2019.

"People just started coming out of the woodwork," explains Woodwell's Dr. Max Holmes. "[The volunteer base] comprises engaged and concerned people who can weigh in on issues related to the rivers and climate. And what's clear is that there's the capacity to get a lot bigger."

The goal of Science on the Fly is to create a consistent, long-term monitoring program of river health across the world. This is accomplished by harnessing the enthusiasm and access to rivers of different members of the fly-fishing community. Essentially, Science on the Fly provides the framework to support a vast network of fly fishers eager to help assess the health of the rivers they fish. Scientists at the Woodwell Climate Research Center can then analyze the water samples for different nutrients, such as nitrate, phosphate, and dissolved organic carbon (DOC), all of which are important to assessing the health of a river ecosystem.

"It's unbelievable how many people want to be a part of this thing," describes Dr. Holmes. And what's special about Science on the Fly, is that individual volunteers can have a large impact on the overall work of river health monitoring. Each volunteer is important, providing access to a specific river site and each volunteer serves as a node that connects Science on the Fly to even more volunteers. Currently, Science on the Fly coordinates a group of volunteers sampling more than 300 sites across 6 countries.

Allie Cunningham currently serves as the volunteer coordinator and social media manager for Science on the Fly. As an avid fly fisher, Cunningham ended up in

Telluride, Colorado after college working at a local fly shop. As her passion for fly fishing continued to grow, so did Cunningham's desire to do more than simply fishing. After getting involved with Science on the Fly as a volunteer, Cunningham eventually transitioned to



serve as volunteer coordinator in order to bring more people into the program. "A lot of our growth happens by word of mouth," Cunningham explains. "Volunteers share their passion for fly fishing and involvement with Science on the Fly with their local fly-fishing communities and that brings us more volunteers."

"All anglers want to be conservationists but not all of them know how best to do this," Cunningham describes.

Science on the Fly provides a unique framework for passionate fly-fishers to also be watershed stewards. Science on the Fly volunteers take a water sample

from a designated site approximately once per month. After freezing the sample for up to three months, the volunteers ship the sample to the Woodwell Climate Research Center laboratory where the samples are analyzed and the data is collected and made available to the

public. In this way, Woodwell serves as the central hub where water samples from around the world converge. And Woodwell Climate scientists

play a role in processing, collecting, and representing the water sample data to better understand and protect watersheds globally.

Cunningham describes the role Woodwell plays in shaping the Science on the Fly community: "Science on the Fly is not a random non-profit, it has Woodwell and Woodwell's science and team as its backbone, which makes it more credible and impactful."

When contemplating the rapid growth of Science on the Fly, Cunningham attributes a lot of the interest to the passion of the fly-fishing community: "If you know you have the patience and

passion for fly fishing, you want to get more involved, and Science on the Fly is the framework for being able to be a better steward."

The consistent sampling regimen that Science on the Fly volunteers partake in helps illuminate some of the changes watersheds are experiencing in response to climate change.

"Fly fishing is a shared passion that relies on a good environment so you're not too many steps from talking about climate change," explains Dr. Holmes. "If volunteers care about the rivers and water quality, they're going to start hearing about climate change and caring about the impact." In this way, Science on the Fly is able to build trust around the shared love of fly fishing and then spark conversations addressing issues of climate change and watershed protection. "There may be different political views, but we all care about fish and fishing," says Dr. Holmes.

Holmes and Cunningham expect that Science on the Fly will continue to grow in order to meet the engagement of the fly-fishing community. And this growth will help expand our knowledge of global river health. "We're already seeing trends in the river data," explains Dr. Holmes. "And my biggest interest is how things change over time, so we want to keep this going for the long-term."

KANEB LECTURE SERIES

Indigenous perspectives on climate change

Restoring a safe and stable climate is the greatest challenge of our time. Science is key to this effort, as is Indigenous knowledge, wisdom, and leadership. This virtual event series offers opportunities to deepen relationships with Indigenous communities in the places where Woodwell scientists work and to amplify Indigenous voices within our broader community.



JUNE 23, 4-5:15 PM EDT

Leslie Jonas

Vice Chair, Native Land Conservancy, Mashpee Wampanoag

The Native Land Conservancy is the first Indigenous land trust east of the Mississippi River, and working on the leading edge of addressing climate change as it relates to land rescue and conservation, and cultural survival for Indigenous peoples. In her presentation, NLC Vice Chair Leslie Jonas will explore the symptoms of climate change we live with on Cape Cod, and why it's important to have First Peoples at the climate change table.

To register visit woodwellclimate.org/events

In the news: highlights

The follow-up to the 2019 framework designed to help companies and their executive teams assess and disclose the potential effects of the physical risks of climate change (P-ROCC) is in *Business Wire*.

An update on the CONSERV project was syndicated in a handful of Portuguese-language outlets, including *Portal do Agronegócio*.

Chris Golgasian, Director of Climate Research at Wellington Management, wrote an opinion piece for *Financial Investigator* focusing on their partnership with Woodwell Climate.

The Risk program's first climate and security case study, on exacerbation of tensions along the India-China border, was written up in *E&E News* and *The Diplomat*.

Dr. Jonathan Sanderman is quoted in a *Mongabay* article on soils.

Dr. George Woodwell's 1986 Congressional testimony on climate change got a prominent mention in a widely syndicated column by David Suzuki on the IEA's recent *Net Zero by 2050* report.

The Sustainable Angler podcast featured an interview with Dr. Max Holmes.

Dr. Brendan Rogers' 'zombie' fire work continued to be covered, in BBC's *Science Focus*.

E&E News wrote up the Risk program's first climate and security case study, on exacerbation of tensions along the India-China border.

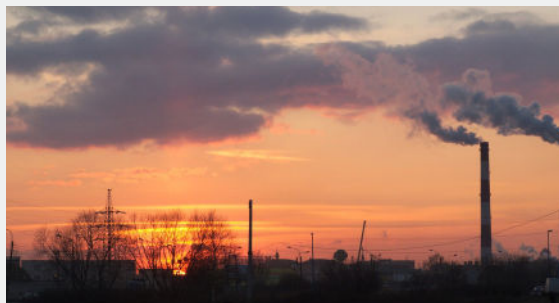
A *Nature* paper on overwintering boreal wildfires, co-authored by Dr. Brendan Rogers, has attracted a lot of high-profile coverage, especially in European outlets, and also *Wired*, *ABC News*, *ScienceNews*, and *Barron's* (via AFP). Carl Churchill's maps were featured in *Grist's* coverage.

Dr. Carly Phillips, a former Woodwell-UCS postdoctoral researcher, wrote about wildfires and climate change for *The Conversation*.

A recent *PNAS* commentary on permafrost emissions co-authored by seven Woodwell Climate experts received great coverage, including *Reuters* (syndicated dozens of times, particularly on radio, and in *The Daily Mail* and *U.S. News and World Report*), *The Hill*, and *Inverse*.

ABC News quoted Dr. Phil Duffy on the early start to Western wildfires.

Woodwell Thought Leadership

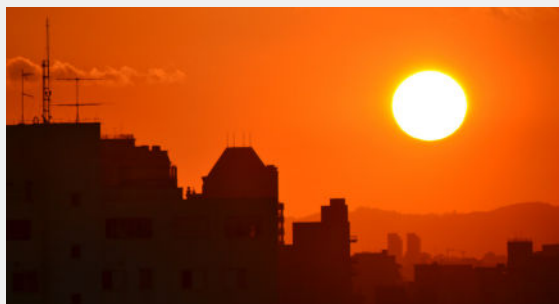


Settled enough: Climate science, skepticism and prudence

Woodwell Climate's Dr. John Holdren takes on the recent resurgence in climate skepticism promoted by former Obama Administration official Dr. Steve Koonin.

"...respect for healthy skepticism must be tempered by recognition that revolutions overturning central aspects of previous scientific understandings are extremely rare."

Learn more: <http://bit.ly/settled-enough>



Climate risk disclosures must be transparent

Woodwell's Dr. Phil Duffy and Dr. Robert Litterman, along with Niskanen Center's Joseph Majkut, highlight the importance of making climate science models and data accessible to everyone.

"It is critical that risk disclosure be based upon transparent and publicly accessible models and data."

Learn more: <http://bit.ly/risk-transparency>

cover: Collecting samples and data from the Kwethluk River in Alaska. / photo by John Land Le Coq

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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**Woodwell Climate
Research Center**

149 Woods Hole Road
Falmouth, MA, 02540-1644

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