



National Oceanic and Atmospheric Administration (NOAA)

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Introduction

The fiscal year has just come to an end, and upon review of discretionary spending, the Speaker of the US House of Representatives and the Majority Leader of the US Senate have announced that the budget for the next fiscal year can fund one more major program. As the battle to bring climate change to the forefront of national priorities becomes dire, NOAA leaders see a unique opportunity.

With supplemental funding, the agency can finally implement solutions to the climate crisis. However, with every other federal agency also vying for the extra budget, and Congressional lack of interest in NOAA, getting the appropriation will not be easy.

This simulation features a summit of NOAA leaders, an ad hoc commission to develop a proposal for American action on climate change, to meet or surpass national commitments under the 2015 Paris Climate Convention, and actually begin to reverse global warming. This impromptu think tank will host NOAA’s leading experts and renowned scientists. If they succeed, Congress will fund America’s climate future, and America will regain global leadership.

Note for delegates: In this simulation, the Congressional budget process is simplified. Normally, US government agencies submit annual budget requests to the White House, which sends a complete annual budget proposal to Congress. The Congress authorizes the budget in the spring, and appropriates the money in the autumn. In this simulation, budget requests are sent directly to Congress for authorization.



NOAA’s Mission

Before there was NOAA, there were three separate agencies dedicated to monitoring the climate: the U.S. Coast and Geodetic Survey, responsible for charting North American waters, was created in 1807 under President Thomas Jefferson; the Weather Bureau, founded in 1870 to monitor the atmosphere, and the U.S. Commission of Fish and Fisheries, created in 1871 for conservation. In 1970, President Richard Nixon combined these agencies to create NOAA.

Technically part of the U.S. Department of Commerce, NOAA is an autonomous scientific agency responsible for research and informing debate on climate change and the environment. NOAA consists of six main departments:

- the National Environmental Satellite, Data, and Information Service (NESDIS),
- the National Marine Fisheries Service (NMFS),
- the National Ocean Service (NOS),
- the National Weather Service (NWS),
- Oceanic and Atmospheric Research (OAR),
- and the Office of Marine and Aviation Operations (OMAO).

NOAA's mission is founded on three main goals: Science, Service and Stewardship. More specifically, their mission is:

1. To understand and predict changes in climate, weather, oceans and coasts;
2. To share that knowledge and information with others; and
3. To conserve and manage coastal and marine ecosystems and resources.¹



NOAA research ship, the USS Thomas Jefferson

NOAA Goal 1 - Science

NOAA aims to study, observe, and understand the nature of the ocean, atmosphere, and other ecosystems. They seek to discover previously unknown aspects of the ocean and atmosphere, and apply this knowledge to climate change, weather events, and the dynamics within different ecosystems in the United States and the world. Science is the core of NOAA as it studies oceans, atmosphere and ecosystems.

¹“Our Mission and Vision,” Our mission and vision | National Oceanic and Atmospheric Administration, 16 May 2021, <https://www.noaa.gov/our-mission-and-vision>

NOAA Goal 2 - Service

NOAA's goal in the global scientific community is to expand knowledge and awareness of the environment and its changes. As understanding of climate change's impact grows, as well as of the effect of weather events and patterns, and evolving ecosystems, NOAA looks to keep the nation and the world informed and active in preserving the environment. NOAA works closely with businesses and communities to share the information they discover; by teaching businesses and communities how to best preserve their environment and minimize ecological harm.

NOAA Goal 3 - Stewardship

NOAA utilizes information gained from its own research and the work of researchers around the world to conserve the Earth's ecosystems and protect those affected by environmental changes. This stewardship includes regulating and managing fishing practices and marine fisheries, working to save endangered species by sustaining habitats, and providing assistance in the face of environmental crises. NOAA aims to persistently learn and adapt their approaches in their preservation measures.

Elements of climate change science

Climate: NOAA defines climate as: “the long-term average of temperature, precipitation, and other weather variables at a given location”, and it's described by “the intensity, frequency, and duration”² of those aspects. This is what makes climate different from weather, “weather reflects short-term conditions of the atmosphere while

²“Climate,” National Oceanic and Atmospheric Administration, 26 May 2021, <https://www.noaa.gov/education/resource-collections/climate>



climate is the average daily weather for an extended period of time at a certain location”³.

Every 30 years, climate scientists revisit certain regions and review their patterns, to calculate how the averages have changed. Scientists monitor the global climate by comparing these averages, and tracking changes to improve their understanding and predictions.



NOAA Headquarters, Silver Spring, Maryland

It takes lot of heat for the Earth’s average yearly surface temperature to increase just a little. However, following industrialization, the

climate has slowly been heating. According to NOAA, the Earth’s temperature increased 0.13°F (0.08°C) on average each decade since 1880. That average has more than doubled since 1981. This can be attributed to increasing amounts of greenhouse gases affecting the atmosphere, brought about by human activities.⁴

2020 was the second-warmest year recorded, and the Summer of 2021 was characterized by dangerously high heat levels.⁵ Though the impact of climate change is clear to many, there still is widespread denial of its existence or humanity’s role causing it.

In a society whose future is threatened by climate change, those trying to create a positive difference are hindered by those meant to protect and vouch for them. Out of 535 members of the 117th Congress, 139 report they refuse to acknowledge climate change or a human role causing it.⁶ As climate change accelerates, science-denying politicians and the public emerged as a barrier to reform. For example, when extreme winter conditions crippled unprepared power plants in his home state, Senator Ted Cruz and his family escaped to Cancún.⁷

Weather: NOAA’s NWS has mastered technologies and methods to be able to successfully predict the weather and mitigate potential damage. While certain weather events are expected, the effects of climate change are becoming increasingly detrimental to the U.S.’s economy and ecology. From dangerously high temperatures in Washington state, to wildfires in

³ “What Is the Difference between Weather and Climate?” National Ocean Service, 2 October 2009, https://oceanservice.noaa.gov/facts/weather_climate.html

⁴ “Climate,” National Oceanic and Atmospheric Administration, 26 May 2021, <https://www.noaa.gov/education/resource-collections/climate>

⁵ “Climate Change: GLOBAL Temperature: NOAA Climate.gov,” NOAA Climate, 15 March 2021, <https://www.climate.gov/news->

[features/understanding-climate/climate-change-global-temperature](#)

⁶ Sally Hardin and Ari Drennen, “Climate Deniers in the 117th Congress,” Center for American Progress, 10 August 2021, <https://www.americanprogress.org/issues/green/news/2021/03/30/497685/climate-deniers-117th-congress/>

⁷ Kathryn Hansen, “Extreme Winter Weather Causes U.s. Blackouts,” NASA, 2021, <https://earthobservatory.nasa.gov/images/147941/extra-winter-weather-causes-us-blackouts>



California, Florida floods, and unprecedented icy conditions in Texas, the impact on the United States is becoming clearer. When no preventative measures are in place, volatile weather leads to property damages and casualties. Be it poor education or weak policies, unpreparedness can be dangerous; and in a worsening climate it is becoming deadly. Thus, the NWS is working tirelessly to keep the public informed, providing easily accessible information, in the hopes of creating a *Weather-Ready Nation*.

A Weather-Ready Nation: NOAA's *Weather-Ready Nation* goal is to ensure all communities across the U.S. are "ready, responsive and resilient to weather, water and climate threats"⁸. In order to prevent continued loss of life and property, each and every community must be as informed and technologically equipped as possible. This standard would require active all the way to the grassroots level. In a nation divided on climate change's existence and the federal government's involvement in local legislature, this is a tricky goal to accomplish.

Leadership: Dr. Richard Spinrad

The NOAA team is led by President Joe Biden's pick for the *Undersecretary of Commerce for Oceans and Atmosphere and NOAA Administrator*, Dr. Richard Spinrad. Spinrad, sworn in on 22 June 2021, inherits an agency in disarray, suppressed and leaderless, without a Senate-confirmed head for the entire four years of the Trump administration's leadership,

NOAA is an agency in doubt.⁹ Under the previous Administration, it was sidelined as science was ignored and policies for climate protection were reversed.

Now Dr. Spinrad and his team — that's you — can push to repair the agency and the environment. With previous NOAA experience as acting as head of research for five years and chief scientist for two, Dr. Spinrad is ready to take on the climate crisis and build a Blue Economy, expanding NOAA as he goes.¹⁰

The Blue Economy Initiative

The Blue Economy is a concept being championed by the United Nations as a feature of their sustainable development goals. It works to take advantage of the economic and employment opportunities the Ocean provides, while taking into consideration the importance of using sustainable methods to do so. The Blue Economy works to maximize possible profit, while changing policies to conserve the World's Oceans and ensure it continues to thrive. Marine resources are often taken for granted, so when they are properly protected and their value recognized, it promotes economic growth and helps to reduce poverty. All that's needed is a secure foundation for the program.¹¹ A Blue Economy prioritizes coastal protection, biodiversity, and renewable energy. According to Dr. Spinrad, "The new Blue Economy is a knowledge-based economy, looking to the sea not for extraction of material goods but for data

⁸ "Your National Weather Service: Evolving to Build a Weather-Ready Nation," National Weather Service, 11 August 2017, <https://www.weather.gov/about/wrn>

⁹ Adria Schwarber, "NOAA Nominee Rick Spinrad Has Deep Roots at the Agency," American Institute of Physics, 6 May 2021, <https://www.aip.org/fyi/2021/noaa-nominee-rick-spinrad-has-deep-roots-agency>

¹⁰ Scott Smullen, "Richard W. Spinrad Sworn in As NOAA Administrator," Oceanic and Atmospheric Administration, 22 June 2021, <https://www.noaa.gov/news-release/richard-w-spinrad-sworn-in-as-noaa-administrator>

¹¹ "Exploring the Potential of the Blue Economy," United Nations, n.d., <https://www.un.org/en/desa/exploring-potential-blue-economy>



and information to address societal challenges and inspire their solutions.”¹²

Goals of a Blue Economy are to:

- provide social and economic benefits for current and future generations;
- restore, protect, and maintain the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems;
- be based on clean technologies, renewable energy, and circular material flows that will reduce waste and promote recycling of materials.¹³

These goals would be accomplished through shifts in the nature of activities the government participates in to be more sustainable. NOAA plans to focus on five specific areas of the Blue Economy:

1. Marine Transportation
2. Ocean Exploration
3. Seafood Competitiveness
4. Tourism and Recreation
5. Coastal Resilience¹⁴

By targeting these sectors, NOAA aims to repair both a pandemic-damaged economy and a mistreated ocean.

The Exploration Gap

During the Trump administration, NOAA’s funding was severely cut. Throughout the government, “climate research and climate observing systems [were] being cut by at least

20%.” Many of America’s political leaders still deny the climate crisis.

However, NOAA’s request for a \$7 Billion budget for Fiscal Year 2022, the largest the agency would have ever seen, may not be unattainable.¹⁵ NOAA’s ability to further exploration and counter climate change may be receiving a much needed boost.



National Climate Service

The concept of a National Climate Service was introduced in 2000. It was not until that a Coordinating Committee was created to develop ways of creating the service:

1. Create a national climate service federation that would determine how to deliver climate services to the nation
2. Create a non-profit corporation with federal sponsorship
3. Create a national climate service with NOAA as the lead agency with specifically defined partners, and
4. Expand and improve weather services into weather and climate services within NOAA.

¹²Richard W. Spinrad, “The New Blue Economy: A Vast Oceanic Frontier,” Eos, 8 June 2016, <https://eos.org/opinions/the-new-blue-economy-a-vast-oceanic-frontier>

¹³“The Potential of the Blue Economy,” UN Department of Economic and Social Affairs, 2017, https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf

¹⁴“NOAA Blue Economy Strategic Plan 2021-2025,” NOAA, 2020,

<https://aambpublicoceanservice.blob.core.windows.net/oceanserviceprod/economy/Blue-Economy-Handout.pdf>

¹⁵Scott Smullen, “NOAA FY 2022 Budget Advances America’s Response to the Climate Crisis,” National Oceanic and Atmospheric Administration, 28 May 2021, <https://www.noaa.gov/budget-finance-performance/news-release/noaa-fy-2022-budget-advances-america-s-response-to-climate-crisis>



Each of these ideas was accompanied by a “tiger team” whose purpose was to evaluate their potential successes and faults.¹⁶ Unfortunately, the lack of focus on the climate crisis and the price tag which would come with the project resulted in it being tabled. Arguments against a NWS-style climate service vary, from worries that the service would repeat activities already carried out within the agency, to opposition based on climate change denial and insistence its contribution would be negligible.¹⁷

However, under the Biden administration it may finally become a reality. If efforts were to succeed, a National Climate Service would merge climate research and technologies throughout NOAA into a single body to track and counter the crisis. This would improve the efficiency of the department as they work to keep the public informed and manage the impacts of climate change.

The Climate Council

Announced 21 July 2021, NOAA’s Climate Council was created to promote further government action on the climate crisis. The council will be comprised of experienced leaders across NOAA who have extensive knowledge on climate change and how to approach the mission of managing it. The group will provide recommendations to Dr. Spinrad on prioritizing issues and actions to solve those issues. The Council has three main concerns to address:

1. Ensuring NOAA’s trusted and authoritative climate science and services

¹⁶“Options for Developing a National Climate Service,” NOAA Science Advisory Board, 18 May 2009, https://sab.noaa.gov/sites/SAB/Reports/CWG/NCS_Report_FinaltoNOAA_5_18_09.pdf?ver=2020-09-28-150156-190

¹⁷“Congress Revisits Case for a Federal Climate Service,” American Institute of Physics, 29 April

are foundational to the nation’s adaptation, mitigation, and resilience efforts;

2. Advancing the equitable delivery of NOAA’s climate products and services to all communities, especially those most vulnerable to the impacts of climate change; and
3. Coordinating NOAA’s climate portfolio within the Department of Commerce and with other agencies and partners to leverage one another’s expertise and enhance the value of collaboration and innovation toward a climate-ready nation.¹⁸

Though the council members have yet to be announced, in an agency of climate change experts, those chosen will be the tops of their field. The Climate Council’s goal is to reshape the way the U.S. government approaches the climate crisis, leading the nation to a healthier, more stable planet.

Scientific Integrity Policy

At NOAA, honesty and accuracy are of utmost importance. When dealing with complex issues such as the climate crisis, it’s imperative that all members of the agency follow the NOAA Administrative Order 202-735D.2. The order bans scientific misconduct, “fabrication, falsification, plagiarism or interference with scientific work conducted by the agency and its partners”. This policy ensures the integrity of the department’s scientific work and findings, and bolsters confidence among the public in the

2021, <https://www.aip.org/fyi/2021/congress-revisits-case-federal-climate-service>

¹⁸“New NOAA Climate Council to enhance delivery of climate science and services,” National Oceanic and Atmospheric Administration, 21 July 2021, <https://www.noaa.gov/news-release/new-noaa-climate-council-to-enhance-delivery-of-climate-science-and-services>



information they are receiving and the scientists providing it.¹⁹

Key Terms for Council²⁰

Carbon dioxide - This chemical compound is the primary greenhouse gas and driver of climate change. It's an integral part of life cycles on earth, produced through animal respiration and absorbed by plants to fuel their growth. Human activities are drastically altering the carbon cycle in many ways. Two of the most impactful are: by burning fossil fuels and adding more carbon dioxide into the atmosphere; and, by affecting the ability of natural sinks (like forests) to remove carbon dioxide from the atmosphere.

Greenhouse Gas - A greenhouse gas is a chemical compound found in the Earth's atmosphere, such as methane, water vapor, and other human-made gases. These gases allow much of the solar radiation to enter the atmosphere, where the energy strikes the Earth and warms the surface. Some of this energy is reflected back towards space as infrared radiation. A portion of this outgoing radiation bounces off the greenhouse gases, trapping the radiation in the atmosphere in the form of heat. The more greenhouse gas molecules there are in the atmosphere, the more heat is trapped, and the warmer it will become.

Emissions - In the climate change space, emissions refer to greenhouse gases released into the air that are produced by numerous activities, including burning fossil fuels, industrial agriculture, and melting permafrost, to name a few.

Fossil Fuels - Fossil fuels are sources of non-renewable energy, formed from the remains of living organisms that were buried millions of

years ago. Burning fossil fuels like coal and oil to produce energy is where the majority of greenhouse gases originate. As the world has developed and demand for energy has grown, we've been burning more fossil fuels.

Sea-Level Rise - Sea-level rise as it relates to climate change is caused by two major factors. First, more water is released into the ocean as glaciers and land ice melts. Second, the ocean expands as ocean temperatures increase. Both of these consequences of climate change are accelerating sea-level rise around the world, putting millions of people who live in coastal communities at risk.

Renewable energy - Renewable energy is energy that comes from naturally replenished resources, such as sunlight, wind, waves, and geothermal heat. Because renewables don't produce the greenhouse gases driving climate change, shifting away from fossil fuels to renewables to power our lives will put us on the path to a safe, sustainable planet for future generations.

Mitigation - Mitigation refers to an action that will reduce or prevent greenhouse gas emissions, such as planting trees in order to absorb more CO₂. It can also include developing and deploying new technologies, using renewable energies like wind and solar, or making older equipment more energy efficient.

¹⁹“Noaa Scientific Integrity Policy,” NOAA Science Council, 2021, <https://sciencecouncil.noaa.gov/Scientific-Integrity-Commons/SIC-Integrity-Policy>

²⁰ “Key Terms You Need to Know to Understand Climate Change.” Climate Reality, 6 November 2019. <https://www.climaterealityproject.org/blog/key-terms-you-need-understand-climate-change>.

Characters

In alphabetical order



Kenneth M. Bailey - Director of the Office of Inclusion and Civil Rights

An army veteran with a degree in Human Resources and numerous diversity and leadership certifications and awards, Bailey has 23 years of military service and strategy under his belt. He transitioned from the army in 2006, moving on to take his leadership skills to civil service. He worked in the U.S. Nuclear Regulatory Commission as the chief diversity specialist, and went on to continue this role in the Immigration and Customs Enforcement agency. With 10 years of experience in creating an inclusive work environment, his charisma and expert guidance were transformational at NOAA. Now, Bailey works to create a diverse and welcoming community at NOAA, as well as providing training to other federal agencies to spread his knack for efficiency, inclusivity, and strategy. When he is not at work sharing his experience and knowledge, Bailey spends his time at his home in Baltimore with his 2 daughters and 3 grandchildren.²¹

²¹ “Kenneth M. Bailey,” National Oceanic and Atmospheric Administration, 25 August 2020, <https://www.noaa.gov/organization/inclusion-and-civil-rights/our-people/kenneth-m-bailey>



Dr. Dominique David-Chavez - Natural Resource Scientist

With a PhD from Colorado State University’s Human Dimensions of Natural Resources program, Dr. David-Chavez is a breakthrough force in the earth science field. Driven by her Arawak Taíno roots, she works to uphold “an intergenerational commitment”.²² This comes by spreading knowledge of traditional Indigenous methods for sustainably caring for and managing land.

On her way to becoming a renowned research scientist, Dr. David-Chavez served on the Collaboratory for Indigenous Data Governance, and a passionate professor of Indigenous Natural Resource Stewardship. She has been part of multiple research projects, working with the Native Nations Institute, CSU’s Department of Forest and Rangeland Stewardship, and the National Science Foundation. These projects are centered around researching Indigenous ethics, data stewardship, and research governance in environmental policy-making. Dr. David-Chavez seeks to educate others and restore her community’s cultural practices.

²² “Team Member: Dominique M. David-Chavez,” Collaboratory for Indigenous Data Governance, 30 November 2020, <https://indigenoustatalab.org/idsov-team-member-dominique-m-david-chavez/>



Janet Coit - Assistant Administrator for Fisheries

Though she only recently took up the mantle of Assistant Administrator for Fisheries, Coit enters her new role well prepared. With over 30 years of experience working on environmental issues, natural resource management, and stewardship, Coit is well-versed in the fisheries world.

Before joining NOAA, Coit directed Rhode Island's Department of Environmental Management and their Seafood Marketing Collaborative as well. In these roles, she promoted resource conservation, locally grown seafood, and methods to minimize the damage done by the climate crisis on the fisheries industry. At NOAA she is the resident expert. Known for her interpersonal skills and friendly demeanor, Coit is ready to take on the climate crisis and brighten up NOAA's morale in the meantime.²³



Dr. Sonya Dyrman - Oceanographer

A pioneer in microbiology, Dr. Dyrman grew up clamming in Puget Sound. Growing up, she noticed the time she got to spend on the water shrink as the coastal waters became contaminated with toxic algae blooms. Inspired by the scale of the impact something so small could have on the coast, she followed her connection to the ocean to the microbiology field.

Today she is a dynamic force in microbial research. She's watched the impact of the climate crisis accelerate, and is determined to mitigate - or hopefully prevent - the threat to the foundation of the ocean ecosystem's food chain: microbes. She utilizes her expertise as a professor of Earth and Environmental Sciences at Columbia University, passionately educating her students and spreading awareness on the threat climate change poses to the ocean's microbial system. Dr. Dyrman is committed to chase data to improve understanding of the oceans at its most complex level.²⁴



Benjamin Friedman - Deputy Under Secretary for Operations

As chief of NOAA operations, Friedman manages the everyday services of the administration. He supervises research and stewardship activities on the coast and oceans, His leadership and organizational skills, developed over 14 years of federal

²³ "Janet Coit," NOAA Fisheries, n.d., <https://www.fisheries.noaa.gov/contact/janet-coit>

²⁴ Carly Stern, "The Scientist Tackling the Ocean Food Chain," OZY, 8 March 2020,

<https://www.ozy.com/the-new-and-the-next/will-your-favorite-fish-still-be-here-in-2050-the-microbes-tell-the-tale/284851/>



management work, have propelled him to this top position in NOAA.

Before NOAA, Friedman worked as a prosecutor at the Department of Justice for 16 years, first in the Organized Crime and Racketeering Section and then in the U.S. Attorney's Office. He managed 2 separate trial sections and was Special Assistant to the US Attorney.

From these experiences he emerged with a knack for winning arguments and charismatic leadership. Friedman came a long way from his hometown in Tennessee, and has resided in D.C. for the past 24 years. Today he works to ensure that NOAA continues to research, service to the nation, and stewardship to the coasts and oceans.²⁵



Rhiana Gunn-Wright - Climate Policy Director

Growing up in the South Side of Chicago, Gunn-Wright had an intense curiosity for the structures that kept her community running. Her inquisitive nature led her to attend Yale, where she worked as a research fellow at the Institute for Women's Policy Research, before becoming a Rhodes Scholar at the University of Oxford. At Oxford she studied Social Policy. After she worked at New Consensus, an advocacy organization and think-tank connected to Representative Alexandria Ocasio-Cortez. She also worked as the policy lead for Abdul El-Sayed and his

²⁵ "Benjamin Friedman," National Oceanic and Atmospheric Administration, 22 June 2021, <https://www.noaa.gov/our-people/leadership/benjamin-friedman>

²⁶ "Rhiana Gunn-Wright," Roosevelt Institute, 17 September 2021,

gubernatorial campaign for Michigan, where she developed an agenda focused on sustainability.

Gunn-Wright now works as Director of Climate Policy at the Roosevelt Institute, where she leads research on climate policy, public investment, racial equity, and public power.²⁶ In Gunn-Wright's eyes, climate policy and social justice go hand-in-hand. In her hometown of Englewood, air pollution causes many to suffer from asthma. Poor land-use planning damages the environment, disproportionately affecting minorities. Gunn-Wright aims to eliminate the issue by tackling the very policies that enable the mistreatment of these communities.²⁷



Dr. James Hanson - Atmospheric Physicist, and Climatologist

An astrophysicist with a doctorate from the University of Iowa, Dr. Hanson was drawn to the climate crisis through research on the changing atmosphere.

He first entered activism in 1988 when he—with Dr. Michael Oppenheimer—were invited to present their findings before the U.S. Senate Committee on Energy and Natural Resources, testifying that global warming was caused by greenhouse gases. Now he is well-known in the science community as an

<https://rooseveltinstitute.org/authors/rhiana-gunn-wright>

²⁷ "Rhiana Gunn-Wright," Wikipedia, n.d, https://en.wikipedia.org/wiki/Rhiana_Gunn-Wright



unstoppable force in the fight to bring awareness to climate change.

His boldness and distaste for pleasantries has rocketed him to the top, with many publications and interviews, though his provocative—and at times abrasive—attitude irks some of his peers. He is quick to criticize those he blames for failures in properly handling global warming, and has been involved in a multitude of controversies. He continues his activism, and has been arrested at protests. When he isn't in the spotlight due to his unapologetic attitude, he's an adjunct professor directing Columbia University's Program on Climate Science, Awareness and Solutions.²⁸



Dr. Zeke Hausfather - Climatologist

A Yale graduate, who went on to the University of California, Berkeley to earn his doctorate in Climate Science, Dr. Hausfather has taken the cleantech sector by storm. He is constantly innovating, using his research on observational temperature records, climate models, and mitigation technologies to try to heal the Earth.

He has years of experience in a multitude of climate science positions, from co-founding and directing research at his own data science company, to his current position as the Director of Climate and Energy at The Breakthrough Institute. As a policy entrepreneur, Dr. Hausfather takes every opportunity to capitalize on his bright ideas. When he isn't spreading awareness of his climate change research

on his Twitter, he's analyzing energy systems and working to build a more sustainable world.²⁹



Dr. Katherine Hayhoe - Atmospheric Scientist

A Canadian, Dr. Hayhoe is prominent in the U.S. for her work on the climate change movement. Her father - an avid scientist and educator himself - instilled a love for science within her from a young age, and she developed a passion for understanding the world around her. She started at the University of Toronto where she received her B.S. in Astrophysics, and went on to get her masters in Science and doctorate in Philosophy at the University of Illinois at Urbana-Champaign.

She's the CEO of AMTOS, a research firm which studies the impact of human activities on the planet, as well as holding multiple positions at Texas Tech University. Restless for opportunities to research, she's also the Chief Scientist for The Nature Conservancy, a global environmental organization based in Arlington, VA. With over 120 peer-reviewed publications under her belt, Dr. Hayhoe has become what some would consider to be a celebrity in the climate science community.³⁰

²⁸ "James Hansen," Wikipedia, n.d., https://en.wikipedia.org/wiki/James_Hansen

²⁹ "Zeke Hausfather," The Breakthrough Institute, 18 September 2019,

<https://thebreakthrough.org/people/zeke-hausfather?tab=media>

³⁰ "Katharine Hayhoe," Wikipedia, n.d., https://en.wikipedia.org/wiki/Katharine_Hayhoe



Louisa Koch - Director of Education

Equipped with degrees in Physics and Electrical Engineering, Koch previously worked for Booz Allen Hamilton, and as a researcher for the National Academy of Sciences. She was a staff economist for the U.S. Congress's Joint Economic Committee, held various positions as a Presidential Management Intern within the Department of Defense, and worked for the Office of Management and Budget.

At NOAA she returned to her roots as a scientist. She started as the Deputy Assistant Administrator for Oceanic and Atmospheric Research before taking her current position. In this role she leads the agency in spreading awareness and directing them in accomplishing the 2nd mission goal, service. Koch lives in Silver Spring, Maryland with her husband and 2 daughters. Known for her smile and limitless capacity to educate, Koch's expertise on bringing awareness to the climate crisis is unquestionable.³¹

³¹ "Louisa Koch," National Oceanic and Atmospheric Administration, 8 October 2020, <https://www.noaa.gov/education/our-people/louisa-koch#:~:text=Louisa%20Koch%2C%20NOAA's%20Director%20of,Deputy%20Assistant%20Administrator%20for%20Research> Molly Graham, "Louisa Koch: National Oceanic and Atmospheric



Nicole R. LeBoeuf - Assistant Administrator of the National Ocean Service

As a child on the Texas Gulf coast, LeBoeuf was drawn to marine science. She earned degrees in Marine Biology and Conservation Biology, and started in NOAA's Fisheries Department. She's made her way through the agency, working in the Office of Protected Resources, NOAA's headquarters, in the Budget Office, and represented the agency at the U.N. General Assembly. She's been a leading force in solving crises and pushing the administration to gain prominence. LeBoeuf's mastery of strategy led to her work overseeing one of NOAA's premiere departments, the National Ocean Service. She, implements efficient commerce methods, stewardship activities, risk reduction processes, and tourism and recreation programs.

Her interpersonal skills helped her make partnerships between her department and other federal agencies, non-governmental organizations, and industry. Her schedule is taught, but that's nothing new ofr LeBoeuf.³²

Administration," NOAA Fisheries, 5 December 2020, <https://voices.nmfs.noaa.gov/louisa-koch>

³² "NOS Assistant Administrator Nicole R. LeBoeuf," NOS Assistant Administrator, 14 July 2021, <https://oceanservice.noaa.gov/about/nosaa-bio.html>



Dr. Anthony Leiserowitz - Human Geographer

Known to his friends as Tony, Dr. Leiserowitz is laid-back, but for research no one switches quite as well. He completed his undergraduate degree at Michigan State and moved to Colorado with plans of being a ski bum. In his time there, he saw the slopes suffer from global warming, and found himself drawn to the science behind it.

Inspired, he went to the University of Oregon to earn a doctorate in Human Geography, becoming an expert in risk perception. He joined the faculty of Yale, where he and Edward Maibach, began studying people's perception of climate change, and has continued analyzing the concept since. Later he became senior research scientist for the Yale School of Forestry and Environmental Studies. He also directed a research center dedicated to studying public climate change awareness at Yale, as well as acting as a principal investigator at Columbia University's Center for Research on Environmental Decisions.

Though first impressions may paint the picture of someone meant to be in a movie by Seth Rogan, anyone who's seen Dr. Leiserowitz at work knows that this bright scientific mind has only just gotten started.³³

³³ "Anthony Leiserowitz," Wikipedia, n.d., https://en.wikipedia.org/wiki/Anthony_Leiserowitz.

³⁴ "Craig N. McLean," National Oceanic and Atmospheric Administration, 25 June 2021,



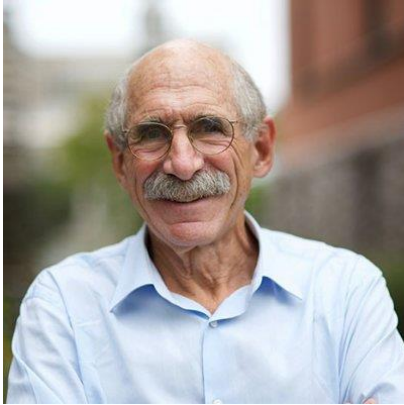
Craig N. McLean - Acting Chief Scientist, and the Assistant Administrator for Oceanic and Atmospheric Research

A work-oriented man, many are not sure he ever rests. A seasoned attorney and respected scientist, McLean started his journey to NOAA growing up along a river too polluted to swim in. He turned to boats, sailed on a NOAA ship conducting research on water pollution and public health. He graduated from Rutgers University with a degree in Zoology, and helped create a nonprofit program which provided marine education to urban students.

He joined the NOAA Commissioned Corps, where he remained as a loyal officer for 25 years. He moved on to the National Marine Fisheries Service, where he focused on developing sustainable fish harvesting strategies, and served as the captain of their largest ship. Deeply dedicated to his field, McLean has held numerous high-ranking positions. He later earned his Juris Doctor to practice marine resource law, returning to NOAA with more skills, culminating in appointment as founding director of the Office of Ocean Exploration.

Now, he's NOAA's Chief Scientist and Assistant Administrator for the Oceanic and Atmospheric Department, directing the ocean exploration activities. If there were two things that could compete with his adoration for his wife JoAnn, it would be his passions for both saving the oceans and exploring them.³⁴

<https://www.noaa.gov/our-people/leadership/craig-mclean> David Wallechinsky and Danny Biederman, "Officials: Mclean, Craig," AllGov, 2016,



Dr. Michael Oppenheimer - Climatologist

Long before he was a big name in the scientific community, Dr. Oppenheimer discovered a bed of oysters on the shoreline by his father's business. Enthusiastic about this new discovery, he dug up as many as he could carry and hauled them home. His mother made him to put them back, since the water badly polluted the shellfish affected. From then on, he chased after opportunities, getting a degree in Chemistry, a doctorate in Chemical Physics, and post-doctoral research on Astrophysics. As he watched the climate become dire, he determined to advance public awareness.

His research covers many topics of the climate crisis, practically making him into a climate change textbook, and he is more than happy to act as one. He spreads awareness, educating as many as he possibly can. Known among his peers as "The Pioneer", Dr. Oppenheimer's vast research has revolutionized the climate change movement.³⁵³⁶

<http://www.allgov.com/officials/mclean-craig?officialid=30355>

³⁵ Maurice Tamman, "The Hot List: Meet Pioneering Climate Scientist Michael Oppenheimer," Reuters, 20 April 2021, <https://www.reuters.com/investigates/special-report/climate-change-scientists-oppenheimer/>



Dr. Louis W. Uccellini - Assistant Administrator for Weather Services, and Director of the National Weather Service

With doctorate in Meteorology, Dr. Uccellini found his passion. Never caught off guard, he is always prepared for a challenge, expertly leading NOAA in their weather services. He's spent his professional journey analyzing dangerous weather and working to create a nation that's prepared for anything. Having published 70 peer-reviewed works, he has no plans to decelerate, and is constantly innovating to improve his field.

Uccellini serving as NOAA's Director of the National Centers for Environmental Prediction and for the National Weather Service's Office of Meteorology. Known among his coworkers as the go-to for any weather-related question, he is a common choice to represent NOAA in weather-related conversations. Currently the Director of the National Weather Service and Assistant Administrator for Weather Services, he is responsible for the day-to-day civilian weather operations for the U.S. Dr. Uccellini's standards are high, and he aims to take his nation's risk preparedness and weather communication capabilities past adequate and into admirable.³⁷

³⁶ "Michael Oppenheimer," Wikipedia, n.d., https://en.wikipedia.org/wiki/Michael_Oppenheimer

³⁷ "Dr. Louis W. Uccellini," National Weather Service, 24 August 2020, https://www.weather.gov/organization/uccellini_louis



Dr. Stephen Volz - Acting Assistant Secretary of Commerce for Environmental Observation & Prediction, and the Assistant Administrator for Satellite and Information Services

With a PhD in Experimental Condensed Matter Physics, Dr. Volz looks to the skies to understand the oceans. He's worked in aerospace for 35 years, and is enthusiastically looking forward to what he'll discover next. In the Earth observation community he is a leader with unmatched expertise. He has experience both in government and industry, working at Ball Aerospace and Technologies Corporation and NASA's Goddard Space Flight Center, respectively. Dr. Volz started off as an instrument manager and systems engineer, and climbed his way up the ladder. For the past decade he's consistently worked leadership positions, and now at NOAA he's at top positions in 2 separate departments. In both these roles, he's responsible for the administration's observing systems, directing the process to turn those observations into predictions. Additionally, he chairs the agency's Observing Systems Council and a member of the Executive Council. His cool demeanor leaves him unbothered by people who won't listen to facts. Dr. Volz, like Aesop's turtle, firmly believes that slow and steady wins the race. While some may succumb to the pressure of the worsening climate crisis and rush to get conclusions from their research, Dr. Volz refuses to be anything but calm and collected.³⁸

³⁸ "Stephen Volz, Ph.D.," National Oceanic and Atmospheric Administration, 28 June 2021,

<https://www.noaa.gov/our-people/leadership/stephen-volz>



Bibliography

- “Anthony Leiserowitz.” Wikipedia, 19 August 2021. https://en.wikipedia.org/wiki/Anthony_Leiserowitz
- “Benjamin Friedman.” National Oceanic and Atmospheric Administration, 22 June 2021. <https://www.noaa.gov/our-people/leadership/benjamin-friedman>
- “Climate change: global temperature”, National Oceanic and Atmospheric Administration, 15 March 2021. <https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature>
- “Climate.” National Oceanic and Atmospheric Administration, 26 May 2021. <https://www.noaa.gov/education/resource-collections/climate>
- “Congress revisits case for a federal climate service.” American Institute of Physics, 29 April 2021. <https://www.aip.org/fyi/2021/congress-revisits-case-federal-climate-service>
- “Craig N. McLean.” National Oceanic and Atmospheric Administration, 25 June 2021. <https://www.noaa.gov/our-people/leadership/craig-mclean>
- “Exploring the potential of the blue economy.” United Nations, n.d., <https://www.un.org/en/desa/exploring-potential-blue-economy>
- Graham, Molly. “Louisa Koch: National Oceanic and Atmospheric Administration.” NOAA Fisheries, 5 December 2020. <https://voices.nmfs.noaa.gov/louisa-koch>
- Hansen, Kathryn. “Extreme winter weather causes US blackouts.” NASA. 2021. <https://earthobservatory.nasa.gov/images/147941/extreme-winter-weather-causes-us-blackouts>
- Hardin, Sally, and Ari Drennen. “Climate Deniers in the 117th Congress.” Center for American Progress, 10 August 2021. <https://www.americanprogress.org/issues/green/news/2021/03/30/497685/climate-deniers-117th-congress/>.
- “James Hansen.” Wikipedia, n.d. https://en.wikipedia.org/wiki/James_Hansen
- “Janet Coit.” NOAA Fisheries, n.d. <https://www.fisheries.noaa.gov/contact/janet-coit>
- “Katharine Hayhoe.” Wikipedia, n.d. https://en.wikipedia.org/wiki/Katharine_Hayhoe
- “Kenneth M. Bailey.” National Oceanic and Atmospheric Administration, 25 August 2020. <https://www.noaa.gov/organization/inclusion-and-civil-rights/our-people/kenneth-m-bailey>.
- “Key Terms You Need to Know to Understand Climate Change.” Climate Reality, 6 November 2019. <https://www.climateRealityproject.org/blog/key-terms-you-need-understand-climate-change>
- “Louisa Koch.” National Oceanic and Atmospheric Administration, 8 October 2020. <https://www.noaa.gov/education/our-people/louisa-koch#:~:text=Louisa%20Koch%2C%20NOAA's%20Director%20of,Deputy%20Assistant%20Administrator%20for%20Research>.
- “Michael Oppenheimer.” Wikipedia, n.d. https://en.wikipedia.org/wiki/Michael_Oppenheimer



“New NOAA Climate Council to enhance delivery of climate science and services.” National Oceanic and Atmospheric Administration, 21 July 2021. <https://www.noaa.gov/news-release/new-noaa-climate-council-to-enhance-delivery-of-climate-science-and-services>

“NOAA Blue Economy Strategic Plan 2021-2025.” NOAA, 2020. <https://aambpublicoceanservice.blob.core.windows.net/oceanserviceprod/economy/Blue-Economy-Handout.pdf>

“Noaa Scientific Integrity Policy.” NOAA Science Council, 2021. <https://sciencecouncil.noaa.gov/Scientific-Integrity-Commons/SIC-Integrity-Policy>

“NOS Assistant Administrator Nicole R. LeBoeuf.” NOS Assistant Administrator, 14 July 2021. <https://oceanservice.noaa.gov/about/nosaa-bio.html>

“Options for Developing a National Climate Service.” NOAA. NOAA Science Advisory Board, 18 May 2009. https://sab.noaa.gov/sites/SAB/Reports/CWG/NCS_Report_FinaltoNOAA_5_18_09.pdf?ver=2020-09-28-150156-190

“Our Mission and Vision.” Our mission and vision | National Oceanic and Atmospheric Administration, 16 May 2021. <https://www.noaa.gov/our-mission-and-vision>.

“Rhiana Gunn-Wright.” Roosevelt Institute, 17 September 2021. <https://rooseveltinstitute.org/authors/rhiana-gunn-wright/>

“Rhiana Gunn-Wright.” Wikipedia. 21 September 2021. https://en.wikipedia.org/wiki/Rhiana_Gunn-Wright

Stern, Carly. “The scientist tackling the ocean food chain.” OZY, 8 March 2020. <https://www.ozy.com/the-new-and-the-next/will-your-favorite-fish-still-be-here-in-2050-the-microbes-tell-the-tale/284851/>

Tamman, Maurice. “The hot list: meet pioneering climate scientist Michael Oppenheimer.” Reuters. 20 April 2021. <https://www.reuters.com/investigates/special-report/climate-change-scientists-oppenheimer/>

“Team Member: Dominique M. David-Chavez.” Collaboratory for Indigenous Data Governance, 30 November 2020. <https://indigenoustalab.org/idsov-team-member-dominique-m-david-chavez/>

“The Potential of the Blue Economy.” UN Department of Economic and Social Affairs, 2017. https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf

Reardon, Sara, Jeff Tollefson, Alexandra Witze and Erin Ross. “US science agencies face deep cuts in Trump budget.” Nature News. 23 March 2017. <https://www.nature.com/articles/nature.2017.21652>

Schwarber, Adria. “NOAA nominee Rick Spinrad has deep roots at the agency.” American Institute of Physics, 6 May 2021. <https://www.aip.org/fyi/2021/noaa-nominee-rick-spinrad-has-deep-roots-agency>

Smullen, Scott. “NOAA FY 2022 budget advances america's response to the climate crisis.” NOAA FY 2022 budget advances America's response to the climate crisis. National Oceanic and Atmospheric Administration, 28 May 2021. <https://www.noaa.gov/budget-finance-performance/news-release/noaa-fy-2022-budget-advances-america-s-response-to-climate-crisis>

Smullen, Scott. “Richard W. Spinrad sworn in as NOAA Administrator.” National Oceanic and Atmospheric Administration, 22 June 2021. <https://www.noaa.gov/news-release/richard-w-spinrad-sworn-in-as-noaa-administrator>



Spinrad, Richard W. "The New Blue Economy: A Vast Oceanic Frontier." Eos, June 8, 2016.

<https://eos.org/opinions/the-new-blue-economy-a-vast-oceanic-frontier>

"Stephen Volz, Ph.D." Stephen Volz, Ph.D. | National Oceanic and Atmospheric Administration, June 28, 2021.

<https://www.noaa.gov/our-people/leadership/stephen-volz>

US Department of Commerce, National Oceanic and Atmospheric Administration. "What Is the Difference between Weather and Climate?" NOAA's National Ocean Service, October 2, 2009.

https://oceanservice.noaa.gov/facts/weather_climate.html

US Department of Commerce, NOAA. "Dr. Louis W. UCCELLINI." Dr. Louis W. Uccellini. NOAA's National Weather Service, August 24, 2020. https://www.weather.gov/organization/uccellini_louis

US Department of Commerce, NOAA. "Your National Weather Service: Evolving to Build a Weather-Ready Nation." National Weather Service. NOAA's National Weather Service, August 11, 2017.

<https://www.weather.gov/about/wrn>

Wallechinsky, David, and Danny Biederman. "Officials: Mclean, Craig." AllGov, 2016.

<http://www.allgov.com/officials/mclean-craig?officialid=30355>

"Zeke Hausfather." The Breakthrough Institute, September 18, 2019. <https://thebreakthrough.org/people/zeke-hausfather?tab=media>