

**Testimony by
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For a Hearing titled, “*Expanding Climate Services at the National Oceanic and Atmospheric Administration (NOAA): Developing the National Climate Service*”

**Subcommittee on Energy & Environment, Committee on Science & Technology
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Chairman Baird, Ranking Member Inglis, and Members of the Subcommittee: Thank you for inviting me to testify on the importance of creating a National Climate Service. My name is Eric Barron, and I am the Director of the National Center for Atmospheric Research, a federally-funded institute based in Boulder, Colorado, that supports and conducts research and scientific inquiry into our atmosphere and its interactions with the Sun, the oceans, the biosphere, and society. In all these areas, our scientists are looking closely at the role that humankind plays in creating climate change, increasing our ability to predict future changes, and assessing the impact that climate change is having, in turn, on us.

I am also Chair of the Climate Services Coordinating Committee, a body within the Climate Working Group of NOAA’s Science Advisory Board which formed last year to examine options for developing a National Climate Service. The Committee recently prepared a report titled *Options for Developing a National Climate Service*, which I would like to bring to your attention as a key document and resource on this topic. This report is intended to provide Members of this Committee, other Members of Congress, and the new Administration, with a solid foundation on which to make well-reasoned choices on the development of a National Climate Service. At the core of the Report, we identify four options for developing a National Climate Service, weigh the pros and cons of each option, and list key recommendations for design and implementation.

I recommend that you review and take into consideration the findings and recommendations of *Options for Developing a National Climate Service*. It reflects the coordinated efforts, over the course of more than a year, of an authoritative group of climatologists, climate policy experts, federal policymakers, potential users of a National Climate Service, and other key stakeholders. It is representative of a broad spectrum of interests from a range of sectors and backgrounds, all of which have a stake and should be taken into account in the integrated design of a National Climate Service.

The outcome of our Committee’s efforts – distilled in the form of our report -- offers an informed and well-considered analysis of how to best approach the design and implementation of a National

Climate Service. I hope that, as you formulate policy ideas, and especially if you begin to draft an authorization bill for the National Climate Service, you will make ample use of our report, take advantage of our hard work, and use the members of the Coordinating Committee as resources.

Today, climate services – provided by a number federal agencies, universities, non-profits, and private sector firms nationally -- provide decision-makers with information about long-term trends in the weather and other Earth systems. While such climate services met some of user demand in the past, demand for climate information and the range of information that is needed are rapidly growing as decision-makers are increasingly concerned about the consequences of global warming: How should my community prepare? How can my community minimize losses? How can we maximize gain? Planners, commissioners, policymakers, and other decision-makers want to know detailed and specific information about how climate change will affect their state, region, community, industry, or utility. They need a dependable and accurate source of information to which to turn. They need a level of engagement with experts that enables them to make informed decisions. They need a research community that recognizes and responds to their problems. The lives and the well-being of their clients and constituents are at stake, as are economic vitality of their communities and other priorities like environmental stewardship and sustainability.

The patchwork of climate services that currently exists does not have the capacity to meet growing needs and demands. Rather, climate services are disparate and disconnected by type and region, lacking central coordination, focus, and direction. They generally do not obtain data, predictions, and syntheses across a broad span of sectors and regions, nor do they have the resources to tackle the advanced computer climate modeling that is required to produce high-resolution, downscale climate predictions. Currently, there is no single source of authoritative, credible and useful information that will allow society to span such important topics as the physical aspects of sea level rise, temperature and precipitation, the resource implications of failed crops, anticipating adverse human health outcomes, robust water supply, managing changes in ecosystems, or the social implications of migrations and resource competitions. In short, current climate services as they are presently constituted are not suited to new challenges or the rapidly growing demand for climate information.

As we face the certainty of a warming planet over the next 100 years – “unequivocal” in the words of the U.N. Intergovernmental Panel on Climate Change – a National Climate Service would dramatically increase our ability to respond, and it’s necessary to unify, strengthen, and optimize our nation’s existing climate services. The purpose of the National Climate Service would be to provide the best possible information to the public to assist in understanding, anticipating, and responding to climate, climate change, and climate variability, and their impacts and implications. Centralized within the federal government, integrated across region and type of services, and supported with sufficient resources and leadership, a National Climate Service would be unique in

its capacity to produce and deliver authoritative, timely, and useful information on climate change. It would enable decision-makers to manage climate-related risks and opportunities, along with other local, state, regional, tribal, national, and global impacts.

A National Climate Service should:

- 1) promote active interaction among users, researchers, and information providers;
- 2) be user-centric, ensuring that scientifically-based information is accessible and commensurate with users' needs and limitations; and
- 3) provide usable information and enable the development of decision support tools through a sustained network of observations, modeling, research activities, and user outreach and assistance.

Critical to the survival and success of a new National Climate Service are the functions of design, leadership, and funding. These are addressed in the key recommendations laid out in *Options for Developing a National Climate Service*, the following five of which are critical to implement:

Recommendation #1. Internally Reorganize at NOAA. Given NOAA's mission and operational capabilities, it is an agency that should play a key role in the establishment and implementation of a National Climate Service. NOAA already contains many of the fundamental components of a climate service and they have considerable history in providing services to the nation. However, as it is currently organized, NOAA is not well-suited to the development of a unified climate service function. An internal reorganization of NOAA that allows greater connectivity between weather and climate functions, and between research, operations, and users, is a necessary step for success.

Recommendation #2. Define Role of Each Agency. There are several federal agencies that are positioned to contribute expertise and that must contribute resources to support a National Climate Service. Each federal agency needs to collaboratively define its role and level of commitment in a National Climate Service. To achieve success, each agency must commit a set amount of funding that is not optional and must commit to participation at a very high level within the agency. There are examples of interagency programs that have failed because leadership was not involved and participants did not have the authority to make commitments on behalf of their agency. This service is too important to the security and well being of the country to risk that approach. We must also define a lead federal entity. There is also good logic for considering NOAA as the lead agency. A lead agency provides a greater ability to speak with an authoritative voice, and a NOAA-lead allows us build quickly from existing components of a climate service, ensure support of inherently governmental functions (observing systems, operational systems), and increases our ability to ensure "one-stop shopping" if weather and climate functions are integrated.

Recommendation #3. Place under High-Level Leadership. Success of a National Climate Service requires recognized, clear, authoritative, responsible leadership within the Federal System at the highest level possible, ideally within the White House. The importance of this cannot be

overemphasized. The service must be interagency and involve state and local governments as well as the private and public sector. To make this work, someone with clear and obvious authority must take the lead.

Recommendation #4. Grant a Large, Dedicated Budget. A National Climate Service requires a defined, independent budget large enough to influence the direction of the Service and achieve its mission.

Recommendation #5. Establish a Federated Structure. A National Climate Service requires an interface best described by a federated structure (i.e., non-profit or federation). This point is extremely important. The greatest strengths of the federated or non-profit option is their flexibility and nimbleness (especially the non-profit option), ability to connect and actively engage a broader range of users and members of the research community, and potential to have a single focus (no competing agenda).

Implementation of the recommendations outlined in the report will establish an efficient and effective service that promotes interactive partnerships among scientists, information providers, and a variety of users. For instance, accurate and properly-scaled predictions of long-term trends in wind volume and sunshine levels at a research institution can help renewable energy companies plan where to build their new wind turbine farm or concentrated solar thermal plant. A national clearinghouse for all carbon and climate monitoring data and all impact analyses, based in Washington, D.C., could support policymaking and provide an authoritative signal to Congress about how rapidly and deeply you should cut or mitigate greenhouse gas emissions to minimize losses. A civil engineer's high-resolution model of how stream flow will change over the long term for a key river could help fisherman improve management of that river's fisheries, farmers improve irrigated agriculture along the river, and dam operators optimize hydropower production. And authoritative information on weather and climate parameters associated with causes of adverse health outcomes could help officials at the Center for Disease Control and Prevention and other health professionals respond to adverse health outcomes in advance and prepare with an appropriate level of medical community preparation.

As these examples show, the benefits of a National Climate Service will be manifold, will extend to all parts of the economy, and will have implications for the everyday lives of all people of this country. Climate change is happening now and it is occurring at a faster rate than anticipated. We need a National Climate Service that will enable people to plan for change in a constructive, efficient manner. If we succeed in this endeavor, I am confident that we can avoid many of the adverse changes that could surely affect our society otherwise.

Mr. Chairman and Ranking Member Inglis: Thank you again for the opportunity to testify before your Subcommittee regarding this very important program. I would be more than happy to field any questions you or the other members of the Subcommittee have for me today.