

**90th ANNUAL MEETING OF THE AMERICAN METEOROLOGICAL SOCIETY
PRESIDENTIAL LUNCHEON – CLOSING SESSION
DR. LUBCHENCO’S REMARKS
JANUARY 21, 2010**

As Delivered

INTRODUCTION:

[INTRO]

Thank you, Tom, for that gracious introduction, and the AMS for inviting me to speak in this forum. It is a privilege for me to be here, especially in my capacity as the NOAA Administrator. Before I begin my prepared remarks, I'd like to acknowledge the herculean efforts of many individuals at NOAA to support the US relief efforts under way in Haiti.

In response to the earthquake in Haiti on January 12, NOAA has contributed to the national response to this tragedy:

1. The Office of Marine and Aviation Operations and the National Geodetic Survey have based a NOAA citation N52RF aircraft and crew out of Western Puerto Rico. NOAA personnel are flying aerial surveys for damage assessment to support Search and Rescue and to identify transportation corridors in and out of Port-au-Prince; especially routes connecting unaffected seaports.
 - a. There have been 3 flights over 3 days where approximately 1500 very high resolution images have been collected. NOAA plans to be engaged for another 5-7 days.
 - b. The data are unclassified and being prioritized to first responders, but are available to the general public.
2. The Satellite Services Division has update its website to provide a loop of real time imagery for satellite passes over Haiti.
3. The National Weather Service has been requested by the Department of Homeland Security to provide current weather information and outlooks through 7 days for the following locations – the Guantanamo Naval Base; Miami; and Port-au-Prince.
 - a. The National Weather Service is using Department of Defense weather information in its models to provide aviation and marine forecasts for the Port-au-Prince area.
4. A Senior Scientific Coordinator from the Office of Response and Restoration is standing by to provide technical expertise on oil spill and hazmat containment to a US Coast Guard Strike team in Port-au-Prince. National Weather Service and National Ocean Service personnel are archiving wind field data to be able to predict “lost oil spills” once the situation stabilizes.
5. And NOAA stands ready to address longer term responses, which could include debris mapping, hydrographic products, coral restoration, and fisheries habitat efforts once an accurate assessment of the impact has been determined.

Most of you can appreciate how important this kind of information and assistance is to all of the rest of the relief efforts. This is yet another example of the ways that people at NOAA provide critical services that often go unrecognized. I thank everyone involved.

This is my first AMS meeting and it's been a great opportunity for me to connect to the science and community of people that are so important and central to NOAA's mission. While many of you know my background as an ecologist, I'm most interested in connections. I believe that we should look at the earth system holistically, which means understanding the interconnectedness between the physical systems, the biogeochemical systems, and the human systems. The interactions among these components result in complex systems, whose nonlinear dynamics are both fascinating and immediately relevant to societal interests. Understanding the behavior of the components and their interactions must underpin the information and services provided by *this* community to benefit society.

This is one of the most exciting and most challenging times ever for the scientific community. We are making significant headway on understanding the climate system, we are increasing the lead time on tornado warnings, and science is being recognized as a critical component to decision making.

But at the same time, our scientific integrity is being called in to question, we have strained resources for observing systems and high performance computing, and we have quite a way to go to communicate scientific information in a way that is understandable and useful to society. We must work together as a community to continue these advancements and tackle these challenges.

As our Nations collectively enter the 'no analogue state' of a climate-changed world, as the possibility of a run-away greenhouse effect rears its head, and as demand for information about climate change grows exponentially, we must act today to address the challenges, seize the opportunities, and develop the most effective mitigation and adaptation strategies possible based on the best available science.

[Outline]

To build on your meeting theme, "Weather, Climate and Society: New Demands on Science and Services", I will focus my remarks on highlights from the Obama Administration to address climate and society and then turn to our plans for NOAA's science and service, and close with next steps.

Unfortunately, I'm not in a position to make any big announcements here today. Our plans are tightly linked to the budget and the President won't be releasing his budget until the first week of February. I will, however, give you some of our current thinking and close with 'things to watch.'

[Science Graphic]

The climate challenge before us is very real. There is unequivocal evidence that the Earth is warming. This warming can be seen in increases in global-average surface air and ocean temperatures, widespread melting of snow and ice that threaten freshwater supplies, rising sea levels that encroach upon our coasts, and many, many other impacts.

The science behind these trends is solid, but we face continuing challenges in communicating the patterns to the American public. I stand behind the quality, reliability and integrity of NOAA's climate science, and continue to emphasize the importance of the openness and transparency of our data.

[President Obama]

In the short time that President Obama has been in office, he has made it clear that he considers addressing climate change to be a high priority and that our choices will be informed by scientific knowledge. As he said to the National Academy of Sciences, "Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before."

Since he took office, President Obama has dramatically shifted US policy on climate change. He has emphasized that good government depends on good science, and that the scientific evidence of climate change is compelling. He is committed to reducing green house gas pollution, creating clean energy jobs and adapting to climate change already underway. And he has committed to working with Congress to pass energy legislation that will transition the Nation to a clean energy economy and reduce dependence on foreign oil.

[Domestic Actions]

The Obama administration has taken bold steps to reduce greenhouse gas emissions and formulate durable policies:

- Fuel efficiency standards for new cars and trucks have been increased substantially;
- Eighty billion dollars of stimulus funds support clean energy, including the Nation's largest ever investment in renewable energy;
- More stringent efficiency standards for appliances continue to be developed;
- EPA's endangerment findings;
- A new White House office, interagency coordinating committees, and an executive order to all agencies on energy efficiency provide clear evidence of a sea change in words and deeds.

NOAA participates actively in all of the interagency efforts. We co-chair the Adaptation Task Force, and we led the interagency 'Global Climate Change Impacts' report.

The President's Executive Order on Federal Leadership in Environmental, Energy and Economic Performance is worth mentioning in a little more detail. The Executive Order requires Federal agencies to set a 2020 greenhouse gas emissions reduction target within 90 days; increase energy efficiency; reduce fleet petroleum consumption; conserve water; reduce waste; support sustainable communities; and leverage Federal purchasing power to promote environmentally-responsible products and technologies.

These actions are significant, but clearly there is much more to do. One obvious task is to help the American public understand what is known and what is at risk. The Global Climate Change Impacts in the United States report is an excellent start.

It is the most authoritative assessment of the best available science on climate-change and its impacts on the United States – impacts already being felt, and impacts yet to come.

Equally important, it is written in plain language and designed to be accessible to decision makers at all levels – national to local. It contains new and updated information on climate science, including research findings more recent than the last IPCC report. The significant effort invested in making sure this report could be understood by lay audiences is paying off, but the information in the report has only begun to penetrate the American consciousness. I applaud all of the agencies and scientists who contributed to this report.

[Interagency Climate Change Adaptation Task Force]

Nancy Sutley, Chair of CEQ and Shere Abbott, Associate Director for Science at the White House Office of Science and Technology Policy co-chair the Climate Change Adaptation Task Force.

This task force has some important goals:

- Recommendations toward a national adaptation strategy that utilizes a set of best practices derived from the experience and knowledge of governments and stakeholder groups across the United States and abroad;
- The integration of climate change resilience and adaptive capacity into Federal Government operations;
- Coordination of interagency preparations for climate change impacts with domestic and international activities.
- And, the continued cultivation of communities that are informed, understanding of their vulnerability to climate impacts, and equipped with information to use in local adaptation policies.

This is a tall order, but the Task Force is making progress through stakeholder workshops and targeted studies.

[International Actions]

Turning to the International front, the President appointed Todd Stern as Special Envoy for Climate Change very early in his administration, to send a clear message that the United States will be “energetic, focused, strategic and serious about addressing global climate change”.

NOAA works closely with Todd Stern, his staff and others at the State Department on bilateral and multi-lateral agreements, the science needed to address climate adaptation and mitigation, and international climate meetings.

I had the pleasure of leading the US delegation to the World Climate Conference -3 last August in Geneva. Recall that the first two World Climate Conferences in 1979 and 1990 were both prescient and bold, tackling critically important climate issues before they were broadly appreciated.

Decisions taken at the first and second World Climate Conferences set in motion what is now recognized as an impressive legacy: The World Climate Programme and the World Climate Research Programme, i.e. the core scientific capacity that enabled our understanding of the climate system, and contributed to the establishment of the IPCC, and a global climate observing system that serves as the backbone for national and international climate assessments and provides a baseline for research and modeling efforts. This is a powerful legacy.

The second World Climate Conference also laid the foundation for the United Nations Framework Convention on Climate Change -- the international treaty that guides our collective commitments to reduce global greenhouse gas emissions and that, in recent years, has taken a leadership role in efforts to adapt to climate changes that cannot be avoided.

At this year's World Climate Conference-3, there was a resounding, strong presence from the US -- including the federal sector, academia, non-governmental organizations, and the private sector. We were at the negotiating table, we gave science talks, we were on panels, and we made a statement that we were there to work with the global community to continue the science and service needed to address climate change.

This meeting culminated with an adoption of a High Level declaration to establish a Global Framework for Climate Services. This framework is intended to bring together the developers and providers of climate information, predictions and services, and the climate-sensitive sectors around the world to ensure relevant climate information made available for integration into planning, policy options and practice at various levels. And my message was to stress the urgent need for useful *scientific* information to underpin these services.

This message was carried into the fifteenth UN Conference of Parties, or COP-15, in Copenhagen this December. The US had an unprecedented level of participation, underscoring the strong support across the Administration to continue to work toward an international agreement to address climate change. The Administration officials included President Obama, Commerce Secretary Gary Locke, Interior Secretary Ken Salazar, Agriculture Secretary Tom Vilsack, Energy Secretary Steven Chu, and Environmental Protection Agency Administrator Lisa P. Jackson, along with Council on Environmental Quality Chair Nancy Sutley, Office of Science and Technology Policy Director John Holdren, and Assistant to the President for Energy and Climate Change Carol Browner.

And I will proudly note, that the NOAA Science on Sphere was the primary feature for the US Center at COP-15. I want to publicly acknowledge the great work of the NOAA Team for making it all happen and allowing us to use COP-15 as a teachable moment about the importance of the science.

Although the Copenhagen Accord did not go as far as many hoped, it does provide a good foundation on which the nations of the world can build. The next important steps are action by the US Senate and actions by the countries emitting the most greenhouse gas. The continued engagement of the scientific community is crucial.

Following the COP-15 meetings, I spent some time in Indonesia over the holidays. The impacts of a changing climate are already evident there and are projected to get worse. The hundreds of millions of people who live in Indonesia, mostly along the coastal margins, are vulnerable to climate impacts.

60% of them depend on seafood for their sole or primary source of protein, but their fisheries will likely be affected by warmer and more acidic waters. Tourism, a vital source of income, will be affected if coral reefs bleach. Flooding, salt water intrusion, sea level rise, increased rainfall in the wet season and declining dry-season precipitation are impacting their infrastructure, food, drinking water and livelihoods.

Realizing the seriousness of the problem, the President of Indonesia has committed to aggressive reductions in the country's emissions and is seeking partners to help them both reduce emissions and adapt.

[Our Nation Needs Climate Services]

With the multiple domestic and international actions focused on climate change and/or its impacts, it is clear that our Nation needs Climate Services that provide authoritative, reliable, timely, and relevant climate information and services to assist the nation's leaders and citizens in making climate-related decisions that enhance their lives and livelihoods; services that are rooted in sound science.

[Where is NOAA headed?]

Clearly the Administration has taken actions to address climate change at home and globally, and NOAA has also taken actions to move toward improved climate science and services.

[NOAA envisions...for climate services]

NOAA Envisions an Informed Society Anticipating and Responding to Climate and its Impacts, and NOAA has already begun to do this.

Imagine these scenarios....

- 1) The number of water restriction days are few and far between because your community used reliable information about the likelihood of extreme droughts for planning.
- 2) Your home is powered by efficient, reliable renewable energy sources, supported by a suite of short and long-term environmental forecasts such as Wind Surface Forecasts for wind turbines.
- 3) A new private sector industry -- one spawning new jobs and supporting a green economy -- grown up around the core products and information generated by a National Climate Service, much like the establishment of the private sector weather industry did around our weather services
- 4) Our nation's security is enhanced because reliable climate change information clearly shows areas of vulnerability due to changes in food and water availability, climate-

related health issues, coastal sea level rise, and other impacts of climate, and the nation acts upon this information.

[Legislative Mandates]

NOAA has several legislative mandates that give us the authority to carry out wide-ranging activities to improve our understanding of climate processes and deliver climate services to assist our Nation. Principal among these authorities is the National Climate Program Act, which was first passed in 1978 and demonstrates not only NOAA's lengthy tenure at the forefront of investigating the climate, but also that at the highest level, our government recognized and took action to make this issue a priority over 30 years ago.

This issue is not new and over 30 years of effort provides us with tremendous understanding. Under the auspices of these authorities and any new legislation that may be passed to further define, or even expand, our mandates to address the Nation's need for climate services, we will continue to provide leadership and foster collaboration on this issue of paramount importance to our society and economy and environment.

[Meeting the Rising Demands]

Building on these legislative authorities to meet the rising demand for climate services, there are a few points to note.

NOAA's existing framework for climate was established before climate services were recognized as essential, and its current structure is not optimized for climate service delivery. Therefore, a reorganization of NOAA's assets is under consideration as an important first step, but alone it will not be sufficient to strengthen NOAA's science and ensure the success and integration of climate science and services.

To meet climate service demands, NOAA must direct efforts to develop a framework that will:

- Connect users to existing climate products and services, while continuing to develop new authoritative, reliable services;
- Transform current science and data into understandable, usable and accessible information;
- Actively engage users in service development. This means a continued and sustained two-way dialog in all phases of service development and delivery.

NOAA's climate framework must deliver needed climate services while maintaining leadership in observing, research, modeling and assessments. These critical science components underpin our services and must remain strong to ensure we are using the best scientific information available to inform our services.

[NOAA's Climate Strategic Goals]

As we learn more about the growing demands for climate services, NOAA has developed three overarching strategic goals to help focus and strengthen our climate science and services.

In the areas of Service, Partnerships and Science NOAA has a long, established history of excellence. These are not new to NOAA. Rather, the agency will build upon our existing strengths.

The first goal is the Delivery of Sustained & Effective Services

- Promote integrated service delivery at the national and regional scales
- Develop science-based climate information, products and decision support tools needed for informed decision making
- And expand sustained engagement, dialogue and collaborations with users to build a robust service-centric program.

The second Goal is Promoting Collaborative Partnerships

- Use existing partnerships and networks, and address gaps as needed (examples include the Regional Climate Centers, the State Climatologists, Sea Grant, and many others)
- Commit to strong federal partnerships that promote effective leveraging of unique capabilities to meet the nation's needs
- Promote a thriving private sector to deliver diverse climate services to businesses and individuals
- **The National Integrated Drought Information System is a prime example of how these partnerships can be success to serve society's needs.

And the third goal – and an essential one -- is Advancing Climate Science

- Build and sustain comprehensive observations and monitoring systems and provide state of the art research, modeling, predictions and projections
- Guide the evolution of NOAA's science enterprise based on changing societal needs, new scientific insights and continuous evaluation in collaborations with users, scientists and partners
- Link natural and socio-economic sciences to support decision-making

And with these goals I should include adaptability. We will continually evaluate our progress in these goals and make adjustments over time.

[NOAA's Role in a National Strategy]

As we work to achieve these goals, we recognize there are multiple levels in which NOAA has a role.

International: To address the climate change issue, it is clear that all nations much to commit to collectively develop and deliver climate services. NOAA, in this context, is widely known for its leadership and contribution in the Global Earth Observation System of Systems, or GEOSS, its contributions to the World Climate Research Programme, and will be a participant in the development and implementation of the Global Framework for Climate Services...the result of the World Climate Conference-3.

National: Unlike Weather Services – which are provided by a single agency, --, numerous federal agencies and partners like academia will need to participate to make Climate Services successful. In this national context, NOAA provides foundational science that is the keystone of

climate services, and commits to engaging with other agencies as both partners in climate services, and users of NOAA's information.

Regional: At the regional level, and to the extent we get down the local level – where all of the action happens – again, many agencies and other partners must participate in a regional climate service enterprise. And in this context, NOAA brings regional assets and decades of experience addressing climate issues at the regional level.

NOAA can leverage its regional and local National Weather Service infrastructure, which has over two hundred years of service delivery experience. Finally, to engage the private sector, NOAA will expand on existing relationships and intends to use the Department of Commerce's national and regional infrastructure.

[Embedded Graphic on NOAA's Leadership]

This slide captures the essence of what is needed to deliver climate services that will support the needs of our Nation. NOAA is committed to bringing these critical assets to a federal partnership including Observation and Monitoring, Research and Modeling, Assessments, and Information Delivery and Decision Support.

Let's start at the bottom of the slide and build our way up. The nested nature of the chart shows the core functions most deeply embedded and we build out from there.

Climate Observations and Monitoring are the foundation upon which climate science and services are developed. Observations enable all of the other components on this chart. NOAA is responsible for over 90 observing and monitoring systems located throughout the world and our experience spans from local to international in terms of developing and maintaining these systems.

NOAA is also the agency mandated to be stewards of our climate record, and operates the National Climatic Data Center where the quality and reliability of climate observations are ensured, and then made available to the public.

The observations and modeling capabilities enable research and modeling. NOAA's Research and Modeling is recognized as some of the best in the world today. NOAA is pushing our modeling efforts to improve resolution at the regional scale, and is being developed for applications critical to resource managers, such as the early warning Drought Monitor. NOAA models were also critical for the current and upcoming IPCC reports.

The observations, monitoring, research and modeling provides the information used to develop assessments. NOAA has demonstrated an overwhelming representation in climate change assessments relative to other agencies. NOAA is the largest federal contributor of IPCC authors. In particular, over 2/3 of the federal authors for the IPCC Working Group 1 in the Third and Fourth Assessment Reports were from NOAA. In addition to national and international assessments, NOAA has a long history of working with communities, cities, and states to develop regionally specific adaptation plans. For example, NOAA's partnered with King County

in Secretary Locke's home state of Washington to develop the report, *Adapting to Climate Change: Strategies from King County, Washington*.

Finally, all of the previous information feeds into the delivery of climate information and development and delivery of decision support tools. NOAA's Information Delivery and Decision Support includes education, communication and engagement activities to create a two-way dialog with our partners and users. And we are working to enhance these services.

While we look to the Administration, in particular, the Office of Science and Technology Policy, NOAA is working internally to enhance all of our climate science and service efforts and we will work with our key partners to ensure the federal government is collectively addressing the growing climate needs, including academic, NGO, state, and local partners in the effort, and enabling a new private sector to grow around climate services.

I note that each of the different sectors listed along the right side of the slide will need different kinds of information – and that different agencies will be important in providing that information.

[Looking ahead]

To wrap up this session, I want to give you a preview of actions on the horizon.

[Coming soon....]

➤ NOAA's proposal on Climate Services

While NOAA's employees and assets have provided national and international leadership informing both mitigation and adaptation decisions to respond to the opportunities and challenges of a changing climate, it is clear further action is needed.

NOAA must make adjustments today that will support our long term commitment to serving the climate needs of the Nation and the world. This will require a continued strong commitment to advancing climate science and research while improving our product development and service delivery to better meet the growing demand we see from users for relevant climate information and services.

NOAA has spent many months carefully studying alternatives to determine how NOAA can best meet the nation's need for climate information and has benefited from substantial input from both our employees and advisory bodies, such as the NOAA Science Advisory Board and the National Academy of Science.

We are at the point where we are vetting a proposal through the Administration and expect to have an announcement of our intentions within the next couple of weeks. We look forward to further engagement with our employees and this community over time.

➤ NOAA's Climate Portal going live

One of the steps that NOAA has taken is to reorganize and coalesce all of the information about climate into a more cohesive and easy to find and use format. We're creating a new NOAA

climate portal and look forward to making it public. The prototype has been available for beta-testing since November and we appreciate the constructive comments we have received thus far.

The NOAA Climate Portal is a one-stop shop for access to NOAA's climate information. It is set up to serve different audiences (e.g., teachers, researchers, policy makers, the public) and to provide various types of information – data, the latest research findings, education materials, and magazine stories. Neal Lott, from NCDC will be giving a presentation about the climate portal at 2:45pm today in B217. I encourage you to learn more about the incredible work done by our NOAA Climate Portal Team.

➤ Strategy to Strengthen NOAA Science

While we are working on a plan to enhance our climate services and communication, we are simultaneously developing a strategy to strengthen NOAA's overall science. And I do want to mention, as I stated at the Women in Science Luncheon on Tuesday, I believe we have to get away from the basic versus applied research paradigm and move to research that is both cutting edge intellectually and relevant to today's problems. NOAA is setting in motion a strategy to ensure the enhancement of our science enterprise. Reinstating and elevating the role of Chief Scientist in NOAA is one step in that process.

➤ Establishment of the Task Force to develop the Global Framework for Climate Services

As I mentioned previously, the outcome of the WCC-3 was to establish a Global Framework on Climate Services. On January 11, subsequent to the WCC-3, the World Meteorological Organization convened an intergovernmental meeting, in which NOAA participated, to endorse the composition of the Task Force and agree to its terms of reference for the Task Force.

That Task Force will be comprised of luminaries from a wide range of disciplines and geographic regions, bringing broad perspectives to bear in defining the user-needs and scope of climate services.

We, NOAA, stand ready to do our part to ensure the success of this effort in the coming months, and as we transition from planning to implementing the Framework.

➤ Executive Order on Scientific Integrity

On March 9th – after less than two months in office -- the President issued an Executive Order on Scientific Integrity, tasking his Science Advisor, John Holdren, to lead an interagency effort to recommend policies that would ensure that scientific integrity is protected.

The Executive Order made the following five points:

1. The public must be able to trust the science and scientific process informing public policy decisions.
2. Political officials should not suppress or alter scientific or technological findings and conclusions.

3. Scientific information developed and used by the government should ordinarily be made available to the public.
4. To the extent permitted by law, there should be transparency in the preparation, identification, and use of scientific and technological information in policymaking.
5. The selection of scientists and technology professionals for positions in the executive branch should be based on their scientific and technological knowledge, credentials, experience, and integrity.

The Executive Order also established an interagency task force led by the Office of Science, Technology, and Policy to develop recommendations for action that guarantee scientific integrity throughout the executive branch. NOAA played an active role in the task force and we eagerly await the Administration-wide guidelines on scientific integrity.

In closing, I can't think of a better or a more relevant topic than what you have chosen as the theme of this AMS meeting: Weather, Climate and Society and I hope my remarks shed some light on how the Administration and NOAA are working to connect the science and the service to meet society's needs for weather and climate information.

I thank you for your time today, and I commend the work of this community to bring together the best and brightest in the relevant sciences to understand the past, solve today's problems and anticipate those of the future.