NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOAA Knows Climate

"The climate challenge before us is real. Climate change impacts will touch nearly every aspect of our lives. Meeting the challenge requires an unprecedented need for climate information and services. NOAA, through its existing climate capabilities, partnerships, and networks, is already beginning to address these needs by providing high quality climate information and services that are user-friendly, responsive, and relevant. Below is just a brief sample of some of the many ways in which **NOAA Knows Climate**.**"**

- ***Dr. Jane Lubchenco***
Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator

National Environmental Satellite, Data, and Information Service

NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) provides critical climate data derived through the development and operation of 16 geostationary and polar-orbiting satellites. The satellite systems provide continuous global observations as well as supply the expansion of operational climate and weather products. The NESDIS National Data Centers manage and offer access to the world's largest archive of climatic, oceanographic, geophysical, and environmental data and ensure the data is readily and easily accessible for its users. Access to these data products promote, protect, and enhance the nation's economy, security, environment, and quality of life. NESDIS is at the forefront of developing new operational satellites that can ensure continuity of climatic data for future generations. For additional information, please visit http://www.nesdis.noaa.gov.

National Marine Fisheries Service

NOAA's National Marine Fisheries Service's (NMFS) science and management activities have been directly affected by climate change. Our scientist have implemented programs to understand the effects of climate change on marine resources and are working with our managers to modify or enhance existing management measures for a number of species. Specific examples include:

- NMFS and the National Science Foundation have commissioned the first comprehensive study of how CO_2 emissions may be altering the biology and chemistry of the ocean environment.
- NMFS scientists are studying the effects of climate change on the feeding habits of gray whales, which migrate from the Arctic Circle to Baja.
- NMFS is conducting Beaufort Sea Marine Fish Surveys in collaboration with the Universities of Alaska and Washington and the Mineral Management Service to help determine temperature related changes in distribution for commercially important species such as walleye pollock and Pacific cod.

For additional information, please visit http://www.nmfs.noaa.gov/.

National Ocean Service

NOAA's National Ocean Service (NOS) monitors the effects of, and helps communities adapt to, the affects of climate change. For example, NOS operates the tide and water level station network along the U.S. coast and Great Lakes. With more than two hundred years of historical data, NOS can better understand trends in sea level rise, the impact of coastal storms and El Nino-type events, and the effect of long-term falling water levels in the Great Lakes. NOS works closely with NOAA's National Weather Service and others on community inundation modeling and is leading an interagency effort to collect high-resolution coastal topographic and bathymetric data. Besides monitoring, observing, and modeling, NOS supports research and tool development that will allow the forecasting and mitigation of the ecological impacts of climate change. Finally, NOS provides coastal managers with high-resolution tools as well as training to help them more effectively use this information to assess risks and implement appropriate strategies for adapting to climate change. For additional information, please visit http://oceanservice.noaa.gov/.

National Weather Service

NOAA's National Weather Service (NWS) provides a wide variety of climate products and services to the public, its constituents, and the business community. This information includes high-quality environmental observations, seasonal and inter-annual predictions, and local 3-month temperature outlooks. In addition, each NWS field office is staffed with one or more Climate Services Focal Points to handle climate-related questions and requests for climate information. Since 1890, the NWS Co-operative Observation Program, or COOP, has been providing weather and climate observations on a daily basis from nearly 10,000 volunteers throughout the 50 states, territories and commonwealths. With NWS climate data, climate products, and close-working relationships with local NWS offices, regional and local communities and partners can improve their preparation and response to environmental hazards such as heat waves, drought, and coastal inundation. For additional information, please visit http://www.nws.noaa.gov/.

Office of Marine and Aviation Operations

NOAA's Office of Marine and Aviation Operations (OMAO) oversees the nation's largest civil fleet of research and survey ships and aircraft and provide necessary platforms for the study of and response to climate change on our nation's ocean, coastal, and Great Lakes' environment. OMAO also manages the renowned NOAA Dive Center and the NOAA Commissioned Corps, the nation's seventh uniformed service. NOAA's ships and aircraft are specially modified to support the agency's programs, and carry instrument packages appropriate for NOAA's missions. OMAO conducts missions on a global scale and provides support for climate related activities such as weather research, hurricane surveillance, ecosystem management, and ocean charting. OMAO's ship fleet provides hydrographic survey, oceanographic and atmospheric research, and fisheries research vessels to support NOAA's strategic plan elements and mission. Additionally, NOAA Corps pilots are the only pilots in the world who are trained and qualified to fly into hurricanes at dangerously low altitudes (below 10,000 feet). OMAO supports NOAA in managing an ever-changing climate. For additional information, please visit http://www.omao.noaa.gov/.

Office of Oceanic and Atmospheric Research

NOAA's Office of Oceanic and Atmospheric Research (OAR) is a world leader in advancing understanding of climate and how it affects our health, economy, and our future. OAR's climate research focuses on observations, prediction, effects, and outreach. OAR sustains global observation networks that monitor the atmosphere, ocean, and ecosystems to provide the climate information needed to verify predictive climate models, to assess the causes and effects of climate change, and to inform decision-making. For example, a world-class NOAA model was used by the Intergovernmental Panel on Climate Change (IPCC) in its Nobel Peace Prize-winning Fourth Assessment Report on Climate Change. More than 120 OAR scientists contributed to the 2007 report and shared in the Nobel Prize. By combining expertise in both climate observations and modeling, OAR scientists study the effects of climate change, including problems such as carbon monitoring, ocean acidification, water resource availability, fire weather frequency and intensity, and severe weather events. For additional information, please visit: http://oar.noaa.gov/climate/ or http://www.oar.noaa.gov/researchmatters/index.html or http://www.climate.noaa.gov.

Program Planning and Integration

NOAA's Office of Program Planning and Integration (PPI) provides the strategic framework that allows NOAA to pursue an integrated approach to climate and other national challenges. PPI focuses NOAA's broad suite of capabilities through a strategic plan, which encourages NOAA to work cohesively toward our mission of science, service, and stewardship. PPI also ensures NOAA's strategy responds to stakeholder priorities through efforts such as NOAA's Regional Collaboration, which support regionally integrated implementation of national priorities such as climate. For additional information, please visit http://www.ppi.noaa.gov/.