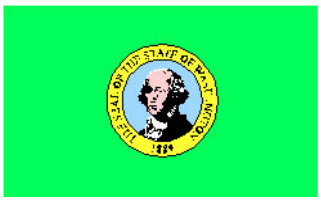
NOAA Research in Washington



WA-1 through 9 (Statewide)

Climate and Global Change Program

NOAA is responsible for providing climate information to the nation in order to prepare and protect climate sensitive sectors of society and the economy. To carry out this mission, NOAA's Climate and Global Change Program conducts focused scientific research to understand and predict variations of climate. The program is comprised of a number of research elements, each focusing on a specific aspect of climate variability. Taken together, this research contributes to improved predictions and assessments of the effects of climate variability and change on different environments over a continuum of time scales from season to season, year to year, and over the course of a decade and beyond. This research is accomplished through the strong support of the academic and private sectors, as well as NOAA and other federal laboratories. In FY 2001, NOAA's Climate and Global Change Program provided approximately $4.9 million in support of climate research in the State of Washington. For more information please visit http://www.ogp.noaa.gov

WA-1 through 9 (Statewide)

National Sea Grant College Program
Washington Sea Grant College Program

The Washington Sea Grant College Program, part of the National Sea Grant College Program, is a statewide network of research, education and extension services that works to promote understanding and conservation of marine and coastal resources while enhancing the environment and economy of the state, region and nation. Current research projects are targeting living marine resources, ecosystem health, economic and community development, and new technologies for study and development of marine products and marine applications. Washington universities and institutions that have received research and education funding through Sea Grant include the University of Washington, University of Washington-Tacoma, Washington State University, Western Washington University, Seattle Pacific University, Bellingham Technical College, Grays Harbor College, Eastern Washington University, Pacific Science Center, Seattle Aquarium, Seattle Central Community College, Shoreline Community College, Pacific Lutheran University, and the University of Puget Sound. In FY 2001, the Program received funding of approximately $2.95 million from the National Sea Grant College Program. For more information please visit http://www.wsg.washington.edu

WA-1, 2, 3, 6, and 7 (coastal communities)

Pacific Marine Environmental Laboratory
Tsunami Research Program

The Tsunami Research Program at the Pacific Marine Environmental Laboratory (PMEL) seeks to mitigate tsunami hazards to Washington, Oregon, Hawaii, California, and Alaska. A tsunami is a

series of very large ocean waves caused by underwater earthquakes, landslides, volcanic eruptions, explosions, and even meteor impacts. Capable of flooding hundreds of meters inland past the typical high-water level, the fast-moving water associated with an inundating tsunami can crush homes and other coastal structures. Research and development activities focus on improved tsunami inundation maps for coastal communities and advanced technology to increase the speed and accuracy of tsunami forecasts and warnings. PMEL has developed and deployed an array of early warning buoys in the Pacific to increase the reliability of tsunami warnings. This array consists of six moored buoys located at key deep water sites to improve risk assessment from tsunamis associated with major earthquake hazard areas around the Pacific Basin. One of the primary aspects of this work is the National Tsunami Hazard Mitigation Program, a state/federal partnership created to reduce the risks of tsunamis to U.S. coastal areas. This program was funded at $2.3 million in FY 2001. For more information please visit http://www.pmel.noaa.gov/tsunami

WA-1, 2, 3, 6, and 7 (coastal waters)

West Coast and Polar Regions National Undersea Research Center
National Undersea Research Program

The NOAA National Undersea Research Program (NURP) funds research in waters off Washington primarily through the West Coast and Polar Regions National Undersea Research Center. The West Coast part of the Center's mission is to promote, facilitate and support quality undersea research along the U.S. West Coast according to programmatic research themes which include fisheries research, shelf and slope ecology, ridge crest processes, subduction zone processes, and seamount research. FY 2001 funding for the West Coast and Polar Regions Center was $2.69 million. For more information please visit http://www.wcnurc.alaska.edu:8000

WA-2, 4, 5, and 7 (Whidbey Island, Appleton, Spokane, Maury Island, and Seattle)

Forecast Systems Laboratory
GPS Meteorological Observing Systems

NOAA's Forecast Systems Laboratory (FSL) operates a rapidly expanding network of GPS Meteorological (GPS-Met) Observing Systems to monitor the total quantity of precipitable water vapor in the atmosphere. Currently, there are 93 systems over the contiguous 48 states and Alaska, and plans are being made to extend these observations to Hawaii, Puerto Rico, the Caribbean Islands, and Central America. Water vapor is an important but under-observed component of the atmosphere that plays a major role in severe weather events and the global climate system. GPS-Met systems provide accurate water vapor measurements under all weather conditions, including thick cloud cover and precipitation, and do so at very low cost. The network is being developed in cooperation with federal, state and local government agencies, universities, and the private sector. The GPS stations provide high-accuracy surveying and navigation services for National defense, automated agriculture, safe land and marine transportation, government infrastructure management, and 911 emergency response services. Fortuitously, these systems can also be used for meteorology with the addition of surface weather sensors. GPS-Met systems are operated by NOAA near Seattle, by the U.S. Department of Transportation near Spokane and Appleton, and by the U.S. Coast Guard near Whidbey Island and Robinson Point. For more information please visit http://www.gpsmet.noaa.gov

WA-3 (Astoria Canyon)

Ocean Exploration

In 2001, with a $4 million appropriation from Congress, NOAA launched a systematic, strategic effort through the Office of Ocean Exploration to search and investigate the oceans for the purpose of discovery. Washington State University, the University of Washington, and NOAA's Pacific Marine Environmental Laboratory all contributed to the success of the Astoria Canyon voyage. Just 10 kilometers offshore from the mouth of the Columbia River, the most westward reach of the famous 19th century explorers Lewis and Clark, scientists used a variety of tools to characterize the canyon. Additional details about Astoria Canyon can be found at http://www.oceanexplorer.noaa.gov

WA-7 (Seattle)

Pacific Marine Environmental Laboratory

NOAA's Pacific Marine Environmental Laboratory (PMEL) in Seattle carries out interdisciplinary scientific investigations in oceanography, marine meteorology and climate change. The internationally-known laboratory is at the forefront of El Niño research through the development and maintenance of the TAO/TRITON Array of moored buoys in the equatorial Pacific. PMEL led the effort to establish these moorings to collect ocean data that improves detection, understanding, and prediction of the El Niño and La Niña phenomena. Early detection of the 1997-98 El Niño event provided by this observing system averted millions of dollars in economic losses across the nation. PMEL's research into ocean-atmosphere exchanges takes place through the Global Carbon Cycle Program, which assesses the concentration of CO_2 in the atmosphere and oceans and provides high-quality data which can be used for making critical economic decisions regarding greenhouse gases, and the Atmospheric Chemistry Program, which conducts field measurements to understand the distribution of climatically important trace gases and aerosols in the marine atmosphere and the processes controlling them. The Chlorofluorocarbon (CFC) Tracer Program uses dissolved CFCs as unique tracers of ocean circulation and mixing processes on decadal time scales. These observations are used to test and evaluate ocean-atmosphere models. Improved forecasts will lead to improved prediction of longer-term climate variations such as those that give rise to persistent drought and recurrent flooding. In addition to climate research, PMEL focuses on coastal and open ocean observations and modeling in order to improve understanding of the physical and geochemical processes operating in the world oceans. Additional research improves environmental forecasting capabilities and other supporting services for marine commerce and fisheries. The PMEL Vents Program, established in 1984, conducts research on the oceanic impacts and consequences of submarine volcanoes and hydrothermal venting. The program focuses on understanding the chemical and thermal effects of venting along the northeast Pacific Ocean seafloor spreading centers, which provides the foundation for prediction of the global-scale impact of seafloor hydrothermal systems on the ocean. Research results continue to support the hypothesis that hydrothermal venting at seafloor spreading centers has global significance in terms of the chemical and thermal state of the ocean. Scientists in the PMEL Vents Program, along with colleagues from the University of Washington and other institutions, are actively studying the microbial biosphere, the living organisms that thrive beneath the ocean's crust independent of the sun. These bacteria and their metabolic by-products have great potential for use in biotechnical and medical applications. An acoustic monitoring system by the PMEL Vents Program to locate underwater earthquakes has been

adapted in recent years to provide information on the migration patterns of large whales in the Northeast Pacific. PMEL is a $14.6 million dollar laboratory ($6.9 in NOAA base), with a staff of 182, including 90 federal employees, 30 contract employees, and 62 university employees. For more information please visit http://www.pmel.noaa.gov

WA-7 (Seattle)

Joint Institute for the Study of the Atmosphere and Ocean

The Joint Institute for the Study of the Atmosphere and Ocean (JISAO) in Seattle, at the University of Washington, has fostered research collaboration between NOAA and the University of Washington since 1977. The administrative units most directly connected with JISAO are NOAA's Pacific Marine Environmental Laboratory (PMEL), the University of Washington's Department of Atmospheric Sciences and the College of Ocean and Fisheries Sciences. JISAO's core research themes are: (1) climate variability, (2) global environmental chemistry, (3) recruitment of fish stock, and (4) policy, impact, and response strategies with respect to climate variability. JISAO also studies the impacts of El Niño and La Niña on the Pacific Northwest. JISAO currently supports 12 senior researchers, 63 research scientists, 9 research associates (postdoctoral) and 24 graduate students. JISAO was funded at $6,614,009 in FY 2001. For more information please visit http://jisao.washington.edu

WA-7 (Seattle)

Air Resources Laboratory
Integrated Surface Irradiance Study

Solar radiation is the driving energy for the geophysical and biochemical processes that control weather and life on earth, so understanding the global surface energy budget is key to understanding climate. Because it is impractical to cover the earth with monitoring stations, the answer to global coverage lies in reliable satellite-based estimates. Accurate and precise ground-based measurements in differing climatic regions are essential to refine and verify the satellite-based estimates, as well as to support specialized research. The Integrated Surface Irradiance Study (ISIS) is a continuation of earlier NOAA surface-based solar monitoring programs in the visible and ultraviolet wavebands. ISIS provides basic surface radiation data with consistency and accuracy. The Air Resources Laboratory operates the NOAA national broadband solar radiation network, including a station located in Seattle. For more information please visit http://www.atdd.noaa.gov

WA-7 (Seattle)

Climate and Global Change Program
Center for Science in the Earth System

NOAA’s Climate and Global Change Program provides support for the Center for Science in the Earth System (CSES) at the University of Washington. The aim of the CSES is to engage in a variety of theoretical and diagnostic studies related to climate prediction, and to develop improved methods for using climate information for critical societal needs. Established in 2001, the CSES is a

coalescence of specific activities of the Stanley P. Hayes Center, established in 1994, and the Pacific Northwest Climate Impacts Group, established in 1995. CSES emphasizes the study of coherent climate phenomena such as the Arctic Oscillation and the Pacific Decadal Oscillation and their impacts on the regional climate of the Pacific Northwest. CSES also develops methods for downscaling climate forecasts to the regional scale and for assessing the impacts of climate variability and change on the Pacific Northwest. For more information please visit http://www.ogp.noaa.gov

For further information about these and other NOAA programs, please contact NOAA's Office of Legislative Affairs at (202) 482-4981.

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