JOINT INSTITUTE FOR THE STUDY OF THE ATMOSPHERE AND OCEAN
University of Washington
4909 25th Avenue NE
106 Li Building
Seattle, WA 98195
206-543-7390
Dr. Mike Wallace, Director

http://jisao.washington.edu

The Joint Institute for the Study of the Atmosphere and Ocean (JISAO), established in 1977, is a NOAA Cooperative Institute at the University of Washington that fosters collaborative research between NOAA and university scientists. Throughout its existence, JISAO has conducted outstanding collaborative research primarily with scientists at the Pacific Marine Environmental Laboratory (PMEL) within NOAA Research. In recent years, JISAO has expanded its collaborations to include scientists at NOAA's Ocean Service and NOAA Fisheries, specifically with the Alaska Fisheries Science Center (AFSC) and the Northwest Fisheries Science Center (NWFSC). University departments involved in this research are: Atmospheric Sciences, Earth and Space Sciences, School of Oceanography, School of Fisheries, School of Marine Affairs, Applied Physics Laboratory (APL), Civil and Environmental Engineering, and the School of Public Affairs.

JISAO conducts research under four research themes: **(1) Climate -** Research seasonal-to-interannual climate prediction; tropical atmosphere-ocean interaction;global climate sensitivity, climate change in the Arctic; and the regional impacts of climate variability, with emphasis on the Pacific Northwest**; (2) Environmental Chemistry –** Address issues central to the U.S. Climate Program, particularly to the Climate Change Science Program - specifically, the carbon cycle and the sources, transformations, transports, and sinks of aerosols and trace gases and hydrothermal vents; **(3) Marine Ecosystems –** Focus on linkages between physical, chemical and biological processes in the marine environment; impacts of climate variability on the Bering Sea and Gulf of Alaska marine ecosystems; spatiotemporal distributions, dynamics and interactions of aquatic organisms; quantitative description of the distributions of aquatic organisms; distinguishing between climatic and human impacts on ecosystem dynamics; and prediction of climatic and human impacts on ecosystem dynamics; and **(4) Coastal Oceanography –** Perform research to understand tsunami dynamics and develop prototype applications to reduce the loss of life and property associated with tsunamis and other ocean hazards.

JISAO research activities resulted in 134 scientific publications annually, of which 75% appear in peer-reviewed publications. Some of the research contributes to the development of a global observing system, the development of climate models, and outreach to government agencies and businesses that have a stake in climate information. In addition, the research includes the estimation of the amount of carbon that has accumulated in the World Ocean from the time of the Industrial Revolution up until 1994 as a result of the burning of fossil fuels and deforestation. Additionally, JISAO scientists study ecosystems associated with underwater volcanoes called hydrothermal vents which support unique and poorly understood marine ecosystems that can affect the biological, chemical, and thermal variability of the oceans. Some hydrothermal microorganisms may serve society in drug development and toxic waste management as well as serving research on the origins of life.

JISAO's research activities assist NOAA in three of its Mission Goals: 1) Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management; 2) Understand climate variability and change to enhance society's ability to plan and respond; and 3) Serve society's needs for weather and water information.

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