Sea Level Rise in California, Oregon, and Washington

Committee

Robert A. Dalrymple

Chair

Robert A. Dalrymple is the Willard and Lillian Hackerman Professor of Civil Engineering at Johns Hopkins University. His research interests are in coastal engineering, water wave mechanics, high-performance computing, fluid mechanics, littoral processes, and tidal inlets. Dr. Dalrymple has chaired several National Research Council committees, including the Committee on Review of the Louisiana Coastal Protection and Restoration Program, and served on others including the Committee on Responding to Sea Level: Engineering Implications. He has also held leadership positions in professional societies including president of the Association of Coastal Engineers and of the American Society of Civil Engineer's (ASCE's) Coasts, Oceans, Ports, and Rivers Institute. Dr. Dalrymple is a member of the National Academy of Engineering and a recipient of ASCE's International Coastal Engineering Award for his achievements and contributions to the advancement of coastal engineering through research, teaching, and professional leadership. He received a B.A. in engineering sciences from Dartmouth College, an M.S. in ocean engineering from the University of Hawai'i, and a Ph.D. in civil and coastal engineering from the University of Florida.

Laurence C. Breaker

Member

Laurence C. Breaker is an adjunct professor at the Moss Landing Marine Laboratories at San Jose State University. Prior to joining the laboratory in 2001, he spent 13 years as a senior research physical scientist at NOAA's National Centers for Environmental Prediction. Dr. Breaker's research focuses on the analysis of long-term observations of sea level rise along the California coast, modeling of both global and local sea level rise, physical oceanography, and satellite remote sensing. His recent papers have examined the 154-year record of monthly sea level at San Francisco and sea level responses to large earthquakes in California and Alaska. Dr. Breaker was awarded NOAA’s Bronze Medal for major contributions to the Coastal Marine Demonstration Project, which tested the state of the art in marine forecasting and evaluated the potential benefits of experimental higher resolution predictions. He received a B.S. in mechanical engineering from Bucknell University, an M.S. in applied marine physics from the University of Miami, and a Ph.D. in oceanography (minor in meteorology) from the Naval Postgraduate School.

Benjamin A. Brooks

Member

Benjamin A. Brooks is an associate researcher (tenured) and director of the Pacific GPS Facility in the Hawai'i Institute of Geophysics and Planetology at the University of Hawai'i. His research interests are in tectonic geodesy and active tectonics with a recent focus on relative sea level change as a result of subsidence in the Los Angeles Basin and the San Francisco Bay Delta. Dr. Brooks is a member of the advisory committee for the Plate Boundary Observatory, which collects geodetic data on active deformation across the western United States. He is a Fullbright Fellow. He received a B.S. in earth science from the University of California, Santa Cruz and a Ph.D. in geological sciences from Cornell University.

Daniel R. Cayan

Member

Daniel R. Cayan is a research meteorologist at the Scripps Institution of Oceanography and is also a researcher in the U.S. Geological Survey. His work is directed at understanding climate variability and changes over the Pacific Ocean and North America and climate impacts on water, wildfire, health, and agriculture in California and western North America. Among his recent publications are projections of sea level extremes along the California coast. Dr. Cayan heads two climate research programs aimed at improving climate information and forecasts for decision makers in the California region: the California Nevada Applications Program and the California Climate Change Center. He received a B.S. in meteorology and oceanography from the University of Michigan and a Ph.D. in oceanography from the University of California, San Diego.

Gary B. Griggs

Member

Gary B. Griggs is a distinguished professor of Earth and Planetary Sciences and the director of the Institute of Marine Sciences at the University of California, Santa Cruz. His research is focused on the coastal zone and ranges from coastal evolution and development to shoreline processes—including the evaluation of long-term shoreline changes and geomorphic evolution of coastlines—to coastal hazards and coastal engineering. Dr. Griggs is the author or coauthor of several books including "Living with the Changing California Coast." He served as chair of the UC Marine Council from 1999 to 2009 and currently chairs the Science Advisory Team to the Governor's Ocean Protection Council. He is a fellow of the California Academy of Sciences. He received a B.A. in geology from the University of California, Santa Barbara and a Ph.D. in oceanography from Oregon State University.

Weiqing Han

Member

Weiqing Han is an associate professor in the Department of Atmospheric and Oceanic Sciences at the University of Colorado. Her research interests are in sea level, ocean circulation and dynamics, air-sea interaction, and climate variability and change. Among her recent work is an analysis of patterns of sea level change in the Indian Ocean and the influence of North Atlantic circulation on glacial sea level changes. Dr. Han serves on a panel of the World Climate Research Programme's CLIVAR (Climate Variability and Predictability) project, and is a recipient of an NSF Faculty Early CAREER Award. She received a B.S. in meteorology from the Nanjing Institute of Meteorology, an M.S. in meteorology from the Chinese Academy of Meteorological Sciences, and a Ph.D. in physical oceanography from the Nova Southeastern University Oceanographic Center.

Benjamin P. Horton

Member

Benjamin P. Horton is an associate professor in the Department of Earth and Environmental Science at the University of Pennsylvania. He is also an honorary research fellow in the Department of Geography at the University of Durham, United Kingdom. Dr. Horton's research focuses on mechanisms of observed and predicted sea-level changes including climate change, earthquakes, tsunamis, and the coastal sedimentary budget. He has also examined the response of estuaries to sea level rise. Dr. Horton has worked on sea-level rise in several countries focusing on the contributions of glacial isostacy along the Atlantic coast of the United States, earthquakes and ground deformation along the West Coast, and sediment compaction in the United Kingdom. He received a B.A. in geography from the University of Liverpool and a Ph.D. in geography from the University of Durham.

Christina L. Hulbe

Member

Christina L. Hulbe is an associate professor of geology at Portland State University. Her research focuses on understanding and modeling the dynamics of ice sheets, the interactions between ice shelves and ice sheets, and on the role of ice sheets in climate change. In addition to her scholarly publications, she is a regular contributor to the "Left Coaster," explaining issues such as how fast the ice sheets are changing and their impact on sea level to the public. Dr. Hulbe is a representative of the NRC's Scientific Committee on Antarctic Research (SCAR) and co-chairs the local organizing committee for the 2012 SCAR Open Science Conference. She received a B.S. in geological engineering from Montana College of Mineral Science and Technology, an M.S. in geology from Ohio State University, and a Ph.D. in geophysics from the University of Chicago.

James C. McWilliams

Member

James C. McWilliams is Louis B. Slichter Professor of Earth Sciences in the Institute of Geophysics and Planetary Physics and the Department of Atmospheric and Oceanic Sciences at the University of California, Los Angeles. He is also a senior research scientist at the National Center for Atmospheric Research. His research interests are in theory and computational modeling of Earth’s ocean and atmosphere. In addition to his work in fluid dynamics, he developed a 3D simulation model of the U.S. West Coast that incorporates physical oceanographic, biogeochemical, and sediment transport aspects of the coastal circulation and is being used to interpret coastal phenomena, diagnose historical variability in relation to observational data, and assess future possibilities. Dr. McWilliams has served on many NRC climate committees including the Committee on Science of Climate Change. He is a fellow of the American Geophysical Union and a member of the National Academy of Sciences. He received a B.S. in applied mathematics from Caltech and an M.S. and Ph.D. from Harvard.

Philip W. Mote

Member

Philip W. Mote is a professor in the College of Oceanic and Atmospheric Sciences and director of Oregon Climate Services at Oregon State University. He is also the director of the Oregon Climate Change Research Institute for the Oregon University System. Before joining Oregon State University, he was the state climatologist for Washington. Dr. Mote's research interests include climate variability and change in the Pacific Northwest, mountain snowpack and its response to climate variability and change, sea level rise, impacts of climate change on water resources, forests, and shorelands, and adaptation to climate change. Among his publications in these areas is an analysis of sea level rise in the coastal waters of Washington state. Dr. Mote has served on several committees associated with climate change and sea level rise including the NRC Panel on Adapting to the Impacts of Climate Change. He received a B.A. in physics from Harvard University and a Ph.D. in atmospheric sciences from the University of Washington.

William T. Pfeffer

Member

William Tad Pfeffer is a professor of Civil, Environmental, and Architectural Engineering at the University of Colorado. He is also a fellow of the university's Institute of Arctic and Alpine Research. Dr. Pfeffer's research interests are in modern glacier physics including ice mechanics and glacier dynamics, heat and mass transfer in snow and ice, atmosphere/glacier and ocean/glacier interactions, and the application of the results to estimates of future sea-level change. He is a member of the Executive Committee of the American Geophysical Union's Cryospheric Sciences Focus Group. He received a B.A. in geology from the University of Vermont, an M.A. in geology from the University of Maine, and a Ph.D. in geophysics from the University of Washington.

Denise J. Reed

Member

Denise Reed is a University Research Professor in the Department of Earth and Environmental Sciences at the University of New Orleans. Her research interests include coastal marsh response to sea-level rise and how this is affected by human activities. She has worked on coastal issues on the Atlantic, Pacific and Gulf coasts of the US, as well as other parts of the world, and is also involved in ecosystem restoration planning both in Louisiana and in California. Dr. Reed has served on numerous boards and panels concerning coastal environments and ecosystem restoration including NRC committees on water and environmental management in the California Bay Delta and on mitigating shore erosion, the Chief of Engineers Environmental Advisory Board, a number of National Research Council Committees, the Ecosystems Sciences and Management Working Group of the NOAA Science Advisory Board, the National Science Panel for South Bay Salt Ponds Restoration, and the Strategic Science Review Panel for the Puget Sound Nearshore Ecosystem Restoration Program. She received her BA and PhD in geography from the University of Cambridge in England, UK.

C. K. Shum

Member

C.K. Shum is a professor of geodetic science in the School of Earth Sciences at Ohio State University and is affiliated with the Byrd Polar Research Center and the John Glenn School of Public Affairs. His research focuses on the accurate measurements of present-day sea-level rise and to the improved understanding of the geophysical causes of its rise. He also works on satellite geodesy, temporal gravity field and tide modeling, satellite oceanography, hydrology and geodynamics, ice mass balance, precision satellite orbit determination, GPS meteorology, and space physics. Dr. Shum was a lead author of the chapter on observations of oceanic climate change and sea level in the Fourth Assessment of the Intergovernmental Panel for Climate Change. He is a fellow of the International Association of Geodesy and a representative of that society's Project on Global Geodetic Observing system. He is a recipient of several NASA awards for his work on the TOPEX/POSEIDON mission, which mapped ocean surface topography. He received his B.S. and Ph.D. in aerospace engineering from the University of Texas, Austin.