

Memorial to Doak C. Cox 1917–2003

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Doak Cox, distinguished contributor to the science community of Hawaii and the Pacific, died on April 21, 2003, in Honolulu, after a bout with cancer. He was born on the island of Maui but spent his early years on Kauai, where his father was a civil engineer for a sugar plantation. Following his graduation from the University of Hawaii with a B.S. degree in Physics and Mathematics in 1938, he earned a Master's degree in Geology from Harvard University in 1941. In 1965, Harvard University awarded him a Ph.D., substituting his many publications for his dissertation. The years 1941–45 were spent with the U.S. Geological Survey, performing strategic minerals investigations in the western states, locating and evaluating fluorite badly needed in foundries, blast furnaces, and smelters. In the postwar years, Doak's career path would lead him to emphasize the fields of interest in which he accomplished a great deal with distinction—hydrogeology, earthquake/tsunami research, and the environment.



In 1946, the opportunity to return home came from the Hawaiian Sugar Planters Association (HSPA), where he was placed in charge of water development and research on water and geology. The HSPA was an agency funded by the sugar growers of Hawaii, whose existence depended on adequate water. During his HSPA years of 1946 to 1960, Doak participated in hydrogeologic investigations on Arno Island, Western Samoa, and the Marshalls and the Marianas. From research on the island of Maui, he was the first to define the sigmoidal mixing curve in a fresh water lens with a series of sampling tubes. In more recent years, a consuming interest by the Honolulu Board of Water Supply led to large investments in drilling more than 30 deep monitor wells into salt water on Oahu to obtain details on the behavior of the freshwater body in response to long term pumping, which is critical to determine the availability of water.

Doak had a gift for recognizing needs that could be addressed with science and to organize efforts to meet them. His usual thoughtful strategem was to use a multidisciplinary approach. The 1946 Alaskan earthquake produced a fearsome tsunami that devastated nearshore properties and caused loss of life on the islands, particularly the Hilo region of the island of Hawaii. To provide a warning system for tsunamis, Doak pressed for one based on wave recorders in strategic ocean locations, which are now part of the Pacific Tsunami Warning System. From the height and velocity of the quake-generated wave, direction, time of wave arrivals, and potential hazard to the impact area could be judged. The great Alaskan earthquake of 1960 caused the onslaught of another destructive tsunami upon the Hawaii Islands, with great damage to Hilo and loss of life. Doak was the first to perform a systematic assessment of damage and wave runup from tsunamis.

His next effort was the establishment of the Hawaii Institute of Geophysics at the University of Hawaii while he was still with the HSPA. Doak served on the planning committee and was a

proposer as well, and he was executive secretary until HIG was formally established. He left the HSPA to join the University of Hawaii faculty as professor of Geology and Geophysics, where he was put in charge of tsunami research. The 1960 great Alaskan earthquake and other tsunami threats in the 1960s established the value of an early warning system and zoning of threatened shoreline areas. He drafted the original agreement that established the internationally recognized Joint Tsunami Research Effort (JTRE), which served a model for NOAA cooperative institutes. The Joint Institute for Marine and Atmospheric Research (JIMAR) is a direct outgrowth of the JTRE.

In 1964, Doak was appointed the first Director of the University of Hawaii Water Resources Research Center, where he gathered a multi-disciplined nucleus of researchers to tackle all manner of water interests. The WRRC's research resulted in a wide range of published technical reports, professional papers, and theses that are testimony to the directions and energy of his leadership.

During the late 1960s, the growing public awareness of environmental concerns and the concern for responsible environmental management prompted the university to tap Doak's expertise and communicative talent to convince the Hawaii State Legislature of the need for wise environmental planning and management. In 1970, his efforts resulted in passage of legislation that created the Office of Environmental Quality Control, the Environmental Council, and the Environmental Center of Hawaii, where he was appointed Director. The Environmental Center was widely noted for impartial, perceptive, reasoned responses to environmental issues. Doak retired from the University of Hawaii in 1985.

In addition to the many institutional directorships, Doak held many other positions of distinction. He served more than 20 years on the Faculty Senate and the Chancellor's ad hoc committee on Academic Planning. He was a charter member of the Hawaii State Earthquake Advisory Board, President of the Hawaii Academy of Science (1958–59 and 1984–85), and a member of the Hawaii Commission on Water Resources Management (1980–81), and many other national science bodies. In 1985, in recognition of his dedication to service and outstanding achievements, the Governor's Award for distinguished service to the University and the State of Hawaii was conferred upon him.

While a student at Harvard, Doak met and married Marjorie Greiner, a math major at Radcliffe. His wife, four daughters, and a son survive him, as do two brothers and their families. Despite his awe inspiring accomplishments over his lifetime, his demeanor was one of genuine interest in the person before him. Doak had a certain grace about him, so that one never felt uncomfortable before him or in his presence. One of his habits was an unconscious scratching of his head while thinking. He was also sometimes noted for long sentences with multiple interesting dependent clauses that needed tracking so the main thought was retained. Those of us who knew Doak feel deeply honored and grateful for the experience.

Acknowledgments

This memorial is a collaborative effort by his many friends and colleagues at the University of Hawaii, private and government agencies, and those in the community privileged to have known him. In particular, the contributions of colleagues at the Environmental Center and the Water Resources Research Center of the University of Hawaii are gratefully acknowledged.

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