

Biography of Rudolph William Preisendorfer



After service with the U.S. Army in the Pacific, Rudolph William Preisendorfer matriculated at the Massachusetts Institute of Technology (MIT). It was there that he discovered what was to become his lifelong favorite topic: the study of light in the sea. After graduation from MIT in 1952, Preisendorfer worked at the Scripps Institution of Oceanography (SIO) as a research mathematician from 1952 to 1959. His work on the development of a complete and mathematically rigorous formulation of the physical laws governing radiative transfer in the sea made him a cornerstone of the newly founded Visibility Laboratory at SIO. While there he also completed his Ph.D. in mathematics at the University of California at Los Angeles in 1956. After a brief period in industry, he returned to the Visibility Laboratory from 1961 to 1969 and completed the investigations that are found in his monumental, six-volume treatise *Hydrologic Optics*, which earned him an international reputation.

Preisendorfer taught at the Naval Postgraduate School during 1970 and then moved to Hawaii in 1971 to join the Joint Tsunami Research Effort (a part of what is today the Pacific Marine Environmental Laboratory of the National Oceanic and Atmospheric Administration), until 1977. His interest during these years centered on the application of invariant imbedding techniques, which he had developed for hydrologic optics, to problems in water-wave propagation and tsunami forecasting. He returned once again to Scripps during 1977-1979, where he began publishing on topics in climate analysis and forecasting. While there, he helped found the nation's first Experimental Climate Forecast Center.

In 1979, Preisendorfer moved to Seattle to pursue his climate studies at the Pacific Marine Environmental Laboratory. He was especially interested in coupled dynamical-statistical forecast models and in model-data intercomparison Problems. He soon became a recognized expert in the use of principal component analysis and statistical discriminant techniques, and at the time of his death was actively developing combined principal component-discriminant techniques for data analysis and forecasting. However, by the 1980's computers had achieved sufficient power to solve the radiative transfer equations for realistic ocean conditions, and so Preisendorfer could not resist returning to this topic to finish what he considered the cumulation of his life's work in hydrologic optics: the development of numerical models for predicting radiance distributions in the ocean, given the inherent optical properties of the water and the boundary lighting conditions. This work, conducted in parallel with his climate studies, was nearing completion at the time of his death.

Though a prolific researcher of unbounded curiosity and originality, Preisendorfer was equally known for the clarity of his teaching. He had the ability to master any subject and to present it at the level appropriate for his audience. He taught many courses over the years, most recently while occupying the Naval Air Systems Command G. J. Haltiner Research Chair in Meteorology at the Naval Postgraduate School during 1983. While there he also developed the theory for a number of innovative approaches to the use of model output statistics for forecasting quantities of interest to shipping and aviation.

It is unusual for a scientist to attain world-class stature in one field let alone in two or three diverse fields. He was a significant contributor to the progress of mankind, and this makes his loss all the more profound.

-Curtis Mobley