

In Memory of Keiiti Aki, 1930–2005

While editing this volume in honor of Kei Aki, we were greatly saddened to receive the news that he passed away on May 17, 2005, in La Réunion, a French Island in the Indian Ocean. According to Thomas Staudacher, the Director of the Observatoire volcanologique du Piton de la Fournaise, Aki fell in the street coming home from a grocery store on May 13. The next day, he was disoriented and X-rays revealed bleeding in the brain. Aki was sent to the hospital where doctors performed two surgeries to stop the bleeding without success. He fell into a coma, died on May 17, and was buried in the cemetery of the town of Le Tampon on May 18.

Keiiti Aki was born on March 3, 1930, in Yokohama, Japan to a family of engineers with a 100-year tradition of education and openness to the west. Various aspects of his family history, upbringing and scientific influences on his career, described by Kei to one of us, are given in the introduction to the 2003 Pageoph Aki Volume. Here we provide complementary details that shed additional light on his life and career.

When Aki was 19 years old, he was among the 12 students admitted to the Department of Geophysics of the University of Tokyo. It was a very exciting place with world class professors in both Solid and Fluid Earth, including Chuji Tsuboi, Takeshi Nagata, Takeo Matuzawa, and Koji Hidaka. Among Aki's contemporary schoolmates were Syun-iti Akimoto, Syukuro Manabe, and Seiya Uyeda. Kei obtained his B.Sc. and Ph.D. degrees in geophysics in 1952 and 1958, respectively.

Aki's scientific career may be divided chronologically to activities carried in four geographic centers. From 1952 to 1966, Aki was mostly at the University of Tokyo, and visited Caltech as a research fellow. In 1966, Aki moved to the United States to join the faculty of MIT as a Professor of Geophysics, and became a mentor to a large number of students and postdocs. He also spent summers working with colleagues all over the world. In 1984, Aki moved to the University of Southern California as its first W.M. Keck Foundation Professor of Geophysics. He was responsible for the establishment of the Southern California Earthquake Center, where Aki's vision for integrated research on earthquakes has been realized by scientists and engineers in many disciplines working together. In 1995, Aki moved to La Réunion. After making progress in predicting volcanic eruptions, he returned to the problem of earthquake prediction and completed a book manuscript in 2004. During the last five years of his life, Aki annually lectured in Japan as an adviser to the Japanese Association for the Development of Earthquake Prediction. His last project was promoting the "Coda

Club” for collaborative research of using coda waves for earthquake prediction worldwide.

Aki was a pioneer in many fields of seismology, including statistical seismology, earthquake source properties, seismic tomography, coda waves and scattering, fault rupture process, and volcanic tremors. He established scaling laws for a broad range of phenomena in seismology and seismotectonics. He initiated new seismological analyses encompassing the earthquake source, Earth structures and dynamics of geophysical systems. His scientific works were instrumental in paving the way toward achieving a predictive understanding of earthquakes. His leadership in developing new research programs in seismology and his vision for integrated seismological research have been felt around the world. The two-volume treatise, *Quantitative Seismology: Theory and Methods* (co-authored with Paul Richards), has set the standard in seismology teaching and research since its first publication in 1980. A second edition of this classic was published in a single volume in 2002.

In 2004, the 1964 Niigata (Japan) Earthquake Archive at the IRIS Data Center (USA) was established in honor of Kei Aki. He was the first to introduce the concept of seismic moment in 1966, and showed how to measure it using the seismograms of the World-Wide Standardized Seismograph Stations (WWSSN) that recorded the Niigata earthquake. This archive, now under construction, serves as an online website for Aki, so that his many contributions and related materials can be posted for free access by anyone anywhere in the world. The website includes a collection of personal tributes to Kei that were written by former students and colleagues for the 2004 AGU session in his honor and reveal aspects of Kei that are not captured in more formal publications. Interested readers should visit: <http://www.iris.edu/seismo/quakes/1964niigata/>

Aki published more than 200 papers (see “Publication list of Keiiti Aki” that follows this Memorial), supervised more than 50 Ph.D. dissertations, and received many honors including election to the U.S. National Academy of Sciences (1979), the Medal of the Seismological Society of America (1986), the Bowie Medal of the American Geophysical Union (2004), and the Gutenberg Medal of the European Geosciences Union (2005). Frank Press called Aki the “Dean of world’s seismologists – an exemplar of scholar, teacher, and humanitarian of the highest distinction”.

We sorely miss Kei Aki not only as a brilliant seismologist and unselfish colleague and teacher, but also as a cheerful and faithful friend.

William H. K. Lee and Yehuda Ben-Zion
October 31, 2005