



## **Michael C. Kelley**

December 21, 1943 – June 23, 2018

Professor Michael C. Kelley, pioneer of electric field measurements in space, renowned expert on the physics of the ionosphere, inspiring teacher and mentor, died peacefully in Ithaca, New York on June 23, 2018. He was 74.

Mike was born on December 21, 1943 in Toledo, Ohio, and grew up in Toledo and Detroit, Michigan. He attended Kent State University from 1961 to 1964 on an athletic scholarship, playing varsity basketball and majoring in mathematics. At Kent State, he won the Bordon and Manchester awards as outstanding Freshman and Senior man, respectively. Mike spent two summers at the Woods Hole Oceanographic Institute and then carried out graduate studies in the Physics Department of the University of California at Berkeley, earning his Ph.D. in 1970. In subsequent years, he was a post-doctoral researcher at Berkeley and held an appointment as a Von Humboldt Fellow with Gerhard Haerendel at the Max-Planck-Institute in Garching, Germany. In January 1975, he joined Cornell University as an Assistant Professor, advancing to full Professor in 1982.

A fervent experimentalist, Mike frequently combined measurements gathered with instruments carried into space on NASA sounding rockets with observations from NSF ground-based incoherent scatter and coherent scatter radars, consistently using the integrated scientific data to address unanswered questions regarding important physical processes. To this end, Mike led numerous NASA/NSF campaigns to international sites such as Peru, Puerto Rico, the Marshall Islands, and Greenland and was known for organizing multi-faceted research activities within the wider scientific community. In his career, Mike provided electric field experimental hardware and/or analyzed results from over 70 sounding rockets, 4 satellites, and numerous balloon flights.

During his distinguished career, Mike published more than 400 articles in the refereed literature. Mike literally "wrote the book" on the ionosphere, having authored "The Earth's Ionosphere: Plasma Physics and Electrodynamics," a seminal text now in its second edition with Academic Press. In addition, he wrote several monographs including one entitled, "The Earth's Electric

Field: Sources from Sun to Mud," published by Elsevier in 2013 (written with R. Holzworth) as well as many reviews and articles for the general public including "Plasma: The Fourth State of Matter," for the Encyclopaedia Britannica.

Mike received many distinguished awards including the James B. Macelwane award from the American Geophysical Union. He gave the AGU Nicolet lecture in 2011 and received numerous teaching awards from Cornell and the IEEE. In 1998, Mike became a Weiss Presidential Fellow, and in 2001, he was elected the James A. Friend Family Distinguished Professor of Engineering. Mike was an associate of the National Academy of Sciences and was chair of the National Academy of Sciences Committee on Solar Terrestrial Research and co-chair of the National Research Council Heliophysics Decadal Survey Subcommittee on Atmosphere-Ionosphere-Magnetosphere Coupling.

Beyond his many scientific achievements, Mike's legacy includes legions of graduate students whom he mentored including 28 Ph.D. students, many of whom stayed in the field and are now professors themselves. He was extremely open-minded and had an infectious enthusiasm for science and experimental research that stayed with him his entire life.

Mike is survived by his wife, Patricia, of 52 years, his three children Scott (Varykina), Brian (Elizabeth), and Erica, three grandchildren (Aidan, Owen and Amelia), and his brother Edward Arthur Kelley, Jr. Mike and Pat were very active in the regional foster child program and were parents to nearly a dozen foster children.

*Written by David L. Hysell (chair) and Robert F. Pfaff*