Richard
Anthes
COSMIC Program UCAR
Oral
Jay Sheldon Fein—atmospheric scientist, long-time program director at the National Science Foundation, and mentor to scores of students and scientists of all ages—died on November 7, 2016. From 1976 until his retirement in 2012, Jay was a program manager in the Climate Dynamics section of the Division of Atmospheric Sciences at the National Science Foundation.

Jay was a remarkably broad-minded scientist who was willing to work across NSF directorates to support multidisciplinary science. Perhaps the greatest example of this breadth and leadership was his key involvement in a proof-of-concept satellite program called “GPS/MET” and the follow-on Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC). In 1992 he partnered with Mike Mayhew in the NSF Earth Sciences Division (EAR) to support GPS/MET, a demonstration program that would launch a single Global Positioning System (GPS) receiver into space to test the value of the radio-occultation (RO) concept for sounding Earth’s atmosphere. This was an extremely high-risk experiment and atypical for an NSF project given the satellite focus. Reviews of the proposal were highly mixed, but after consulting with additional outside experts, Jay was convinced that the potential benefit to science was so high that the concept was worth trying. The total budget proposed for GPS/MET was about $3million more than Jay and Mike could cover from their programs alone. So Jay cobbled together a coalition of NSF program managers and other agencies, notably the FAA, NOAA and NASA, to raise the required funds. GPS/MET was highly successful, making the first radio occultation measurements of Earth’s atmosphere and demonstrating their potential for atmospheric prediction and research.

An even greater opportunity and challenge came along two years after the launch of GPS/MET. At the second (June 1997) Community Climate Model workshop in Breckenridge, I had a long discussion over breakfast with Jay about a new opportunity for a follow-on satellite program to GPS/MET. After trying without success to get other agencies interested in a constellation of small satellites to produce enough RO soundings to make an impact in numerical weather prediction, UCAR had found a potential partner in Taiwan. The condition for Taiwan’s support of the $100 million program, which was soon named COSMIC, was to get 20% of this total from the U.S. Jay could have said no; COSMIC would be an operational demonstration and therefore the responsibility of other agencies. But instead he was immediately supportive. Jay offered to continue playing the role he had been playing for GPS/MET—the head of a U.S. Interagency Working Group for COSMIC that would jointly support the project.

The nine years from that Breckenridge breakfast to the launch of COSMIC in 2006 was full of roller-coaster ups and downs. But Jay managed to delicately and skillfully negotiate the numerous minefields, which more than once brought the program close to a premature end. After its launch in April 2006, COSMIC exceeded all expectations, demonstrating the value of radio occultation observations for operational numerical weather prediction, climate monitoring and research, and ionospheric research and modeling. COSMIC would not have been possible without Jay’s leadership.

*This abstract is borrowed from Jay’s obituary, published in the February 2017 of the Bulletin of the American Meteorological Society.

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