David Miles Smith, Professor of Physics
University of California, Santa Cruz
Santa Cruz, California, USA

HISTORY OF EMPLOYMENT:

1993-1996	Faculty Research Associate, Astronomy, U. Maryland
1996-2003	Assistant Research Physicist, U. C. Berkeley
2003-2007	Assistant Professor of Physics, U. C. Santa Cruz
2007-2012	Associate Professor of Physics, U. C. Santa Cruz
2012-present	Professor of Physics, U. C. Santa Cruz

DEGREES:

1985	S.B., Physics, Massachusetts Institute of Technology
1989	M.A., Physics, University of California, Berkeley
1993	Ph.D., Physics, University of California, Berkeley

RESEARCH EXPERIENCE:

My dissertation was on an observation of the Galactic Center in gamma-rays, using a balloon-borne instrument. Over the next decade, from 1993-2003, I worked on topics in astrophysics, solar flares, and particle precipitation from Earth's radiation belts, all using observations of x-rays and gamma-rays. I was involved in a number of instrument development projects, most notably serving as Instrument Scientist for the spectrometer on the Reuven Ramaty High-Energy Spectroscopic Imager (RHESSI) satellite, launched in February 2002.

Starting in 2003, at the urging of the RHESSI PI, my former advisor Bob Lin, I started searching the RHESSI data for signs of TGFs, bringing an undergraduate student, Liliana Lopez, into the project. After a long effort, Ms. Lopez discovered the first incontrovertible TGFs in the RHESSI data set, and returned from a summer school in Europe with a list of our new collaborators. From that point on, the study of TGFs has been my primary field of research. My group has developed and deployed several generations of instrumentation for detecting TGFs and other high-energy phenomena of atmospheric electricity from the ground, aircraft, and balloons, and has continued to analyze and interpret spacecraft TGF data. I have given up astrophysics entirely, but still maintain minor roles in the study of solar flares and Earth's magnetosphere. I have worked hard over the last 15 years to become not an astrophysicist visiting the atmospheric electricity community, but a real part of it.

KEY PUBLICATIONS:

**First author was a graduate student in my group at the time of authorship.*

"A Terrestrial Gamma-ray Flash Inside the Eyewall of Hurricane Patricia," G. S. Bowers*, D. M. Smith, N. A. Kelley, G. F. MartinezMcKinney, S. A. Cummer, J. R. Dwyer, S. Heckman, R. H. Holzworth, F. Marks, P. Reasor, J. Gamache, J. Dunion, T. Richards, and H. K. Rassoul, '*Journal of Geophysical Research: Atmospheres*, 123, 4977 (2018)

"Gamma Ray Signatures of Neutrons From a Terrestrial Gamma Ray Flash," G. S. Bowers*, D. M. Smith, G. F. Martinez-McKinney, M. Kamogawa, S. A. Cummer, J. R. Dwyer, D. Wang, M. Stock, and Z. Kawasaki, *Geophysical Research Letters*, 44, 10063 (2017)

"The rarity of terrestrial gamma-ray flashes: 2. RHESSI stacking analysis," D. M. Smith, P. Buzbee, N. A. Kelley, A. Infanger, R. H. Holzworth, and J. R. Dwyer, *Journal of Geophysical Research: Atmospheres*, 121, 11382 (2016)

"Relativistic electron avalanches as a thunderstorm discharge competing with lightning", N. A. Kelley*, D. M. Smith, J. R. Dwyer, M. Splitt, S. Lazarus, F. Martinez-McKinney, B. Hazelton, B. Grefenstette, A. Lowell, and H. K. Rassoul, *Nature Communications*, 6, 7845 (2015)

"The rarity of terrestrial gamma-ray flashes," D. M. Smith , J. R. Dwyer, B. J. Hazelton, B. W. Grefenstette, F. Martinez-McKinney, Z. Y. Zhang, A. W. Lowell, N. A. Kelley, M. Splitt, S. Lazarus, W. Ulrich, M. Schaal, Z. H. Saleh, E. Cramer, H. Rassoul, S. A. Cummer, G. Lu, and R.J. Blakeslee,*Geophysical Research Letters*, 38, L08807 (2011)

"A terrestrial gamma-ray flash observed from an aircraft", D. M. Smith, J. R. Dwyer, B. J. Hazelton, B. W. Grefenstette, F. Martinez-McKinney, Z. Y. Zhang, A. W. Lowell, N. A. Kelley, M. Splitt, S. Lazarus, W. Ulrich, M. Schaal, Z. H. Saleh, E. Cramer, H. Rassoul, S. A. Cummer, G. Lu, X.-M. Shao, C. Ho, T. Hamlin, R.J. Blakeslee, and S. Heckman, *Journal of Geophysical Research: Atmospheres*, 116, D20124 (2011)

"First RHESSI terrestrial gamma-ray flash catalog," B. W. Grefenstette*, D. M. Smith, B. J. Hazelton, and L. I. Lopez, *Journal of Geophysical Research: Space Physics*, 114, A02314 (2009)

"Terrestrial Gamma-Ray Flashes Observed up to 20 MeV", D. M. Smith, L. I. Lopez, R. P. Lin, and C. P. Barrington-Leigh *Science*, 307, 1085 (2005)

HONORS:

NASA group achievement awards for a 1990 Antarctic balloon campaign, for the RHESSI satellite, and for contributions to NASA's efforts around the 2017 solar eclipse.
Excellence in Teaching award, U. C. Santa Cruz, 2019.

PROFESSIONAL SOCIETIES:

American Geophysical Union
International Commission on Atmospheric Electricity
American Physical Society