**Daniel Tong**
Associate Professor, George Mason University, Fairfax, VA, USA

## History of Employment

2019 – Present *Associate Professor*, *Director*, Satellite and Earth Science Program, George Mason University, Fairfax, VA
2010 – 2019: *Emission Scientist*, NOAA Air Resources Laboratory & University of Maryland, College Park, MD
2006 – 2009: *Senior Scientist*, US EPA National Exposure Research Laboratory, on assignment from Science and Technology Corp., RTP, NC
2003 - 2006: *Research Associat*e, Princeton University, Princeton, NJ

## Degrees and Training

B.S. with Honors, Chemistry / B.A., Finance**,** Ocean University of China, China.
Ph.D. in Atmospheric Sciences, North Carolina State University, Raleigh, NC USA.
Postdoc, Environmental Policy, Princeton University, NJ, USA.

## Narrative of Research Experience

Dr. Tong has over 20 years of experience in air quality and societal impacts. When working at NOAA Air Resources Laboratory, he led the NOAA effort to develop a comprehensive emission modeling system to incorporate thousands of anthropogenic and natural sources to support the Nation's air quality forecasting operation. Dr. Tong is the lead developer of the dust module FENGSHA, which is being used by the National Weather Service to predict dust storms over North America and around the world. His current research focuses on quantifying emissions of aerosols and traces gases from both anthropogenic and natural sources, in particular dust and wildfires, and their subsequent effects on air quality and human health. Dr. Tong is a member of several satellite science teams, including NASA Health and Air Quality Applied Science Team and NOAA Joint Polar-orbiting Satellite System. He serves as the Chair of the Global Steering Committee of WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS WAS) through which he collaborates and coordinate the global efforts to improve dust early warning to mitigate societal damages in WMO member countries.

## Key Publications

Tong, D.Q., et al., (29 co-authors). Health and Safety Effects of Airborne Soil Dust in the Americas and Beyond; Geophysics Reviews, AGU; preprint under edit on DOI: 10.1002/essoar.10508890.1; https://www.essoar.org/doi/10.1002/essoar.10508890.1

Li, Y., Tong, D., Ma, S., Zhang, X., Kondragunta, S., Li, F., & Saylor, R. (2021). Dominance of Wildfires Impact on Air Quality Exceedances During the 2020 Record-Breaking Wildfire Season in the United States. Geophysical Research Letters, 48(21), e2021GL094908.

Gorris, M. E., Anenberg, S. C., Goldberg, D. L., Kerr, G. H., Stowell, J. D., Tong, D., & Zaitchik, B. F. (2021). Shaping the future of science: COVID-19 highlighting the importance of GeoHealth. GeoHealth, e2021GH000412.

Tang, Y., Tong, D.Q., Yang, K., Lee, P., Baker, B., Crawford, A., Luke, W., Stein, A., Campbell, P.C., Ring, A. and Flynn, J., 2020. Air quality impacts of the 2018 Mt. Kilauea Volcano eruption in Hawaii: A regional chemical transport model study with satellite-constrained emissions. *Atmospheric Environment*, p.117648.

Li, Y., D. Q. Tong, F. Ngan, M. D. Cohen, A. F. Stein, S. Kondragunta, X. Zhang, C. Ichoku, E. J. Hyer, and R. A. Kahn. "Ensemble $PM_{2.5}$ Forecasting during the 2018 Camp Fire Event Using the HYSPLIT Transport and Dispersion Model." Journal of Geophysical Research: Atmospheres: e2020JD032768.

Tao, Z.; He, H.; Sun, C.; Tong, D.; Liang, X.-Z. Impact of Fire Emissions on U.S. Air Quality from 1997 to 2016–A Modeling Study in the Satellite Era. *Remote Sens.* **2020**, *12*, 913.

Walker, J. T., Beachley, G., Amos, H. M., Baron, J. S., Bash, J., Baumgardner, R., ... & Cole, A. (2019). Toward the improvement of total nitrogen deposition budgets in the United States. *Science of the Total Environment*, *691*, 1328-1352.

Geng, G., Murray, N.L., Tong, D., … and Liu, Y., (2018). Satellite-Based Daily $PM_{2.5}$ Estimates During Fire Seasons in Colorado. *Journal of Geophysical Research: Atmospheres*, *123*(15), pp.8159-8171.

Tong, D. and Y. Tang (2018). Advancing Air Quality Forecasting to Protect Human Health. *Environmental Managers*, October 2018.

Casey D Bray, William Battye, Viney P Aneja, Daniel Q Tong, Pius Lee, Youhua Tang, 2018. Ammonia emissions from biomass burning in the continental United States. *Atmospheric Environment*, doi:10.1016/j.atmosenv.2018.05.052.

Tong, D. Q., Wang, J. X., Gill, T. E., Lei, H., & Wang, B. (2017). Intensified dust storm activity and Valley fever infection in the southwestern United States. *Geophysical Res. Letters*, *44*(9), 4304-4312.

Tong, D.Q., L. Pan, W. Chen, L. Lamsal, P. Lee, Y. Tang, H. Kim, S. Kondragunta, I. Stajner, 2016. Impact of the 2008 Global Recession on air quality over the United States: Implications for surface ozone levels from changes in $NO_x$ emissions. *Geophysical Research Letter*, 43(17), 9280-9288.

Tong, D.Q., L. Lamsal, L. Pan, C. Ding, H. Kim, P. Lee, T. Chai, and K.E. Pickering, and I. Stajner, 2015. Long-term $NO_x$ trends over large cities in the United States during the 2008 Recession: Intercomparison of satellite retrievals, ground observations, and emission inventories, *Atmospheric Environment*, 107,70-84, doi:10.1016/j.atmosenv.2015.01.035.

Tong, D. Q., Dan, M., Wang, T., and Lee, P., 2012. Long-term dust climatology in the western United States reconstructed from routine aerosol ground monitoring, Atmos. Chem. Phys., 12, 5189-5205.

Bao, H.M., S. Yu, and Tong, D.Q., Massive volcanic $SO_2$ oxidation and sulphate aerosol deposition in Cenozoic North America, *Nature*, 465: 909-912, 17 June 2010.

**Honors and Awards**

World Meteorology Organization (WMO) SDS-WAS Steering Committee Chair, 2022.
Certificate of Commencement, NOAA Oceanic and Atmospheric Research, 2021.
Science and Technology Achievement Award (STAA), Environmental Protection Agency (EPA), 2012.
Outstanding Scientific Service, US Environmental Protection Agency (EPA), 2009;
Participant, the 2nd International Young Scientists' Conference on Global Change, 2006;

**Professional Society Memberships**

Lifetime member: American Geophysical Union;
Member: American Meteorological Society;