

# Wenfu Tang

ASP Postdoctoral Fellow  
Atmospheric Chemistry Observations & Modeling (ACOM)  
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## EDUCATION

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**Ph.D., 2019, Atmospheric Sciences** – Department of Hydrology and Atmospheric Sciences, University of Arizona

**Ph.D. Minor, 2019, Statistics** – Graduate Interdisciplinary Program, University of Arizona

**M.S., 2016, Atmospheric Sciences** – Department of Atmospheric Sciences, University of Arizona

**B.S., 2014, Atmospheric Sciences** – Department of Atmospheric Sciences, Nanjing University

## RESEARCH INTEREST

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- Fires, fire emissions, and fire impacts
- Atmospheric chemistry modeling and model development (e.g., CESM/CAM-chem)
- Satellite data analysis (e.g., MOPITT, TROPOMI, OMI, MODIS, IASI, OCO-2, GOSAT)
- Field campaign measurements analysis (e.g., KORUS-AQ, FIREX-AQ)
- Air quality and chemical data assimilation

## PROFESSIONAL EXPERIENCES

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Jun. 2019 – present                                  Advanced Study Program (ASP) Postdoctoral Fellow, NCAR, USA  
Aug. 2014 – May. 2019                              Graduate Student Researcher, University of Arizona, USA

## PUBLICATIONS

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1. **Tang, W.**, and Arellano, A. F.: Investigating dominant characteristics of fires across the Amazon during 2005–2014 through satellite data synthesis of combustion signatures, *J. Geophys. Res. Atmos.*, 121, doi:10.1002/2016JD025216, 2017.
2. **Tang, W.**, Arellano, A. F., DiGangi, J. P., Choi, Y., Diskin, G. S., Agustí-Panareda, A., Parrington, M., Massart, S., Gaubert, B., Lee, Y., Kim, D., Jung, J., Hong, J., Hong, J.-W., Kanaya, Y., Lee, M., Stauffer, R. M., Thompson, A. M., Flynn, J. H., and Woo, J.-H.: Evaluating high-resolution forecasts of atmospheric CO and CO<sub>2</sub> from a global prediction system during KORUS-AQ field campaign, *Atmos. Chem. Phys.*, 18, 11007-11030, <https://doi.org/10.5194/acp-18-11007-2018>, 2018.
3. **Tang, W.**, Emmons, L. K., Arellano, A. F., Gaubert, B., Knote, C., Tilmes, S., Buchholz, R. R., Pfister, G. G., Diskin, G. S., Blake, D. R., Blake, N. J., Meinardi, S., DiGangi, J. P., Choi, Y., Woo, J., He, C., Schroeder, J. R., Suh, I., Lee, H., Jo, H., Kanaya, Y., Jung, J., Lee, Y., and Kim, D.: Source contributions to carbon monoxide concentrations during KORUS-AQ based on CAM-chem model applications, *J. Geophys. Res. Atmos.*, 10.1029/2018JD029151, 2019.
4. **Tang, W.**, Arellano, A. F., Gaubert, B., Miyazaki, K., and Worden, H. M. Satellite data reveal a common combustion emission pathway for major cities in China, *Atmos. Chem. Phys.*, 19, 4269-4288, <https://doi.org/10.5194/acp-19-4269-2019>, 2019.
5. **Tang, W.**, Global Modeling and Analysis of Anthropogenic Combustion and Associated Emissions, *Doctoral dissertation, The University of Arizona*, 2019.
6. He, C., Chen, F., Barlage, M., Liu, C., Newman, A., **Tang, W.**, Ikeda, K., Rasmussen, R., Can convection-permitting modeling provide decent precipitation for high-resolution snowpack simulations over mountains? *J. Geophys. Res. Atmos.*, <https://doi.org/10.1029/2019JD030823>, 2019.
7. **Tang, W.**, Gaubert, B., Emmons, L., Choi, Y., DiGangi, J. P., Diskin, G. S., Xu, X., He, C., Worden, H., Tilmes, S., Buchholz, R., Halliday, H. S., and Arellano, A. F.: On the relationship between tropospheric CO and CO<sub>2</sub> during KORUS-AQ and its role in constraining anthropogenic CO<sub>2</sub>, *Atmos. Chem. Phys. Discuss.* [preprint], <https://doi.org/10.5194/acp-2020-864>, in review, 2020.

8. **Tang, W.**, Worden, H. M., Deeter, M. N., Edwards, D. P., Emmons, L. K., Martínez-Alonso, S., Gaubert, B., Buchholz, R. R., Diskin, G. S., Dickerson, R. R., Ren, X., He, H., and Kondo, Y.: Assessing Measurements of Pollution in the Troposphere (MOPITT) carbon monoxide retrievals over urban versus non-urban regions, *Atmos. Meas. Tech.*, 13, 1337–1356, <https://doi.org/10.5194/amt-13-1337-2020>, 2020.
9. He, C., O. Clifton, E. Felker-Quinn, S. R. Fulgham, J. J. Calahorrano, D. Lombardozzi, G. Purser, M. Riches, R. Schwantes, **Tang, W.**, B. Poulter, and A. L. Steiner (2020). Air Pollution-Ecosystem Interactions: Perspectives on Challenges and Future Directions, *Bulletin of the American Meteorological Society*, 1-32.
10. Gaubert, B., Emmons, L. K., Raeder, K., Tilmes, S., Miyazaki, K., Arellano Jr., A. F., Elguindi, N., Granier, C., **Tang, W.**, Barré, J., Worden, H. M., Buchholz, R. R., Edwards, D. P., Franke, P., Anderson, J. L., Saunois, M., Schroeder, J., Woo, J.-H., Simpson, I. J., Blake, D. R., Meinardi, S., Wennberg, P. O., Crounse, J., Teng, A., Kim, M., Dickerson, R. R., He, H., Ren, X., Pusede, S. E., and Diskin, G. S.: Correcting model biases of CO in East Asia: impact on oxidant distributions during KORUS-AQ, *Atmos. Chem. Phys.*, 20, 14617–14647, <https://doi.org/10.5194/acp-20-14617-2020>, 2020.
11. Buchholz, R. R., Worden, H. M., Park, M., Francis, G., Deeter, M. N., Edwards, D. P., Emmons, L. K., Gaubert, B., Gille, J., Martinez-Alonso, S., **Tang, W.**, Kumar, R., Drummond, J. R., Clerbaux, C., George, M., Coheur, P., Hurtmans, D., Bowman, K. W., Luo, M., Payne, V. H., Worden, J. R., Chin, M., Levy, R. C., Warner, J., Wei, Z., and Kulawik, S. S.: Air pollution trends measured from Terra: CO and AOD over industrial, fire-prone, and background regions, *Remote Sensing of Environment*, 256, 112275, 2021.
12. **Tang, W.**, Edwards, D. P., Emmons, L. K., Worden, H. M., Judd, L. M., Lamsal, L. N., Al-Saadi, J. A., Janz, S. J., Crawford, J. H., Deeter, M. N., Pfister, G., Buchholz, R. R., Gaubert, B., and Nowlan, C. R.: Assessing sub-grid variability within satellite pixels using airborne mapping spectrometer measurements, *Atmos. Meas. Tech. Discuss.* [preprint], <https://doi.org/10.5194/amt-2020-509>, in review, 2021.
13. **Tang, W.**, Tilmes, S., Lawrence, D., Li, F., He, C., Emmons, L., Buchholz, R.: Wildfires in the 21st Century under Different Shared Socioeconomic Pathways (SSPs) and Geoengineering Scenarios in CESM2/WACCM6. *Earth's Future*, in review.

## SERVICES AND OUTREACH

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- Reviewing papers from Atmospheric Chemistry and Physics (ACP), Atmospheric Environment (AE), Earth's Future, Geoscientific Model Development (GMD), Remote Sensing of Environment (RSE), etc.
- Member of AGU and AMS

## PROFESSIONAL TRAINING

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- NCAR ASP Summer Colloquium 2016 — Jul - Aug, 2016
- NCAR ACOM Analysis of existing biomass burning datasets (ACCORD) Workshop — July, 2017
- Joint Center for Satellite Data Assimilation (JCSDA) 2018 Colloquium — Jul - Aug, 2018
- Fundamentals of Atmospheric Chemistry and Aerosol Modeling 2018 workshop — Aug, 2018
- Frontiers of Atmospheric Science and Chemistry: Integration of Novel Applications and Technological Endeavors (FASCINATE) 2019 workshop — Sep, 2019
- Leadership Training — Jan, 2020

## RESEARCH GRANT

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Period	Agency	My Role	Project	Funding
2019-2021	NCAR/ASP	PI	(ASP Postdoc Fellowship) Quantification and prediction of atmospheric chemical impacts of fires by integrating models, satellite observations and field measurements	\$135,000
2020-2023	NOAA	Collaborator	Disentangling complex interactions and feedbacks among droughts, fires, and snowpack in the western U.S. by integrating observations and models	\$506,815

**TEACHING EXPERIENCES**

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Feb – May, 2020	Mentor	Research Experience for Undergrads (REU) at CU Boulder
Jan – Feb, 2021	Mentor	Internship for Credit at NCAR through CU Boulder

**PRESENTATIONS AND CONFERENCES**

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1. MUSICA simulations of fire impacts on air quality during the 2019 FIREX-AQ field campaign, **Oral**, Joint WACCM & Chemistry-Climate Working Groups meeting, Virtual (due to COVID), Mar, 2021.
2. Fires in the 21st Century under Different Shared Socioeconomic Pathways (SSPs) using CESM/WACCM ensemble projections, **Oral**, Abstract NH011-03, 2020 AGU Fall Meeting, Virtual (due to COVID), Dec, 2020.
3. Investigating global fire behavior, variability, trends, and driving factors using an interactive fire module coupled with CESM2, **Oral**, 2020 Atmosphere Model, Whole Atmosphere, and Chemistry Climate Working Group meeting, Boulder, CO, Mar, 2020.
4. Investigating global fire behavior, variability, trends, and driving factors using an interactive fire module coupled with CESM2, **Oral**, 2020 Atmosphere Model, Land Model & Biogeochemistry Working Group meeting, Boulder, CO, Mar, 2020.
5. Investigating air quality and climate impacts of fires using an interactive fire module in CESM2, Abstract A23L-2963, 2019 AGU Fall Meeting, San Francisco, USA, Dec, 2019.
6. Modeling and tagging CO and CO<sub>2</sub> in CAM-chem: A case study during the KORUS-AQ campaign, **Oral**, 2019 Joint WACCM & Chemistry-Climate Working Groups meeting, Boulder, CO, Feb, 2019.
7. Tracking Fossil Fuel Emissions in East Asia by Combining Model Simulations, Satellite Observations, and Field Measurements of the CO-to-CO<sub>2</sub> Ratio, **Oral**, Abstract A52A-06, 2018 AGU Fall Meeting, Washington D.C., USA, Dec, 2018.
8. CO<sub>2</sub> tracking in CAM-chem/CESM, Abstract CCWG-1 presented at 2018 CESM Workshop, Boulder, CO, Jun, 2018.
9. CO Source Contributions and Combustion Characteristics during KORUS-AQ, **Oral**, AOGS Annual Meeting, Honolulu, HI, USA, Jun, 2018.
10. Ensemble Simulation of Anthropogenic and Biomass Burning CO<sub>2</sub> and CO in CAM-chem, Abstract 1102, 2018 AMS Annual Meeting, Austin, TX, USA, Jan, 2018.
11. Joint Evaluation of Copernicus Atmosphere Monitoring Service (CAMS) High-resolution Global Near-Real Time CO and CO<sub>2</sub> Forecasts during KORUS-AQ Field Campaign, Abstract A53A-2210, 2017 AGU Fall Meeting, New Orleans, LA, USA, Dec, 2017.
12. Investigating Combustion and Emission Trends in Megacities through Synthesis of Combustion Signatures Using Multiple Datasets, Abstract 1.040, 2017 AMS Annual Meeting, Seattle, WA, USA, Jan, 2017.
13. Investigating Combustion and Emission Trends in Megacities through Synthesis of Combustion Signatures Using Multiple Datasets, Abstract 1.040, 2016 IGAC Conference, Breckenridge, CO, USA, Sep, 2016.
14. Joint Analysis of Bulk Wildfire Characteristics from Multiple Satellite Retrievals, Abstract A23A-0275, 2015 AGU Fall Meeting, San Francisco, USA, Dec, 2015.
15. A Comparative Analysis on the Temporal and Spatial Distribution of Fire Characteristics in the Amazon and Equatorial Southern Africa Using Observations from Space, **Oral**, Abstract EGU2015-637, 2015 EGU Meeting, Vienna, Austria, Apr, 2015.