

1. Personal Information

Sheesley, Rebecca Jacobs
Baylor University
Waco, Texas, United States

2. Employment

2023 - present Professor, Baylor University, School of Earth and Environmental Sciences,
Waco, Texas, United States
2016 - 2023 Associate Professor, Baylor University, Department of Environmental Science,
Waco, Texas, United States
2010 - 2016 Assistant Professor, Baylor University, Environmental Science, Waco, TX,
United States
2007-2009 Postdoctoral Fellow, Stockholm University, Bolin Center for
Climate Research, Stockholm, Sweden

3. Degrees

06/1999 - 06/2004 University of Wisconsin Madison, Madison, WI, United States PhD
Environmental Chemistry & Technology Program
09/1994 - 05/1998 Wheaton College, Wheaton, IL, United States BS Environmental
Science

4. Narrative of Research Experience

My research focuses on understanding how changing anthropogenic and biogenic emissions influence aerosol properties across diverse environments. I investigate aerosol and trace gas composition, along with aerosol optical properties, to better understand the long-range transport of particles, including dust and biomass-burning aerosols, and their impacts on climate through radiative forcing and cloud-aerosol interactions. In addition, I study neighborhood-scale urban air quality and the processes that shape spatial and temporal variations in pollutant exposure. My work integrates field campaigns and laboratory analyses, combining aerosol sampling, optical measurements, trace gas and VOC observations, and advanced chemical characterization techniques to advance understanding of atmospheric processes and aerosol-climate interactions.

5. Key Products

1. Shrestha S, Guo F, Mehra M, Zhou S, Alvarez S, Yoon S, Chao C, Flynn J, Wang Y, Griffin R, Sheesley R. Interannual variability in biogenic and oxidized VOC concentrations driven by post-drought rewetting in the urban atmosphere of San Antonio, Texas. *Atmospheric Environment*. 2026/06; 375:121965.
2. Sheesley R, Ramirez M, Poudel J, Griggs T, Mehra M, Shrestha S, Li Y, Senkbeil L, Flynn J. Downdrafts of Biomass Burning to Houston Enhanced by Local Convective Activity. *ACS EST Air*. 2025/04; 2(4):486-497. doi: 10.1021/acsestair.4c00232.
3. Welch A, Matthews T, Sheesley R, Wang H, Barsanti K, Nielsen N, Xu X, Niu L, Guenther A, Czimczik C. Summertime Carbonaceous Aerosol in Interior Versus Coastal Northern Alaska. *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES*. 2025; 130(8). doi: 10.1029/2024JD042080.
4. Wang H, Welch AM, Nagalingam S, Leong C, Czimczik CI, Tang J, Seco R, Rinnan R, Vettikkat L, Schobesberger S, Holst T, Brijesh S, Sheesley RJ, Barsanti KC, Guenther AB. High

temperature sensitivity of Arctic isoprene emissions explained by sedges. *Nat Commun.* 2024 Jul 21; 15(1):6144. doi: 10.1038/s41467-024-49960-0.

5. Shrestha S, Zhou S, Mehra M, Guagenti M, Yoon S, Alvarez S, Guo F, Chao C, Flynn III J, Wang Y, Griffin R, Usenko S, Sheesley R. Evaluation of aerosol- and gas-phase tracers for identification of transported biomass burning emissions in an industrially influenced location in Texas, USA. *Atmospheric Chemistry and Physics.* 2023 October; 23(19):10845-10867. doi: 10.5194/acp-23-10845-2023.
6. Mehra M, Shrestha S, AP K, Guagenti M, Moffett C, VerPloeg S, Coogan M, Rai M, Kumar R, Andrews E, Sherman J, Flynn III J, Usenko S, Sheesley R. Atmospheric heating in the US from saharan dust: Tracking the June 2020 event with surface and satellite observations. *Atmospheric Environment.* 2023 October; 310:119988-. doi: 10.1016/j.atmosenv.2023.119988.
7. Kirpes RM, Lei Z, Fraund M, Gunsch MJ, May NW, Barrett TE, Moffett CE, Schauer AJ, Alexander B, Upchurch LM, China S, Quinn PK, Moffet RC, Laskin A, Sheesley RJ, Pratt KA, Ault AP. Solid organic-coated ammonium sulfate particles at high relative humidity in the summertime Arctic atmosphere. *Proc Natl Acad Sci U S A.* 2022 Apr 5; 119(14):e2104496119. doi: 10.1073/pnas.2104496119.
8. Moschos V, Dzepina K, Bhattu D, Lamkaddam H, Casotto R, Daellenbach KR, Canonaco F, Rai P, Aas W, Becagli S, Calzolari G, Eleftheriadis K, Moffett CE, Schnelle-Kreis J, Severi M, Sharma S, Skov H, Vestenius M, Zhang W, Hakola H, Hellén H, Huang L, Jaffrezo JL, Massling A, Nøjgaard JK, Petäjä T, Popovicheva O, Sheesley RJ, Traversi R, Yttri KE, Schmale J, Prévôt ASH, Baltensperger U, El Haddad I. Equal abundance of summertime natural and wintertime anthropogenic Arctic organic aerosols. *Nat Geosci.* 2022; 15(3):196-202. doi: 10.1038/s41561-021-00891-1.
9. Moffett C, Barrett T, Liu J, Gunsch M, Upchurch L, Quinn P, Pratt K, Sheesley R. Long-Term Trends for Marine Sulfur Aerosol in the Alaskan Arctic and Relationships With Temperature. *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES.* 2020; 125(22). doi: 10.1029/2020JD033225.
10. Gustafsson O, Kruså M, Zencak Z, Sheesley R, Granat L, Engström E, Praveen P, Rao P, Leck C, Rodhe H. Brown Clouds over South Asia: Biomass or Fossil Fuel Combustion? *Science.* 2009 January; 323(5913):495-498. doi: 10.1126/science.1164857.

6. Professional Society Memberships

1. American Geophysical Union
2. American Chemical Society
3. American Association for the Advancement of Science