



# NOAA Air Resources Laboratory Calendar Year 2019 Publications

## **Journals**

- Aas, W., Mortier, A., Bowersox, V., Cherian, R., Faluvegi, G., Fagerli, H., Hand, J., Klimont, Z., Galy-Lacaux, C., Lehmann, C. M. B., Myhre, C. L., Myhre, G., Olivie, D., Sato, K., Quaas, J., Rao, P. S. P., Schulz, M., Shindell, D., Skeie, R. B., **Stein, A.**, et al. (2019). Global and regional trends of atmospheric sulfur. *Sci Rep* 9, 953, <https://doi.org/10.1038/s41598-018-37304-0>
- Bae, C., Kim, B-U, Kim, H. C., Yoo, C. and Kim, S. (2020). Long-Range Transport Influence on Key Chemical Components of PM<sub>2.5</sub> in the Seoul Metropolitan Area, South Korea, during the Years 2012–2016. *Atmosphere*, 11(1), 48; <https://doi.org/10.3390/atmos11010048>
- Bae, C., Kim, H. C., Kim, B.-U., and Kim, S. (2019). Surface ozone response to satellite-constrained NO<sub>x</sub> emission adjustments and its implications, *Environmental Pollution*, 113469, <https://doi.org/10.1016/j.envpol.2019.113469>
- Barkley, Z.R., Lauvaux, T., Davis, K. J., Deng, A., Fried, A., Weibring, P., Richter, D., Walega, J. G., DiGangi, J., Ehrman, S. H., Ren, X., and Dickerson, R. R. (2019). Estimating Methane Emissions from Underground Coal and Natural Gas Production in Southwestern Pennsylvania. *Geophysical Research Letters*, 46(8), 4531-4540, <https://doi.org/10.1029/2019GL082131>
- Battye, W. H., Bray, C. D., Aneja, V. P., Tong, D., **Lee, P.**, Tang, Y. (2019) Evaluating Ammonia (NH<sub>3</sub>) Predictions in the NOAA NAQFC for Eastern North Carolina Using Ground Level and Satellite Measurements. *JGR Atmospheres*, 124(14), 8242-8259, <https://doi.org/10.1029/2018JD029990>
- Buban, M. S.; Lee, T. R.; Dumas, E. J.; **Baker, C. B.**; Heuer, M. (2019). Observations and Numerical Simulation of the Effects of the 21 August 2017 North American Total Solar Eclipse on Surface Conditions and Atmospheric Boundary-Layer Evolution. *Boundary-Layer Meteorol* 1–14, <https://doi.org/10.1007/s10546-018-00421-4>
- Campbell, P. C., J. Bash, C. Nolte, T. Spero, E. J. Cooter, K. Hinson, and L. Linker (2019). Projections of Atmospheric Nitrogen Deposition to the Chesapeake Bay Watershed. *J. Geophys. Res. Biogeosci.*, 124 (11), 3307-3326, <https://doi.org/10.1029/2019JG005203>
- Dickerson, R. R., Anderson, D. C., Ren, X. (2019). On the use of data from commercial NO<sub>x</sub> analyzers for air pollution studies. *Atmospheric Environment*, 214, 116873, <https://doi.org/10.1016/j.atmosenv.2019.116873>
- Dreessen, J., Orozco, D., Boyle, J., Szyborski, J., **Lee, P.**, Flores, A., Sakai, R. K. (2019). Observed Ozone over the Chesapeake Bay Land-Water Interface: The Hart-Miller Island Pilot Project, *Journal of the Air & Waste Management Association*, 69(11), 1312-1330, <https://doi.org/10.1080/10962247.2019.1668497>
- Etyemezian, V., Gillies, J. A., Mastin, L. G., **Crawford, A.**, Hasson, R., Von Eaton, A. R., Nikolich, G. (2019). Laboratory Experiments of Volcanic Ash Resuspension by Wind. *JGR Atmospheres*, 124(16), 9534-9560, <https://doi.org/10.1029/2018JD030076>
- Halliday, H. S., DiGangi, J. P., Choi, Y., Diskin, G.S., Pusede, S. E., Rana, M., Nowak, J. B., Knote, C., Ren, X., He, H., Dickerson, R. R., Li, Z. (2019). Using Short-Term CO/CO<sub>2</sub> Ratios to Assess Air Mass Differences over the Korean Peninsula During KORUS-AQ. *JGR Atmospheres*, 124 (20), 10951-10972, <https://doi.org/10.1029/2018JD029697>

NOAA Air Resources Laboratory - CY2019 Publications

- Hembeck, L., Hea, H., Vinciguerra, T. P., Canty, T. P., Dickerson, R. R., Salawitch, R. J., Loughner, C. (2019). Measured and modelled ozone photochemical production in the Baltimore-Washington airshed. *Atmospheric Environment* 2, 100017, <https://doi.org/10.1016/j.aeaoa.2019.100017>
- Jung, M., Son, S., Kim, H., Kim, S., Park, R. J., Chen, D. (2019). Contrasting synoptic weather patterns between non-dust high particulate matter events and Asian dust events in Seoul, South Korea. *Atmospheric Environment*, 214, 116864, <https://doi.org/10.1016/j.atmosenv.2019.116864>
- Karion, A., Lauvaux, T., Lopez Coto, I., Sweeney, C., Mueller, K., Gourdji, S., Angevine, W., Barkley, Z., Deng, A., Andrews, A., **Stein, A.**, and Whetstone, J. (2019). Intercomparison of atmospheric trace gas dispersion models: Barnett Shale case study. *Atmos. Chem. Phys.*, 19, 2561-2576, <https://doi.org/10.5194/acp-19-2561-2019>
- Kumar, R., Delle Monache, L., Bresch, J., Saide, P., Tang, Y., Liu, Z., da Silva, A., Alessandrini, S., Pfister, G., Edwards, D., **Lee, P.**, Djalalove, I. (2019). Toward Improving Short-Term Predictions of Fine Particulate Matter Over the United States Via Assimilation of Satellite Aerosol Optical Depth Retrievals. *JGR Atmospheres*, 124(5), 2753-2773, <https://doi.org/10.1029/2018JD029009>
- Lee, J-H, Lee, S-H, Kim, H. C. (2019). Detection of Strong NOX Emissions from Fine-scale Reconstruction of the OMI Tropospheric NO2 Product. *Remote Sens.* 11(16), 1861, <https://doi.org/10.3390/rs11161861>
- Lee, T. R. and Buban, M. (2019). Evaluation of the High-Resolution Rapid Refresh (HRRR) Model Using Near-Surface Meteorological and Flux Observations from Northern Alabama. *Weather and Forecasting*, 34 (3), 635-663, <https://doi.org/10.1175/WAF-D-18-0184.1>
- Leeper, R. D., **Kochendorfer, J.**, Henderson, T. A., Palecki, M. (2019). Impacts of Small-Scale Urban Encroachment on Air Temperature Observations. *J. Appl. Meteor. Climatol.*, 58(6), 1369-1380, <https://doi.org/10.1175/JAMC-D-19-0002.1>
- Lichiheb, N., **Myles, L.**, Personne, E., Heuer, M., Buban, M., Nelson, A. J., Koloutsou-Vakakis, S., Rood, M. J., Joo, E., Miller, J., and Bernacchi, C. (2019). Implementation of the effect of urease inhibitor on ammonia emissions following urea-based fertilizer application at a Zea mays field in central Illinois: A study with SURFATM-NH3 model. *Agricultural and Forest Meteorology*, 269-270, 78-87, <https://doi.org/10.1016/j.agrformet.2019.02.005>
- Lyu, C., Capps, S. L., Hakami, A., Zhao, S., Resler, J., Carmichael, G. R., Sandu, A., Russell, A. G., Chai, T., Henze, D. K. (2019) Elucidating emissions control strategies for ozone to protect human health and public welfare within the continental United States. *Environ. Res. Lett.* 14(12), 124093, <https://doi.org/10.1088/1748-9326/ab5e05>
- Markowski, P. M., Lis, N. T., Turner, D. D., Lee, T. R., and Buban, M. S. (2019). Observations of near-surface vertical wind profiles and vertical momentum fluxes from VORTEX-Southeast 2017: Comparisons to Monin-Obukhov similarity theory. *Monthly Weather Review*, 147 (10), 3811-3824, <https://doi.org/10.1175/MWR-D-19-0091.1>
- Ngan, F., Loughner, C. P., **Stein, A.** (2019). The evaluation of mixing methods in HYSPLIT using measurements from controlled tracer experiments. *Atmospheric Environment*, 219, 117043, <https://doi.org/10.1016/j.atmosenv.2019.117043>
- Pal, S., & Lee, T. R. (2019). Contrasting Air Mass Advection Explains Significant Differences in Boundary Layer Depth Seasonal Cycles Under Onshore Versus Offshore Flows. *Geophysical Research Letters*, 46(5), 2846-2853, <https://doi.org/10.1029/2018GL081699>
- Pal, S. and Lee, T. R. (2019). Advected Air Mass Reservoirs in the Downwind of Mountains and Their Roles in Overrunning Boundary Layer Depths over the Plains. *Geophysical Research Letters*, 46(16), 10140-10149, <https://doi.org/10.1029/2019GL083988>

- Pierra, A., Jutras, S., Smith, C., **Kochendorfer, J.**, Fortin, V., and Anctil, F. (2019). Evaluation of Catch Efficiency Transfer Functions for Unshielded and Single-Alter-Shielded Solid Precipitation Measurements. *J. Atmos. Oceanic Technol.*, 36(5), 865-881, <https://doi.org/10.1175/JTECH-D-18-0112.1>
- Qu, Z., Henze, D. K., Li, C., Theys, N., Wang, Y., Wang, J., Wang, W., Han, J., C. Shim, C., Dickerson, R. R. and **Ren, X.** (2019). SO<sub>2</sub> Emission Estimates Using OMI SO<sub>2</sub> Retrievals for 2005–2017. *JGR Atmospheres*, 124(14), 8336-8359, <https://doi.org/10.1029/2019JD0302403>
- Ren, X.**, Hall, D. L., Vinciguerra, T., Benish, S. E., Stratton, P. R., Ahn, D., Hansford, J. R., **Cohen, M. D.**, Sahu, S., He, H., Grimes, C., Fuentes, J. D., Shepson, P. B., Salawitch, R. J., Ehrman, S. H., Dickerson, R. R. (2019). Methane Emissions from the Marcellus Shale in Southwestern Pennsylvania and Northern West Virginia Based on Airborne Measurements. *JGR Atmospheres* 124(3), 1862-1878. <https://doi.org/10.1029/2018JD029690>
- Salinger, J.; Renwick, J.; Behrens, E.; Mullan, B.; **Diamond, H. J.**; Sirguey, P.; Smith, R.; Trought, M. C.T.; Alexander, L. V.; Cullen, N.; Fitzharris, B. B.; Hepburn, C.; Parker, A.; and Sutton, P. J. (2019). The unprecedented coupled ocean-atmosphere summer heatwave in the New Zealand region 2017/18: drivers, mechanisms and impacts. *Environmental Research Letters*, 14(4), <https://doi.org/10.1088/1748-9326/ab012a>
- Saylor, R. D.**; **Baker, B. D.**; **Lee, P.**; **Tong, D.**; Pan, L.; and Hicks, B. B. (2019). The particle dry deposition component of total deposition from air quality models: right, wrong or uncertain? *Tellus B: Chemical and Physical Meteorology*, 71(1), 1-22, <https://doi.org/10.1080/16000889.2018.1550324>
- Walker, J.T.; Beachley, G.; Amos, H.; Baron, J.S.; Bash, J.; Bell, M.D.; Benedict, K.; Chen, X.; Clow, D.W.; Cole, A., Coughlin, J.G.; Cruz, K.; Daly, R.W.; Decina, S.M.; Elliott, E.M.; Fenn, M.F.; Ganzeveld, L.; Gebhart, K.; Isil, S.S.; Kerschner, B.M.; Larson, R.S.; Lavery, T.; Lear, G.G.; Macy, T.; Mast, M.A.; Morris, K.; Padgett, P. E., Pouyat, R.V.; Puchalski, M.; Pye, H.; Rea, A.W.; Rhodes, M.F.; Rogers, C.M.; **Saylor, R.**; Scheffe, R.; Schichtel, B.A.; Schwede, D.B.; Sextstone, G.A.; Sive, B.; Sosa, R.; Templar, P.H.; Thompson, T.; **Tong, D.**; Wetherbee, G.A.; Whitlow, T.H.; Wu, Z.; Yu, Z.; Zhang, L. (2019). Toward the improvement of total nitrogen deposition budgets in the United States. *Science of the Total Environment*, 691, 1328-1352, <https://doi.org/10.1016/j.scitotenv.2019.07.058>
- Wang, J., Zhu, Z., Qi, L., Zhao, Q., He, J., and **Wang, J. X. L.** (2019). Two pathways of how remote SST anomalies drive the interannual variability of autumnal haze days in the Beijing–Tianjin–Hebei region, China. *Atmos. Chem. Phys.*, 19, 1521-1535, <https://doi.org/10.5194/acp-19-1521-2019>
- Wang, Y., Dörner, S., Donner, S., Böhnke, S., De Smedt, I., Dickerson, R. R., Dong, Z., He, H., Li, Z., Li, D., Liu, D., **Ren, X.**, et al. (2019). Vertical profiles of NO<sub>2</sub>, SO<sub>2</sub>, HONO, HCHO, CHOCHO, and aerosols derived from MAX-DOAS measurements at a rural site in the central-western North China Plain and their relation to emission sources and effects of regional transport. *Atmos. Chem. Phys.*, 19, 5417-5449, <https://doi.org/10.5194/acp-19-5417-2019>
- Wilczak, J., Olson, J., Djalalove, I., Bianco, L., Berg, L., Shaw, W., Coulter, R., **Eckman, R.**, Freedman, J., Finley, C., Cline, J. (2019). Data assimilation impact of in situ and remote sensing meteorological observations on wind power forecasts during the first Wind Forecast Improvement Project (WFIP). *Wind Energy*, 22(7), 932-944, <https://doi.org/10.1002/we.2332>
- Wilkerson, J.; **Dobosy, R.**; Sayres, D. S.; Healy, C.; **Dumas, E.**; **Baker, B.**; and Anderson, J. G (2019). Permafrost nitrous oxide emissions observed on a landscape scale using the airborne eddy-covariance method. *Atmos. Chem. Phys.*, 19, 4257-4268, <https://doi.org/10.5194/acp-19-4257-2019>

***Tech Memos and Other Reports***

- Lee, T. R., Dumas, E., Buban, M. S., Baker, C. B., Neuhaus, J., Rogers, M., Chappelle, N., Marwine, C., Swanson, M., Amaral, C., Hall, P. (2019). Improved sampling of the atmospheric boundary layer using small unmanned aircraft systems: results from the Avon Park Experiment. NOAA Tech Memo OAR ARL 279; 22 p., <https://doi.org/10.25923/a5kx-ap26>
- Quardokus Fisher, K., Kaufman, E., Calagna, O., **Myles, L.**, Brinkworth, C., Simmons, D., and Dixon, P.G. (2019). Developing Scientists as Champions of Diversity to Transform the Geosciences. *Journal of Geoscience Education* 67, 459-471, <https://doi.org/10.1080/10899995.2019.1618692>