

# Bianca C. Baier

---

University of Colorado-Boulder, Cooperative Institute for Research in Environmental Sciences (CIRES)  
CIRES employee hosted at NOAA/GML  
Carbon Cycle and Greenhouse Gases (CCGG) Aircraft Program  
325 Broadway, Boulder, CO 80305  
bianca.baier@colorado.edu, bianca.baier@noaa.gov  
303 497.5769

## Education

Ph.D. **Atmospheric Science**(2016)  
The Pennsylvania State University, University Park, PA  
M.S. **Meteorology** (2014)  
The Pennsylvania State University, University Park, PA  
B.S. **Meteorology: Atmospheric Science**(2011)  
The Pennsylvania State University, University Park, PA  
B.S. **Mathematics** (2011)  
The Pennsylvania State University, University Park, PA

## Professional Employment History

2018–present **Research Scientist**, University of Colorado-Boulder/CIRES,  
CIRES employee hosted at NOAA/GML  
2016–2018 **Postdoctoral Scientist**, University of Colorado-Boulder/CIRES,  
CIRES employee hosted at NOAA/GML  
2011–2016 **Graduate Research Assistant**, Department of Meteorology,  
The Pennsylvania State University

## Relevant Projects

2019–2022 *Co-Investigator*, “High-altitude AirCore retrieval system for atmospheric greenhouse gas profiling”, NOAA UASPO  
2018–2021 *Principal Investigator*, “Establishing WMO Traceability for XCO<sub>2</sub> from OCO-2 using AirCore and Aircraft Vertical Profiles”, NASA  
2018–2020 *Principal Investigator*, “Vertical profiles over NE Colorado using FTS and AirCore in support of OCO-2 and OCO-3 validation”, NASA JPL  
2015–2020 *Subaward Principal Investigator*, “Atmospheric Carbon and Transport-America”, NASA

## Recent Selected Publications

Roche, S., Strong, K., Wunch, D., Mendonca, J., Sweeney, C., **Baier, B.C.**, Biraud, S. C., Laughner, J. L., Toon, G. C., and Connor, B. J.: Retrieval of atmospheric CO<sub>2</sub> vertical profiles from ground-based near-infrared spectra, *Atmos. Meas. Tech. Discuss.* [preprint], <https://doi.org/10.5194/amt-2020-429>, *accepted*.

Laube, J. C., Elvidge, E. C. L., Adcock, K. E., **Baier, B.**, Brenninkmeijer, C. A. M., Chen, H., Droste, E. S., Grooß, J.-U., Heikkinen, P., Hind, A. J., Kivi, R., Lojko, A., Montzka, S. A., Oram, D. E., Randall, S., Rückmann, T., Sturges, W. T., Sweeney, C., Thomas, M., Tuffnell, E., and Ploeger, F. (2020): Investigating stratospheric changes between 2009 and 2018 with

halogenated trace gas data from aircraft, AirCores, and a global model focusing on CFC-11, *Atmos. Chem. Phys.*, 20, 9771–9782, <https://doi.org/10.5194/acp-20-9771-2020>.

Thanwerdas, J., Saunio, M., Berchet, A., Pison, I., Hauglustaine, D., Ramonet, M., Crevoisier, C., **Baier, B.**, Sweeney, C., Bousquet, P. (2020): Impact of atomic chlorine on the modelling of total methane and its  $^{13}\text{C}:^{12}\text{C}$  isotopic ratio at global scale, *Atmospheric Chemistry and Physics Discussions*, <https://doi.org/10.5194/acp-2019-925>, in review.

Hedelius, J.K., He, T.L., Jones, D.B., Buchholz, R.R., Maziere, **Baier, B.C.**, M. D., Deutscher, N.M., Dubey, M.K., Feist, D.G., Griffith, D., Hase, F., Iraci, L., Jeseck, P., Kiel, M., Kivi, R., Liu, C., Morino, I., Notholt, J., Oh, Y.-S., Ohyama, H., Pollard, D., Rettinger, M., Roche, S., Roehl, C., Schneider, M., Shiomi, K., Strong, K., Sussman, R., Sweeney, C., Te, Y., Uchino, O., Velasco, V., Wang, W., Warneke, T., Wennberg, T., Wordern, H., Wunch, D. (2019): Evaluation of MOPITT version 7 joint TIR-NIR XCO retrievals with TCCON, *Atmos. Meas. Tech. Discuss.*, <https://doi.org/10.5194/amt-2019-201>, in review.

**Baier, B. C.**, C. Sweeney, J. Miller, T. Newberger, S. Lehman, P. Lang, B.R. Miller, M. Croswell, S. Englund-Michel, K. Davis, S. Pal, J. Digangi, J. Nowak, Y. Choi, A. Fried. (2019): A multi-species assessment of regional carbon enhancements during the wintertime ACT-America campaign, In review at *JGR-Atmospheres*.

Kostinek, J., Roiger, A., Davis, K., Sweeney, C., DiGangi, J.P., Choi, Y., **Baier, B.**, Hase, F., GroB, J., Eckl, M., Klausner, T., Butz, A. (2019): Adaptation and performance assessment of a quantum and interband cascade laser spectrometer for simultaneous airborne in situ observation of CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, CO<sub>2</sub>, CO, and N<sub>2</sub>O, *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-12-1767-2019>.

**Baier, B. C.**, Brune, W. H., Miller, D. O., Blake, D., Long, R., Wisthaler, A., Cantrell, C., Fried, A., Heikes, B., Brown, S., McDuffie, E., Flocke, F., Apel, E., Kaser, L., and Weinheimer, A. (2017): Higher measured than modeled ozone production at increased NO<sub>x</sub> levels in the Colorado Front Range, *Atmos. Chem. Phys.*, 17, 11273–11292, <https://doi.org/10.5194/acp-17-11273-2017>.

Brune, W., **B. Baier**, J. Thomas, R. Cohen, S. Pusede, E. Browne, A. Goldstein, D. Gentner, F. Keutsch, J. Thornton, S. Harrold, F. Lopez-Hilfiker, X. Ren, and P. Wennberg (2016). Ozone production chemistry in the presence of urban plumes, *Faraday Discuss.*, 189, 169–189. doi: 10.1039/C5FD00204D.

**Baier, B.**, W. H. Brune, B. Lefer, D. Miller, and D. Martins (2015). Direct ozone production rate measurements and their use in assessing ozone source and receptor regions for Houston in 2013, *Atmospheric Environment*, 114, 83–91, doi:10.1016/j.atmosenv.2015.05.033.

## Extended Abstracts

**Baier, B.**, C. Sweeney, T. Newberger, J. Higgs, S. Wolter, P. Tans, A. Andrews, D. Wunch, L. Cunningham, C. Arrowsmith, J. Hedelius, P. Wennberg, H. Parker, G. Osterman, H. Chen, J. J. D. Hooghiem, R. Kivi, P. Heikkinen, M. Leuenberger, P. Nyfeler, C. Crevoisier, T. Laemmle, M. Lopez, M. Ramonet, A. Engel, T. Wagenhaeuser, J. Laube (2020): Toward Greenhouse Gas Remote Sensing Evaluation Using the AirCore Atmospheric Sampling System. *Annual Science Meeting and General Assembly*, Netherlands, Integrated Carbon Observing System.

**Baier, B.**, C. Sweeney, J.B. Miller, S. Lehman, B.R. Miller, K. Davis, S. Feng, T. Lauvaux, J.P. DiGangi, Y. Choi, J.B. Nowak, H.S. Halliday, (2019) A51E-05: Constraining seasonal biogenic and fossil fuel CO<sub>2</sub> during the ACT-America campaigns: observations using critical tracers and model comparisons. *2019 Fall Meeting* San Francisco, CA, American Geophysical Union.

**Baier, B.**, C. Sweeney, A.E. Andrews, E.L. Fleming, J. Higgs, J. Hedelius, M. Kiel, H. Parker, T. Newberger, P. P. Tans, P. Wennberg, S. Wolter, D. Wunch, C. Arrowsmith, L. Cunningham, (2018) A34C-02: AirCore profiles of greenhouse and trace gas species for sites within the Total Carbon Column Observing Network (TCCON) and comparisons to models and ground-based Fourier Transform Spectrometer (FTS) retrievals. *2018 Fall Meeting* Washington, D.C., American Geophysical Union.

**Baier, B.**, C. Sweeney, J. Miller, T. Newberger, S. Lehman, P. Lang, B.R. Miller, M. Crotwell, S. Englund-Michel, K. Davis, S. Pal, J. Digangi, J. Nowak, Y. Choi, A. Fried. (2017) A43C-2459: Interpreting regional carbon enhancements during the ACT-America campaign using multi-species flask measurements. *2017 Fall Meeting* New Orleans, Louisiana, American Geophysical Union.

**Baier, B.**, W. Brune, D. Miller, B. Lefer, B. Sive, D. Blake, and R. Long (2015). A41A-0007: In situ measurements of ozone production rates and comparisons to model-derived production rates during the Houston, TX and Denver, CO DISCOVER-AQ campaigns. *2015 Fall Meeting*, San Francisco, California, American Geophysical Union.

### Invited Presentations

**Baier, B.** (2018). Airborne greenhouse and trace gas measurements and modeling: evaluating regional emissions for carbon and air quality management. *University of Wyoming: Department of Atmospheric Science, Laramie, WY.*

**Baier, B.**, Brune, W. H., Miller, D. O., Blake, D., Long, R., Wisthaler, A., Cantrell, C., Fried, A., Heikes, B., Brown, S., McDuffie, E., Flocke, F., Apel, E., Kaser, L., and Weinheimer, A. (2017). Direct measurements of ozone production rates in the Colorado Front Range: Instrument development and model-data comparisons. *University of Wyoming: Department of Atmospheric Science, Laramie, WY.*

**Baier, B.**, Brune, W. H., Miller, D. O., Blake, D., Long, R., Wisthaler, A., Cantrell, C., Fried, A., Heikes, B., Brown, S., McDuffie, E., Flocke, F., Apel, E., Kaser, L., and Weinheimer, A. (2016). Direct measurements of ozone production rates and comparison to photochemical box models for DISCOVER-AQ Colorado. *NOAA-ESRL Chemical Sciences Division, Boulder, CO.*

**Baier, B.**, W. Brune, D. Miller, B. Lefer, D. Blake, E. Fischer, I. Pollack, and R. Long (2015). Measuring ozone production directly: Instrument development, new data, and comparison to photochemical box models. *The Colorado State University: Chemistry Dept., Ft. Collins, CO.*

### Professional Affiliations

Current	American Meteorological Society (AMS), <b>Member</b>
Current	American Geophysical Union (AGU), <b>Member</b>
Current	Earth Science Women's Network (ESWN), <b>Member</b>

### Service

*PROMoting Geoscience REsearch and Success (PROGRESS)*, **Mentor**

*Atmospheric Research*, **Peer Reviewer**

*Environmental Science and Technology*, **Peer Reviewer**

*Atmospheric Measurement Technologies*, **Peer Reviewer**

*Atmospheric Chemistry and Physics*, **Peer Reviewer**

NOAA Atmospheric Chemistry and Composition (AC4) Grant (2019), **Reviewer**

NOAA Small Business Innovative Research Grant (2020), **Reviewer**