Emily Follansbee

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emilyfollansbee

Education

Expected 2029 **Ph.D. Systems Engineering**, *Colorado State University*, Fort Collins, CO, *GPA: 3.7*

2021 **M.A. Earth and Environmental Sciences**, *Columbia University*, New York, NY
Thesis: *"Compositional and chemical variation of toxic iron minerals present in $PM_{2.5}$ in the NYC region"*

2017 **B.S. Civil Engineering**, *Gonzaga University*, Spokane, WA
Minor: Physics | Concentration: Environmental Engineering

Research Interests

Remote Sensing - Sensor & Instrument Development - Atmospheric Science

Technical Skills

Laboratory & Instrumentation	Methane sensors, laser spectroscopy, field deployment & troubleshooting, instrument calibration & validation, UAV payload integration, sensor & systems integration, mechanical assembly, data acquisition, prototyping, soldering, cryogenic system handling, lab safety, use of hand tools & shop equipment
Programming & Data	Python, ArcGIS & QGIS, Git, Excel, timeseries & geospatial analysis, uncertainty analysis, Bayesian inversion, atmospheric dispersion modeling
Engineering	Systems engineering, AutoCAD, SolidWorks
Certifications	INCOSE ASEP, Engineer-In-Training (WA)

Experience

2025 – Present **Graduate Student Researcher - Systems Engineering**, *Methane Emissions Technology Evaluation Center (METEC), Colorado State University*, Fort Collins, CO
- Methane dispersion modeling for controlled releases and field experiments.
- Development and validation of Gaussian plume Bayesian inversion framework for methane emissions quantification.
- Awarded the **Scott Graduate Research Assistantship** (CSU Walter Scott, Jr. College of Engineering).

2023 – 2025 **Research Engineer - Post-Master**, *Los Alamos National Laboratory*, Los Alamos, NM
- Designed, deployed, and analyzed ground-, vehicle-, and UAV- based methane sensing systems for validation testing of measurement techniques.
- Quantified methane emissions from orphaned and abandoned oil & gas wells across NM, OK, TX.
- **Lead author** and co-author on multiple peer-reviewed publications.

2021 – 2022 **Project Manager**, *NYC Department of Environmental Protection*, NY
- Research lead quantifying methane emissions from 14 wastewater treatment plants.
- Managed >$1,000,000 in energy efficiency projects and greenhouse gas reduction portfolio.
- Authored internal white papers on fugitive methane and climate initiatives.

2018 – 2021 **Graduate Student Researcher - Atmospheric Science**, *Lamont Doherty Earth Observatory, Columbia University*, Palisades, NY

- Analyzed ground- and aircraft-based laser spectroscopy data for methane source attribution in NYC.
- Conducted $PM_{2.5}$ compositional analysis using synchrotron X-ray techniques.
- Coordinated community sampling campaigns and interdisciplinary lab collaborations.

2016 – 2018 **Research Engineer - Internship & Post-Baccalaureate**, *National High Magnetic Field Laboratory, Los Alamos National Laboratory*, Los Alamos, NM

- Designed microspectroscopic sensors for 65 - 100 Tesla pulsed magnets.
- Designed cryogenic instrumentation for material studies in high magnetic fields.

Publications

1 Dubey, M. L., Santos, A., Moyes, A. B., Reichl, K., Lee, J. E., Dubey, M. K., LeYhuelic, C., Variano, E., **Follansbee**, **E.**, Chow, F. K., & Biraud, S. C. (2025). Development of a forced advection sampling technique (FAST) for quantification of methane emissions from orphaned wells [Publisher: Copernicus GmbH]. *Atmospheric Measurement Techniques*, *18*(13), 2987–3007. https://doi.org/10.5194/amt-18-2987-2025

2 **Follansbee**, **E.**, Lee, J. E., Dubey, M. L., Dooley, J. F., Shuck, C., Minschwaner, K., Santos, A., Biraud, S. C., & Dubey, M. K. (2025). Orphaned oil and gas well methane emission rates quantified using Gaussian plume inversions of ambient observations [Publisher: Copernicus GmbH]. *Atmospheric Measurement Techniques*, *18*(18), 4527–4542. https://doi.org/10.5194/amt-18-4527-2025

3 Dooley, J. F., Minschwaner, K., Dubey, M. K., El Abbadi, S. H., Sherwin, E. D., Meyer, A. G., **Follansbee**, **E.**, & Lee, J. E. (2024). A new aerial approach for quantifying and attributing methane emissions: Implementation and validation [Publisher: Copernicus GmbH]. *Atmospheric Measurement Techniques*, *17*(17), 5091–5111. https://doi.org/10.5194/amt-17-5091-2024

4 Guiltinan, E., Milazzo, D., Reeder, M., Downs, C., Pratt, R., **Follansbee**, **E.**, Lee, J. E., Santos, J. E., Jahan, I., Dubey, M., & Viswanathan, H. (2024). Orphan Well Detection Techniques Utilizing Magnetometer and Methane Sensing: Case Study in Osage County, OK [in prep].

5 O'Malley, D., Delorey, A. A., Guiltinan, E. J., Ma, Z., Kadeethum, T., Lackey, G., Lee, J., E. Santos, J., **Follansbee**, **E.**, Nair, M. C., Pekney, N. J., Jahan, I., Mehana, M., Hora, P., Carey, J. W., Govert, A., Varadharajan, C., Ciulla, F., Biraud, S. C., ... Viswanathan, H. (2024). Unlocking solutions: Innovative approaches to identifying and mitigating the environmental impacts of undocumented orphan wells in the united states [Publisher: American Chemical Society]. *Environ. Sci. Technol.* https://doi.org/10.1021/acs.est.4c02069

6 Balk, A. L., Gilbert, I., Ivkov, R., Unguris, J., & Stavis, S. M. (2019). Bubble Magnetometry of Nanoparticle Heterogeneity and Interaction [Acknowledgement]. *Physical Review Applied*, *11*(6), 061003. https://doi.org/10.1103/PhysRevApplied.11.061003

Selected Presentations & Posters

1 Follansbee, E. R., Lee, J. E., Levin, E., Dubey, M. K., & Hodshire, A. (2025, October 8). *Gaussian plume Bayesian inversion for methane emissions quantification from ground-based measurements of an orphaned oil well* [CH4 Connections Conference].

2 Follansbee, E. R., Dooley, J. F., Lee, J., Santos, A., Biraud, S., & Dubey, M. K. (2024). *In situ ethane to methane ratios for source attribution of oil and gas emissions in Osage Nation, Oklahoma* [AGU24].

3 Dubey, M. K., Follansbee, E. R., Dubey, M. L., Lee, J. E., Dooley, J., Minschwaner, K., & Biraud, S. C. (2023). *Safe, defensible, cost-effective, and scalable methane emission monitoring for orphan well plugging* [AGU23].

4 Follansbee, E. R. (2023, September 12). *Orphan well methane emissions inferred from plume observations.* [Los Alamos Annual Student Symposium].

5 Follansbee, E. R., Dubey, M., Dooley, J. F., Lee, J., Minschwaner, K. R., Biraud, S., & Dubey, M. K. (2023). *Orphan well methane emissions inferred from plume observations in the Permian Basin* [AGU23].

6 Guiltinan, E. J., Milazzo, D., Coats, D. E., Lee, J., Follansbee, E. R., Dubey, M. K., & Viswanathan, H. S. (2023). *Undocumented orphan well detection in the Four Corners region* [AGU23].

7 Sevanto, S., Musa, D., Franco, N. A., Follansbee, E. R., Moore, E. R., Negi, S., & Benedict, K. (2023). *Novel greenhouse testbed for evaluating impacts of landscape management practices on greenhouse gas emissions* [AGU23].

8 Follansbee, E. R. (2019, April 12). *Measuring methane emissions from NYC* [Lamont Doherty Earth Observatory, Columbia University].

9 Follansbee, E. R. (2016a, November 4). *Designing and building a cryogenic system for the single turn project* [Gonzaga University Physics Department Seminar].

10 Follansbee, E. R. (2016b, August 3). *Designing and building a cryogenic system for the single turn project* [Los Alamos Annual Student Symposium].

Service & Professional Activities

Reviewer	DOE ARPA-e, Chevron Student Initiative Fund, oneshot.earth
Member	INCOSE, ASCE, AGU, Crohn's and Colitis Foundation
Outreach	Girl Scouts, Los Alamos Science Day, Columbia University Girl's Science Day

Teaching Experience

Ongoing	Private Tutor	
Spring 2021	Teaching Assistant - Earth Environmental System: Climate Systems	*Columbia University*
Spring 2020	Teaching Assistant - Introduction to Atmospheric Chemistry	*Columbia University*
2020 - 2021	Co-Author - Race, Climate, and Environmental Justice Handbook	*Columbia University*
Fall 2016	Teaching Assistant - Scientific Physics II	*Gonzaga University*