Emily Follansbee

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Education

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

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

Satellite and UAV Remote Sensing - Methane Emissions - Sensor Development

Research Experience

2025 – Present **Graduate Student Researcher**, *Systems Engineering, Colorado State University*, Fort Collins, CO

- Graduate researcher at the Methane Emissions Technology Evaluation Center (METEC) as part of the METEC 2.0 project on methane plume dispersion modeling.
- Awarded the *Scott Graduate Research Assistantship* by the Colorado State University Walter Scott, Jr. College of Engineering.

2023 – 2025 **Post-Masters Researcher**, *Los Alamos National Laboratory*, Los Alamos, NM

- Ground- and drone-based instrument and sensor development and deployment to quantify methane emissions from orphaned and abandoned oil and gas wells in New Mexico, Oklahoma, and Texas as part of the Department of Energy's Consortium Advancing Technology for Assessment of Lost Oil and Gas Wells (DOE CATALOG)
- **Follansbee, E.**,et al. (2025). Orphaned Oil and Gas Well Methane Emission Rates Quantified with Gaussian Plume Inversions of Ambient Observations. Atmospheric Measurement Techniques, 18 (18), 4527–4542. https://doi.org/10.5194/amt-18-4527-2025. et al. (2025).

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

- Investigated ground and airborne based remote sensing measurements of methane and carbon surface-atmosphere gas exchange in NYC using laser spectroscopy sensors. Analyzed datasets in Python; identified methane sources in NYC.
- Investigated $PM_{2.5}$ air quality composition of transition metals using synchrotron chemical analysis techniques. Organized correspondence with local residents for site identification and technical team for analysis.
- Presented research to LDEO Colloquium, "Measuring Methane Emissions from NYC"

2017 – 2018 **Post-Baccalaureate Researcher**, *National High Magnetic Field Laboratory, Los Alamos National Laboratory*, Los Alamos, NM

- Designed microspectroscopic sensors for 65 Tesla and 100 Tesla magnets to understand the strain magnets undergo when energized and prevent catastrophic failure. Presented research to senior research PIs.

2016 **Undergraduate Intern**, *National High Magnetic Field Laboratory, Los Alamos National Laboratory*, Los Alamos, NM

- Designed a supercooled cryostatic instrument to cool a sample of material to 4 Kelvin placed in a 200 Tesla explosive magnet studying the effects of high magnetic fields on materials at ultralow temperatures.
- Presented poster at Los Alamos Student Colloquium and invited seminar at Gonzaga University

2016 – 2017 **Senior Design Project**, *Washington State Department of Ecology*, Spokane, WA

- Designed and built a bench-scale model of an anaerobic digester to harness methane from food waste for use in the Gonzaga University dining hall. Presented results to dining hall management, Wash. Dept. of Ecology, and engineering department.

Professional Experience

2022 **Project Engineer, Storm Water**, *Herrera Environmental Consultants*, Seattle, WA

- Designed green stormwater infrastructure (GSI) and low impact development (LID) practices in Civil3D
- Prepared plans, specifications, and cost estimate (PS&E) packages for public and private stormwater management facilities and/or site development civil engineering projects

2021 – 2022 **Energy Project Manager**, *NYC Department of Environmental Protection*, NY

- Research lead to quantify fugitive methane emissions coming from NYC's 14 Wastewater Treatment Plants (WWTP) and the anaerobic digestion biogas and gas-to-grid programs. Collaborated with City University of New York, Los Alamos National Laboratory, and ABB on a methane leak detection survey of WWTPs.
- Granted over $1,000,000 in funding for energy saving projects across DEP as manager of the NYC DEP Energy Expense program. Collaborated with WWTP operations personnel to implement projects in the field. Prepared invoices for consultant projects like the DEP Energy and Carbon Neutrality Plan
- Led internal whitepapers on DEP climate change initiatives and wrote technical surveys on the current science of fugitive methane as a greenhouse gas.

2014, 2015 **Traffic Operations Intern**, *Seattle Department of Transportation*, Seattle, WA

- Project lead for the Painted Intersections Project and Neighborhood ID Signs; communicated with City constituents to assist with engineering and designing painted murals in neighborhood intersections and neighborhood ID signs to help build neighborhood communities

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].

Relevant Skills

Computer	Python, GIS, AutoCAD, SolidWorks, Excel
Analytical	Laboratory instrumentation, data collection, ground- and drone- based remote sensing, data analysis, geospatial analysis
Certifications	Engineer-In-Training, Washington State

Professional Activities

Current Private Consulting *Contract*

2023	Department of Energy, Advanced Research Projects Agency – Energy	*Grant Reviewer*
2020	Chevron Student Initiative Fund Award, Columbia University	*Grant Reviewer*

Professional Organizations

2018 – Present	Earth Science Women's Network
2014 – Present	American Society of Civil Engineers
2017 – Present	American Geophysical Union
2019 – 2022	Crohn's and Colitis Foundation - Young Professionals Committee

Outreach and Service

2000 - Present	Girl Scouts
2023	Los Alamos Volunteer - School Science Outreach Day
Jan 2019 – May 2021	Columbia University Women in Science at Columbia - STEM Starters
April 2019	Girl's Science Day at Columbia University

Teaching Experience

Ongoing	Private Tutor	

Columbia University

Spring 2021	Earth Environmental System: Climate Systems	*Teaching Assistant*
Spring 2020	Introduction to Atmospheric Chemistry	*Teaching Assistant*
2020 - 2021	Seminar in Race, Climate, and Environmental Justice Course Handbook	*Co-Author*

Gonzaga University

Fall 2016	Scientific Physics II	*Lab Teaching Assistant*

Awards & Honors

2025-2026	Scott Graduate Research Assistantship	*College of Engineering, Colorado State University*
2018 - 2021	Dean's Fellow	*Columbia University*
Spring 2017	Dean's List	*Gonzaga University*
Spring 2016	President's List	*Gonzaga University*
Fall 2016	Dean's List	*Gonzaga University*