William S. Daniels

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https://wsdaniels.github.io/

Education

PhD Statistics, Colorado School of Mines, GPA 4.00 (in progress)
M.S. Statistics, Colorado School of Mines, GPA 4.00 2021
B.S. Engineering Physics, Colorado School of Mines, GPA 3.99 2019

Research Projects

Monitoring Methane Emissions from Oil and Gas Operations **Apr 2020 - Present**
Colorado School of Mines, Department of Applied Mathematics and Statistics

- Working on a variety of projects broadly seeking to more completely and accurately monitor methane emissions from the oil and gas industry.
- Developed a framework for emission event detection, localization, and quantification using high frequency data from continuous monitoring systems.
- Developed a hierarchical model to estimate daily methane fields on a very fine grid with uncertainty using coarsely "pixelated" satellite observations.

Modeling Atmospheric Carbon Monoxide **Aug 2019 - Aug 2022**
Colorado School of Mines, Department of Applied Mathematics and Statistics

- Used lagged multiple linear regression to model atmospheric carbon monoxide from climate indices.
- Implemented a regularization method that preserves hierarchical model structure between main effects and interaction effects.
- Developed a framework to highlight the optimally performing models over a range of complexities.

Selected Publications

1. **William S. Daniels**, Jiayang (Lyra) Wang, Arvind Ravikumar, Matthew Harrison, Selina Roman-White, Fiji George, Dorit M. Hammerling. "Towards multi-scale measurement-informed methane inventories: reconciling bottom-up inventories with top-down measurements using continuous monitoring systems." *Submitted*, doi:10.26434/chemrxiv-2023-jp5nt, (2023).
2. Meng Jia, **William S. Daniels**, Dorit M. Hammerling. "Comparison of the Gaussian plume and puff atmospheric dispersion models on oil and gas facilities." *Submitted*, doi:10.26434/chemrxiv-2023-hc95q, (2023).
3. **William S. Daniels**, Meng Jia, Dorit M. Hammerling. "Methane emission detection, localization, and quantification using continuous point-sensors on oil and gas facilities." *Submitted*, doi:10.26434/chemrxiv-2022-xxkk8, (2022).
4. Jiayang (Lyra) Wang, **William S. Daniels**, Dorit M. Hammerling, Matthew Harrison, Kaylyn Burmaster, Fiji C. George, Arvind P. Ravikumar. "Multi-scale methane measurements at oil and gas facilities reveal necessary framework for improved emissions accounting." *Environmental Science & Technology*, *56*(20), 14743-14752, doi:10.1021/acs.est.2c06211, (2022).

Academic Achievements

Fellowships	Harvey Graduate Fellowship	2019 - 2021
	Mines Undergraduate Research Fellowship	2017 - 2018
Selected Awards	Highly Commended poster, IGAC Science Conference	2021
	Best Talk in Environmental Science Session, Mines GRADS	2020
	Mines Physics Department Distinguished Graduate	2019
	Outstanding Presentation Award, APS April Meeting	2019