William S. Daniels

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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 detection and localization using continuous monitoring data.
- Created an empirical Bayesian 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 - Present**
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.
- Created a framework to highlight the optimally performing models over a range of complexities.

Selected Publications and Presentations

1. 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." *ChemRxiv*, doi:10.26434/chemrxiv-2022-9zh2v, (2022).
2. **William S. Daniels**, Rebecca R. Buchholz, Helen M. Worden, Fatimah Ahamad, Dorit M. Hammerling. "Interpretable models capture the complex relationship between climate indices and fire season intensity in Maritime Southeast Asia." *Journal of Geophysical Research: Atmospheres, 127*, e2022JD036774, 10.1029/2022JD036774, (2022).
3. **William S. Daniels**, Meng Jia, Dorit M. Hammerling, Shyla Kupis, Nasr Alkadi, Anna Scott. "Leveraging multiple continuous monitoring sensors for emissions alerting on oil and gas facilities." *AGU Fall Meeting*, (2021).
4. **William S. Daniels**, Dorit M. Hammerling, Rebecca R. Buchholz. "regClimateChem: An R package for data driven variable selection applied to atmospheric carbon monoxide." *NCAR Technical Notes* (No. NCAR/TN-562+STR), doi:10.5065/e8xj-3k89, (2020).

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