William S. Daniels

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Education

PhD Statistics, Colorado School of Mines, GPA 4.00	2024 (expected)
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.
- Detrended continuous monitoring data and used them to help pinpoint potential emissions sources.
- 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.
- Used cross-validation to quantify stability of selected model terms, aiding model interpretability.

Selected Publications and Presentations

1. **William Daniels**, Doug Nychka, Dorit Hammerling. A hierarchical Bayesian model for estimating methane fields from TROPOMI observations. *Payne Institute for Public Policy Commentary Series, In Prep*, (2021).
2. Meera Duggal, **William Daniels**, Rebecca Buchholz, Dorit Hammerling. Optimizing genetic algorithm parameters for atmospheric carbon monoxide modeling. *NCAR Technical Notes* (No. NCAR/TN-566+STR), doi:10.5065/h45f-c987, (2021).
3. **William Daniels**, James Crompton, Dorit Hammerling, Morgan Bazilian. Initial findings from continuous monitoring of oil and gas operations. *Payne Institute for Public Policy Commentary Series*, (2021).
4. **William Daniels**, Dorit Hammerling, Rebecca 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).
5. **William Daniels**, Kevin-Druis Merenda, Lawrence Wiencke. What can elves tell us about very strong lightning? *APS April Meeting*, Volume 64, Number 3, (2019).

Academic Achievements

Fellowships	Harvey Graduate Fellowship	2019 - 2021
	Mines Undergraduate Research Fellowship	2017 - 2018
Awards	Best Talk in Environmental Science Session, Mines GRADS	2020
	Mines Physics Department Distinguished Graduate	2019
	Outstanding Presentation Award, APS April Meeting	2019
	1st Place Poster, Mines Physics Research Symposium	2019