



Laura Mansfield

Postdoctoral Scholar, Earth System Science

Bio

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I am interested in how machine learning and Bayesian statistics can assist our understanding and prediction of the climate and weather. My current research focuses on improving gravity wave parameterizations in atmospheric circulation models, which are necessary to capture the subgrid-scale gravity waves that influence the middle atmosphere dynamics. Machine learning can be used to either improve existing physics-based parameterizations, i.e. through calibration, or to replace these entirely with novel machine learning alternatives. I work on both of these approaches and am particularly interested in exploring uncertainties arising from parameterizations.

Previously, I completed my PhD at the University of Reading, which focused on emulating climate models to estimate the surface temperature response to changes in anthropogenic forcings, including both long-lived greenhouse gases and short-lived aerosol pollutants. Prior to this, I completed the Mathematics of Planet Earth MRes at University of Reading, after coming from an undergraduate degree in Physics at Imperial College London. Outside of work, my interests include cycling, running and being outdoors in California.

STANFORD ADVISORS

- Aditi Sheshadri, Postdoctoral Faculty Sponsor

LINKS

- My personal website: <https://lm2612.github.io/>

Publications

PUBLICATIONS

- **Updates on Model Hierarchies for Understanding and Simulating the Climate System: A Focus on Data-Informed Methods and Climate Change Impacts** *JOURNAL OF ADVANCES IN MODELING EARTH SYSTEMS*
Mansfield, L. A., Gupta, A., Burnett, A. C., Green, B., Wilka, C., Sheshadri, A.
2023; 15 (10)
- **Calibration and Uncertainty Quantification of a Gravity Wave Parameterization: A Case Study of the Quasi-Biennial Oscillation in an Intermediate Complexity Climate Model** *JOURNAL OF ADVANCES IN MODELING EARTH SYSTEMS*
Mansfield, L. A., Sheshadri, A.
2022; 14 (11)