ZACHARY M. LABE, Ph.D.

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SKILLS & EXPERTISE

- **Climate Data Science:**
  - 10+ years of experience analyzing physical climate change and extreme weather with high-resolution models (CMIP6), observations, satellites, and data-driven techniques.
- **Machine Learning & Statistics:**
  - Developing predictive AI frameworks for climate extremes, using Python (TensorFlow, scikit-learn, Xarray) and high-performance computing environments (Linux/Unix).
- **Risk & Impact Analysis:**
  - Designing attribution methods and applying future climate scenarios to inform infrastructure vulnerabilities, identify natural hazards, and assess community impacts.
- **Climate Modeling & Tools:**
  - Extensive work in analyzing and processing large Earth science datasets, using GitHub for version control, and software like CDO, NCO, R, Matlab, Microsoft Office.
- **Public Science Communication:**
  - Engage 100,000+ followers across social media to translate complex climate information through visualization; featured in 100+ media interviews, including major news outlets.
- **Collaboration & Leadership:**
  - Co-led interdisciplinary projects, participated in 3 grant proposal panels, reviewed 50+ journal studies, and organized 6 sessions at major scientific conferences.

EXPERIENCE

Research Physical Scientist (Federal)
NOAA Geophysical Fluid Dynamics Laboratory (GFDL) | 2024 – 2025

- Led new research synthesizing AI and machine learning into climate change risk assessments.
- Evaluated and refined predictions of climate-related hazards (heat, rainfall, drought, wildfires).
- Worked with civil engineers and regional climate services to integrate climate projections into actionable resilience and adaptation strategies for local communities and building design codes.

Postdoctoral Researcher & Associate Research Scholar
Princeton University & NOAA GFDL | 2022 – 2024

- Facilitated real-time assessments for high-impact climate extremes by combining historical observations, climate models, and statistics to identify regions vulnerable to climate change.
- Coordinated with local/federal stakeholders, providing data-driven insights for decision-making.

Postdoctoral Researcher
Colorado State University | 2020 – 2022

- Applied explainable AI to distinguish human-caused climate change from natural variability.
- Awarded Sustainability Leadership Fellowship, included training in science policy engagement

Graduate Research Assistant
University of California, Irvine | 2015 – 2020

- Carried out Ph.D. research and publications on Arctic climate dynamics using numerical models.

EDUCATION

Ph.D. in Earth System Science – University of California, Irvine

- Awarded National Science Foundation Fellowship (NRT) for data science in climate research

B.Sc. in Atmospheric Science – Cornell University

- Distinction in Research | Dyson Business Minor for Life Sciences

SELECTED IMPACTS

- **Publications:** 30+ peer-reviewed articles on Earth science topics, including high-impact journals
- **Outreach:** Engage broad audiences in climate science through accessible data visualizations
- **Leadership:** 100+ scientific talks and contribute to high-profile international climate reports