Stanford

Zachary Kaufman

Summer CSP Instructor

Continuing Studies and Summer Session

Curriculum Vitae available Online

Bio

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My research as a climate scientist seeks to understand the physical processes that shape the polar regions. The high latitudes are undergoing the largest changes on Earth; in recent decades, Arctic temperatures have warmed at twice the global average, while 2023 featured the lowest Antarctic sea-ice extent on record. Policymakers' ability to manage the consequences of these changes requires improved polar climate predictability. Rapidly declining Arctic Sea ice exposes new economic resources and shipping routes, necessitating a detailed understanding of where and how quickly newly open water will appear. In the Antarctic, the instability-prone West Antarctic Ice Sheet may have large future contributions to sea-level rise, but predicting the timing and magnitude of ice sheet melt requires a better understanding of how Antarctic warming trends will progress. To address these scientific priorities, my research characterizes ocean-ice sheet interactions, ventilation of the deep ocean, and coupled atmosphere-ocean variability, among other phenomena. A common theme across my work is the use of data-driven techniques to reconcile discrepancies between models and observations, identifying key areas for improving future generations of climate models.

ACADEMIC APPOINTMENTS

- Casual - Other Teaching Staff, Continuing Studies and Summer Session

PROFESSIONAL EDUCATION

- Bachelor of Arts, Wesleyan University , Earth & Environmental Science (2016)
- PhD, University of California, Santa Cruz , Climate Dynamics (2022)

Publications

PUBLICATIONS

- **The Impact of Underestimated Southern Ocean Freshening on Simulated Historical Sea Surface Temperature Trends** *Geophysical Research Letters*
  Kaufman, Z., Wilson, E., Purich, A., Beadling, R., Li, Y.
  2025
- **Warm Arctic-Cold Eurasia pattern driven by atmospheric blocking in models and observations** *ENVIRONMENTAL RESEARCH-CLIMATE*
  Kaufman, Z., Feldl, N., Beaulieu, C.
  2024; 3 (1)
- **Causes of the Arctic's Lower-Tropospheric Warming Structure** *JOURNAL OF CLIMATE*
  Kaufman, Z. S., Feldl, N.
  2022; 35 (6): 1983-2002
- **Causal Interactions between Southern Ocean Polynyas and High-Latitude Atmosphere-Ocean Variability** *JOURNAL OF CLIMATE*

Kaufman, Z. S., Feldl, N., Weijer, W., Veneziani, M.
2020; 33 (11): 4891-4905