

Jan Kazil, PhD

**Atmospheric Scientist ·
Machine Learning for
Weather & Climate**

Atmospheric scientist with 15+ years of experience in atmospheric research, machine learning, developing and operating models for weather forecasting, research, and climate simulation, analyzing in situ and remote-sensing data, and operational forecasting.

Designed, secured funding for, and led research projects; supervised scientists. Led institutional and international research projects and interdisciplinary teams supporting field campaigns (NOAA, NASA).

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Web

[GitHub](#) | [ORCID](#) | [Web of Science](#)

Skills

ML/AI Development (PyTorch), Python (NumPy, Xarray, Pandas), Global, Regional, and High-Resolution Atmospheric Model Development and Operation, Operational Forecasting, Fortran, IDL, MPI, OpenMP, Git, netCDF, Bash, Parallelization, High-Performance Computing.

Experience and Projects

ML for Weather & Climate

Developed and trained an encoder-only transformer model for local off-grid downscaling and correction of NOAA High-Resolution Rapid Refresh forecasts of temperature, humidity, and wind speed using METAR, Mesonet, or Local Climatological Data observations.

Machine Learning and Artificial Intelligence Development

Designed and implemented torch-tk, an open-source PyTorch toolkit for model training, checkpoint management, and diagnostics. Trained and applied a deep-learning model for instance segmentation in satellite imagery and created a neural-network emulator for an atmospheric radiative-transfer model.

Earth-System Model Development and Evaluation

Developed and implemented process representations in climate, regional numerical weather prediction, and large-eddy simulation models. Led and contributed to model evaluations using in situ and remote-sensing observations and developed a downscaling framework coupling high-resolution simulations with reanalysis and climate-model meteorology.

Senior Research Scientist, University of Colorado

Led the "Clouds, Aerosol, and Climate" project embedded at NOAA; supervised university scientists, managed hiring and evaluations, and coordinated project objectives, delivery, and reporting.

Cold Pool Model Intercomparison Project

Created and led an international comparison of SAM, MicroHH, DALES, SCALE, and ICON simulations to investigate inter-model divergence, disagreement with observations, and opportunities to improve cloud and boundary-layer process representations.

Operational Forecasting

Built and deployed a Python system for near-real-time extraction and

analysis of satellite and numerical weather prediction data from Amazon Web Services. Developed the forecast methodology and led the forecast team for the 2023 NOAA/NASA AEROMMA Marine aircraft campaign, communicating guidance for flight planning and operations.

Scientific Computing and Large Dataset Analysis

Built and deployed Message Passing Interface- and OpenMP-parallelized software to process and analyze large atmospheric-model datasets on Linux high-performance computing systems. Developed Python software to automate evaluation of High-Resolution Rapid Refresh forecasts against surface observations.

NOAA Modeling Strategy (2024–2033)

Served as a subject-matter expert on NOAA's Modeling Strategy Working Group and co-authored NOAA's Modeling Strategic Plan 2024–2033.

Funded Projects

Secured \$1.3 million in competitive external funding as a lead investigator for multi-year NOAA, Department of Energy, and National Science Foundation research projects.

Professional History

University of Colorado, Cooperative Institute for Research in Environmental Sciences (CIRES), Boulder, CO, USA

05/2024 – 03/2025 Senior Research Scientist

05/2015 – 04/2024 Research Scientist III

12/2008 – 04/2015 Research Scientist II

Max Planck Institute for Meteorology, Hamburg, Germany

08/2007 – 11/2008 Research Scientist

University of Colorado (CIRES), Boulder, CO, USA

03/2007 – 07/2007 Research Scientist I

Professional Service, Honors, and Awards

Elected member of the American Meteorological Society's Committee on Cloud Physics (2019 – 2025).

University of Colorado/CIRES Bronze Medal for "Scientific achievement in the design and implementation of the ATOMIC field campaign" (2023).

NASA Group Achievement Award for "Outstanding achievements in advancing and enabling NASA's global systems" during the AEROMMA field campaign (2025).

Publications

43 peer-reviewed publications | h-index: 24 | 1800+ citations
ResearcherID: B-7652-2013

Education

PhD in Atmospheric Science

University of Bern, Physics Institute, Bern, Switzerland

MSc in Theoretical Physics

University of Bern, Institute of Theoretical Physics, Bern, Switzerland