# Daniel Rothenberg

Meteorologist | Climate Scientist | Pythonista

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## Summary of Qualifications

Leader and innovator in the atmospheric sciences, employing novel analytical, modeling, "big data", and AI/ML techniques to pioneer the "atmospheric data science" discipline. With over 10 years of experience tackling cutting-edge research questions in meteorology and climate science, I work with stakeholders across all sectors of the Weather, Water, and Climate Enterprise to advance these fields and to support/promote activities and policies which enhance the outcomes of technological innovation, increasing its positive impact on society.

## Experience

**Waymo**, *Technical Lead – Atmospheric Science (Staff Software Engineer)* 2021-Present

- Worked closely with product and engineering leadership to develop and execute a roadmap delivering weather intelligence and resiliency capabilities to support real-world autonomous vehicle deployments
- Developed and deployed novel technologies for estimating weather conditions using autonomous vehicle sensing equipment (lidars and radar) and ML-based perception software stacks

**Tomorrow.io (formerly ClimaCell)**, *Chief Scientist and Director of Meteorology* 2017-2021

- Managed the company's applied weather R&D portfolio and guided strategic decision-making with respect to innovation and IP development; ultimately led and executed a comprehensive, multi-year R&D roadmap and ensured tight integration with company's business strategy to empower company's growth through Series C
- Oversaw research and development of novel nowcasting algorithms and assimilation/downscaling products using high-resolution numerical models, artificial intelligence and proprietary atmospheric observations
- Led a team of research meteorologists, software engineers and data scientists to produce high-performance, cloud-based infrastructure to operationally run nowcasting, assimilation, and forecasting systems
- Leveraged open source technologies (Pangeo stack) to develop a tera-scale weather/climate data archive and access/analysis tools to power climate data science and machine learning applications

**Massachusetts Institute of Technology,** *Postdoctoral Research Associate* 2016-2017

- Conducted inter-disciplinary research projects investigating air quality and climate change using large ensembles of coupled climate/atmospheric chemistry modeling systems (IGSM / CAM-Chem / GEOS-Chem)
- Implemented Python-based open source data analysis toolkit for Harvard/GEOS-Chem modeling community

**Massachusetts Institute of Technology**, *Ph.D., Atmospheric Science* 2011-2016

- As an NSF Graduate Research Fellow, developed and integrated novel machine learning tools for parameterizing aerosol-cloud interactions in global models; participated in ice nucleation measurement field campaigns
- Created Python-based "big data" software tools for working with global model inter-comparison archives on distributed and HPC computing systems

## Technical Skills / Specialization

**Scientific Research** (orcid.org/0000-0002-8270-4831): 16 refereed articles (5 first author); 2 patents
**Data Analysis** (github.com/darothen) – Python (expert), Spark/dask/MPI, Matlab, R
**Numerical Modeling** – NumPy/Cython/Numba, JAX/PyTorch, Julia, Fortran, C/C++, NWP/GCM development
HPC and cloud (GCP / AWS) computing | Open Source Software | Science/Innovation Policy and Outreach

## Service

American Meteorological Society (AMS) – Annual Meeting Oversight Committee – Member 2016-2020
Pangeo-data – Founding Member and Contributor 2016-Present
AMS – Environmental Information Processing Technologies Committee, Python Committee – Member 2018-Present
Reviewer – *Journal of Open Source Software*, *Journal of Atmospheric Sciences*, etc. 2015-Present
MIT Science Policy Initiative – Executive Committee Member 2012-2016