NINA GRANT

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EDUCATION

Ph.D. Rutgers University, Atmospheric Science   2021-present
Focus on climate intervention impacts
Advisor: Alan Robock

M.S.   Rutgers University, Atmospheric Science   2023
Focus on agricultural impacts of climate intervention
Advisor: Alan Robock

B.A.   Princeton University, Geosciences   2021
Focus on climate science and sustainability
Advisor: Gabriel Vecchi

RESEARCH EXPERIENCE

Research Assistant   Aug 2021-present
Rutgers Impact Studies of Climate Intervention Lab   New Brunswick, NJ
Advisor: Dr. Alan Robock and Lili Xia
- Investigated how stratospheric aerosol injections (SAI) impact Indian wheat and rice crop suitability and production using CESM2 ARISE-SAI-1.5 model outputs
- Researching the impact of climate intervention and nuclear war on coffee and cocoa yields in Brazil and Ghana using multi-model downscaled ISIMIP data
- Comparing the skill and suitability of machine learning and statistical downscaling methods to dynamical downscaling for SAI scenarios

Weather & Climate Data Analyst Summer Student Employee   Jun 2023 – Jan 2024
Electric Power Research Institute   Remote
Tech Lead: Erik Smith
- Quantifying the skill of 4 gridded datasets (ERA5, ERA5-Land, MERRA-2, and PRISM) at representing extreme temperatures and precipitation over the conterminous U.S.

Senior Thesis   Aug 2020- May 2021
Princeton University   Princeton, NJ
Advisor: Dr. Gabriel Vecchi
- *Solar Geoengineering Effects on the Indian Monsoon Precipitation Patterns*
- Used GFDL model outputs for volcanic eruptions and a 1% decline in insolation to determine the impacts of injection location and amount on monsoonal activity
- Investigated whether local thermodynamics or large-scale dynamics were responsible for the pattern shifts

Junior Independent Work   Sep 2019- Jan 2020
Princeton University   Princeton, NJ
Advisor: Dr. Gabriel Vecchi

- *Sea Surface Temperature Variability as A Predictor of Indian Monsoon Activity*
- Revisited past work by Prof. Vecchi to verify whether, with more data, a predictive relationship persisted between sea surface temperatures (in the Indian Ocean and the Bay of Bengal) and breaks in the monsoon

Research Internship   Jun 2019 – Aug 2019
ALMA Observatory   Santiago, Chile
Advisors: Chentao Yang and Violette Impellizzeri

- Applied a new imaging technique for carbon tracing in deep-space, red-shifted galaxies acquiring experience with Linux OS, virtual machines, data analysis, presenting scientific research, and bilingual communication skills

PUBLICATIONS

Grant, N., Kiniry, J., & Aziz, F. *Modeling the impacts of climate change on cocoa*. In *Theobroma cacao - Past, Present and Future Insights*. IntechOpen. (Accepted)

Singh, J., Sahany, S., Robock, A., **Grant, N**., and Xia, L. Comparing quantile mapping and other statistical methods in downscaling rainfall for agriculture impacts. Water Resources Research. (Submitted)

Smith, E., **Grant, N**., Luo, X. et al. Evaluating the ability of gridded climate datasets to capture temperature and precipitation trends and extremes. *Sci Rep* **15**, 12607 (2025). https://doi.org/10.1038/s41598-025-97570-7

Grant, N., Robock, A., Xia, L., Singh, J., & Clark, B. (2025). Impacts on Indian agriculture due to stratospheric aerosol intervention using agroclimatic indices. *Earth's Future*, 13, e2024EF005262. https://doi.org/10.1029/2024EF005262.

Reviewer: Earth's Future (2025)

HONORS AND AWARDS

Solar Geo Society Ambassador   2024

Elected Co-Chair of the 2026 Gordon Research Seminar   2024

Atmospheric Science Graduate Student Travel Fund ($1500)   2023

RCEI Travel Award ($500)   2023

RCI Fund Travel Award ($250)	2022
AGU Student Travel Grant ($1000)	2022
Dean's Fellowship, Rutgers University School of Graduate Studies ($49,736)	2021

LEADERSHIP (VOLUNTEER/SERVICE)

Solar Geo Society Ambassador	2024-Present
AGU Local Science Partner	2024-Present
Organizer of the 1st Rutgers Atmospheric Science Grad Student Retreat	2024
Student Convener of AGU'24 Session GC009	2024
Co-Chair of the 2026 Gordon Research Seminar	2024-Present
Conference Coordinator of the Princeton Energy Association Fall Conference	2020

TEACHING EXPERIENCE

Guest lecturer – Climate Modeling   Aug-Nov 2024
Rutgers University (Remote)
16:107:544 Modeling of Climatic Change (Graduate)
- Led unit on a Python-based global climate model: deployed and tested model on Rutger's Amarel HPC, created reproducible setup via GitHub, and developed assignments, tutorials, and exercises. Gave guest lecture, supported students through the assignment, and coordinated with model developer.

Tutor - Math   Feb-Jul 2024
Private (Remote)
- Tutored a high school student in algebra and geometry, raising GPA 1.6 points

Tutor - Math   Sep 2022 – Apr 2023
Rutgers School of Environmental and Biological Sciences
- Tutored 14 undergraduate students in college-level mathematics (geometry, algebra, calculus) in weekly group and individual sessions, developed lesson plans, coordinated schedules for virtual and in-person sessions, adapted to the needs of the students each session

PRESENTATIONS AND INVITED LECTURES

Invited Panelist, *The Modern Challenges of Geoengineering*, Global Affairs Canada   Jul 2025

Oral Presentation, *Can stratospheric aerosol intervention save coffee and chocolate* May 2025
from climate change? Degrees Global Forum

Poster Presentation, *Impacts on Indian Agriculture Due to Solar Climate*   May 2025
Intervention Using Agroclimatic Indices, Degrees Global Forum

Poster Presentation, *Can stratospheric aerosol intervention save coffee and*   Dec 2024
chocolate from climate change? AGU Fall Meeting

Poster Presentation, *Enhancing Climate Forcing Data for Crop Models: Addressing* Dec 2024
Challenges in Downscaling and Bias Correction under Climate Intervention and
Nuclear Winter Scenarios, AGU Fall Meeting

Poster Presentation, *Can Solar Climate Intervention Save Coffee and Chocolate*   Jul 2024
from Climate Change? 14th GeoMIP Meeting

Poster Presentation, *Impacts on Indian Agriculture Due to Solar Climate Intervention* Feb 2024
Using Agroclimatic Indices, Gordon Research Conference on Climate Engineering

Invited Discussion Leader, *Climate Engineering: Processes, Uncertainties,*   Feb 2024
Responses, and Impacts, Gordon Research Conference on Climate Engineering

Poster Presentation, *Impacts on Indian Agriculture Due to Solar Climate Intervention* Dec 2023
Using Crop Suitability and Agroclimatic Indices, AGU Fall Meeting

Poster Presentation, *Assessing the Ability of Reanalysis Data to Identify Local*   Dec 2023
Extremes, AGU Fall Meeting

Poster Presentation, *Indian Agricultural Impacts under GeoMIP G6 Experiments*,   Dec 2022
AGU Fall Meeting

Poster Presentation, *Indian Monsoon Precipitation Changes in CESM2-WACCM*   Jun 2022
GeoMIP6 Experiments, Gordon Research Conference on Climate Engineering

Invited Talk, *How I Got Involved in Sustainability Work*, The Hewitt School   May 2021

PROFESSIONAL TRAINING

Leadership & No-Blame Problem Solving Certificate   Jun 2025
Rutgers University (Online)

- Asynchronous 10-module course on civic leadership and practical governance skills using the No-Blame Problem Solving method. Taught how average citizens can enact local change. Covered citizen rights, local power structures, media literacy, and strategies for engaging in government decision-making.

AGU Local Science Partner Spring Congressional Visit Workshop   Mar 2025
Washington, D.C.
- Full-day workshop on science policy engagement, science communication, media advocacy, and congressional visit prep. Included training on op-ed writing, messaging strategy, and mock meetings with legislators.

Climate Change AI Virtual Summer School   Aug 2024
Online
- 3-month course on the applications of AI and machine learning for tackling climate change problems with lectures and hands-on coding tutorials. Topics spanned agriculture, biodiversity, climate science, GHG accounting and monitoring, power systems, transportation, and more.

SciComp Workshop - Collaborative Coding with GitHub   Dec 2023
AGU Fall Meeting 2023, San Francisco, CA
- 4-hr workshop on version control, git, and GitHub best practices and how to use GitHub for scientific research projects

Machine Learning Specialization   Sep 2023
Online
- 10-week course hosted on Coursera by Standford University and DeepLearning.AI on supervised learning (linear regression, logistic regression, neural networks, decision trees), unsupervised learning (clustering, anomaly detection), recommender systems, and reinforcement learning

CESM Tutorial   Jul 2023
Boulder, Colorado
- Selective week-long intensive on the science and advancements behind CESM and practical training exercises on running custom model simulations

CESM AGU Workshop   Dec 2022
AGU Fall Meeting 2022, Chicago, IL
- 4-hr workshop on running simple custom models in CESM on the AWS cloud

PROFESSIONAL AFFILIATIONS

Honor Society   2025-Present

American Association for the Advancement of Science (AAAS)   2024-Present

American Geophysical Union (AGU)   2022-Present

National Society of Black Engineers (NSBE)   2018-2021

COMPUTER SKILLS

Programming: Python, Bash script, MATLAB, SQL

Python Packages: Xarray, Numpy, Pandas, Matplotlib, Cartopy, Salem, Seaborn, PyTorch, Scikit-learn, Keras, SciPy, PyAutoGUI

Applications and Platforms: MobaXTerm, VSCode, GitHub, Spyder IDE, DaVinci Resolve, HPCs (Cheyenne/Derecho, Amarel, Frontera)