

# Nina Grant

Ph.D. Candidate

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nina-grant.github.io



/in/nina-grant-2021



*Fifth year Ph.D. student aspiring to become a researcher/data analyst/consultant in the fields of climate science and sustainability. Committed to slowing global warming, so future generations may have a livable, healthy planet.*

## EDUCATION

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- 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

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- 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

Princeton University

Advisor: Dr. Gabriel Vecchi

Sep 2019- Jan 2020

Princeton, NJ

- *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

ALMA Observatory

Advisors: Chentao Yang and Violette Impellizzeri

Jun 2019 – Aug 2019

Santiago, Chile

- 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

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**Grant, N.,** Kiniry, J., & Aziz, F. (2025) *Modeling the impacts of climate change on cocoa*. In *Theobroma cacao - Past, Present and Future Insights*. IntechOpen. <https://doi.org/10.5772/intechopen.1011776>

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

**Grant, N.,** Robock, A., Xia, L., Singh, J., and 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>.

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)

**Grant, N.,** Robock, A., Xia, L., Kiniry, J., and Clark, B. (in prep.) Can Solar Climate Intervention Save Coffee and Chocolate from Climate Change?

**Reviewer:** *Earth's Future* (2025)

## **HONORS AND AWARDS**

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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)**

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Solar Geo Society Ambassador	2024-Present
AGU Local Science Partner	2024-Present
Organizer of the 1 <sup>st</sup> 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**

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<b>Guest lecturer – Climate Modeling</b> Rutgers University (Remote) 16:107:544 Modeling of Climatic Change (Graduate) <ul style="list-style-type: none"><li>Led unit on a Python-based global climate model: deployed and tested model on Rutgers' 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.</li></ul>	Aug-Nov 2024
<b>Tutor - Math</b> Private (Remote) <ul style="list-style-type: none"><li>Tutored a high school student in algebra and geometry, raising GPA 1.6 points</li></ul>	Feb-Jul 2024

**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 TALKS**

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**Invited Panelist**, *A brief introduction to the physical science of SRM*, New York, NY Sep 2025**Invited Panelist**, *The Modern Challenges of Geoengineering*, Global Affairs Canada Jul 2025**Oral Presentation**, *Can stratospheric aerosol intervention save coffee and chocolate from climate change?* Degrees Global Forum May 2025**Poster Presentation**, *Impacts on Indian Agriculture Due to Solar Climate Intervention Using Agroclimatic Indices*, Degrees Global Forum May 2025**Poster Presentation**, *Can stratospheric aerosol intervention save coffee and chocolate from climate change?* AGU Fall Meeting Dec 2024**Poster Presentation**, *Enhancing Climate Forcing Data for Crop Models: Addressing Challenges in Downscaling and Bias Correction under Climate Intervention and Nuclear Winter Scenarios*, AGU Fall Meeting Dec 2024**Poster Presentation**, *Can Solar Climate Intervention Save Coffee and Chocolate from Climate Change?* 14<sup>th</sup> GeoMIP Meeting Jul 2024**Poster Presentation**, *Impacts on Indian Agriculture Due to Solar Climate Intervention Using Agroclimatic Indices*, Gordon Research Conference on Climate Engineering Feb 2024**Invited Discussion Leader**, *Climate Engineering: Processes, Uncertainties, Responses, and Impacts*, Gordon Research Conference on Climate Engineering Feb 2024**Poster Presentation**, *Impacts on Indian Agriculture Due to Solar Climate Intervention Using Crop Suitability and Agroclimatic Indices*, AGU Fall Meeting Dec 2023**Poster Presentation**, *Assessing the Ability of Reanalysis Data to Identify Local Extremes*, AGU Fall Meeting Dec 2023**Poster Presentation**, *Indian Agricultural Impacts under GeoMIP G6 Experiments*, AGU Fall Meeting Dec 2022

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

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

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## PROFESSIONAL TRAINING

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**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 Stanford 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

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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

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**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)