Gabriel Rios / CV

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EDUCATION

Ph. D., Atmospheric and Oceanic Sciences — Aug 2022 – present

Princeton University; Princeton, NJ

Advisor: Gabriel Vecchi

Master of Engineering, Mechanical Engineering — August 2020 – Jun 2022

City College of New York; New York, NY — Overall GPA: 3.90/4.00

Advisor: Prathap Ramamurthy

Thesis: *Understanding the relationship between urban areas and the boundary layer using remote sensing methods*

Bachelor of Engineering, Mechanical Engineering — August 2014 – May 2018

Vanderbilt University; Nashville, TN — Overall GPA: 3.46/4.00

Minors: Scientific Computing, Materials Science — Major GPA: 3.67/4.00

RESEARCH EXPERIENCE

Graduate Intern, Lawrence Livermore National Laboratory; Livermore, CA — Jun 2022 – Sep 2022

- Performed evaluation of the High-Resolution Rapid Refresh (HRRR) model in complex topography
- Conducted analysis of turbulence in fluid flows using high-frequency vertical-profiling lidar data
- Executed NWP validation simulations using the Weather Research and Forecasting (WRF) model

NOAA-CESSRST Graduate Research Fellow, City College of New York; New York, NY — Jun 2020 – Sep 2022

- Developed surface heat flux estimation models for urban areas using GOES-R satellite data
- Performed analysis of boundary layer structural anomalies in urban areas during heatwave events
- Assisted with scintillometry campaign setup and planning for Manhattan urban heat flux observations

Undergraduate Research Assistant, Vanderbilt University; Nashville, TN — Jun 2017 – Aug 2018

- Conducted computational fluid dynamics simulations to assist surgical procedure selection
- Modeled flow behavior in to observe effects of tracheal stenoses on breathing patterns

TEACHING EXPERIENCE

Graduate Teaching Assistant, *ME 35600: Fluid Mechanics*, City College of New York; New York, NY — Jan 2021 – May 2021

- Primary instructor for undergraduate fluid mechanics course
- Held twice-weekly classes (lecture and recitation components) and weekly office hours
- Prepared original lectures, presentations, practice problems, and exam material

PUBLICATIONS

1. **Rios, G.** and Ramamurthy, P., 2023: Observations of boundary layer structure and dynamics over a coastal urban area during extreme heat events. *Submitted to Theoretical and Applied Climatology.*
2. **Rios, G.** and Ramamurthy, P., 2023: Turbulence in the mixed layer over an urban area: a New York City case study. *Boundary Layer Meteorology (accepted, in press).*
3. **Rios, G.** and Ramamurthy, P., 2022: A novel model to estimate sensible heat fluxes in urban areas using satellite-derived data. *Remote Sensing of Environment*, 270. https://doi.org/10.1016/j.rse.2021.112880.
4. **Rios, G.**, Morrison, R.J., Song, Y., Fernando, S.J., Wootten, C., Gelbard, A. and Luo, H., 2020: Computational Fluid Dynamics Analysis of Surgical Approaches to Bilateral Vocal Fold Immobility. *The Laryngoscope*, 130: E57-E64. https://doi.org/10.1002/lary.27925.

PRESENTATIONS

1. **Rios, G.**, Yang, W., Zhang, B., Soden, B., Vecchi, G.: An exploration of the effects of suppressing tropical cyclones in global climate models. *10th Northeast Tropical Workshop*, 5-7 Jun 2023, Albany, NY.
2. Ramamurthy, P., Rahman, MD K., **Rios, G.**: Observations of coastal-urban boundary layer characteristics. *AMS 103rd Annual Meeting,* 11 Jan 2023, Denver, CO.
3. Ramamurthy, P., **Rios, G.**: Observations of urban boundary layer characteristics during extreme heat episodes. *AGU Fall Meeting 2022,* 14 Dec 2022, A35M-1642, Chicago, IL.
4. **Rios, G.** and Ramamurthy, P.: Boundary layer structure and dynamics over New York City during extreme heat events, *2nd Annual NYS Mesonet Symposium*, 13-14 Sep 2022, Albany, NY
5. **Rios, G.** and Ramamurthy, P.: Estimating Urban Sensible Heat Flux using Satellite-Based Data, *10th Biennial NOAA EPP/MSI Education and Science Forum*, 6-8 Apr 2022, Tallahassee, FL.
6. **Rios, G.,** Ramamurthy, P., Arend, M.: Observations of urban boundary layer characteristics during extreme heat episodes, *AGU Fall Meeting 2021*, 13-17 Dec 2021, B15G-1507, 2021. (link to presentation)
7. **Rios, G.** and Ramamurthy, P.: Estimating Urban Sensible Heat Flux using Satellite-Based Data, *EGU General Assembly 2021,* 19–30 Apr 2021, EGU21-6079, https://doi.org/10.5194/egusphere-egu21-6079, 2021, online.
8. **Rios, G.**, and Luo, H., 2020: Computational Fluid Dynamics Analysis of Surgical Approaches to Bilateral Vocal Fold Immobility, *Vanderbilt Institute for Surgery and Engineering Assembly*, 26 Apr 2018, Nashville, TN.

AWARDS & FELLOWSHIPS

Department of Energy Computational Science Graduate Fellowship	Sep 2023 - May 2027
Princeton University President's Fellowship	Aug 2022 – Aug 2023
GEM Ph. D. Engineering and Science Fellowship	Apr 2022
NSF Graduate Research Fellowship, Honorable Mention	Apr 2022
NOAA-CESSRST Professional Development Award	Apr 2021
NOAA-CESSRST Graduate Fellowship	Aug 2020 – May 2022

ADDITIONAL WORK EXPERIENCE

Engineer II, Mechanical, Collins Aerospace; Windsor Locks, CT — Jun 2018 – Aug 2020

- Design lead for Mitsubishi Regional Jet pneumatic valves product line during qualification effort
- Supported design & analysis efforts for KF-X Environmental Control pneumatic components
- Provided design consultation to Material Review Board for supplier and quality control support

PROFESSIONAL ORGANIZATIONS

American Meteorological Society (AMS) — Jan 2021 – Present

- **Student Ambassador,** AMS Committee for Hispanic and Latinx Advancement (CHALA) — Jun 2021 – Present

European Geophysical Union (EGU) — Jan 2021 – Present

Society of Hispanic Professional Engineers (SHPE) — Sep 2014 – Present

- **President,** Vanderbilt University Chapter — May 2017 – May 2018
  - ⇒ Created chapter volunteering programs to increase participation in Metro Nashville
  - ⇒ Organized & led professional development events (e.g. resume preparation, interview drills)
  - ⇒ Recruited chapter sponsors to provide donations & host professional development events
- **Academic Chair,** Vanderbilt University Chapter — May 2016 – May 2017
  - ⇒ Co-created academic planners for incoming students to support transition into college
  - ⇒ Organized study sessions for advanced undergraduate engineering courses

VOLUNTEER EXPERIENCE

Mentor & Mentor Leader, *HGS-NSBP Mentoring Program*; New York, NY — Oct 2021 - Present

- Hosted weekly mentoring sessions with middle schoolers with focus on STEM discussions
- Chaperoned group outings to STEM and art-focused events and exhibits
- Coordinated academic and extracurricular activities to address mentee needs

Graduate Scientist Helper, *HGMS Scientist Support*, Hamilton Grange Middle School; New York, NY — Sep 2020 – Sep 2021

- Led small group bilingual discussions in STEM topics with middle school students
- Assisted with lesson planning and delivery to align with Regents-oriented curriculum goals

Group Lead, *Vanderbilt Scientists Volunteering for Science***,** Vanderbilt University; Nashville, TN — Mar 2015 – May 2018

- Integrated STEM lessons into multiple curricula, taught lessons to 100+ middle school students
- Served as liaison between Vanderbilt and select Metro Nashville schools to create lesson plans
- Coordinated multiple groups of student volunteers to execute lesson plans

TECHNICAL SKILLS (self-evaluated)

Proficient	**Intermediate**	**Basic**
Python, MATLAB, LaTeX, HTML5, CSS3	JavaScript, Git, handling netCDF & GRIB files	FORTRAN, R, Java, Bash, Machine Learning (Scikit-Learn, TensorFlow)