Gabriel Rios / CV

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EDUCATION

Ph. D., Atmospheric and Oceanic Sciences — Aug 2022 – May 2027 (expected)
Princeton University; Princeton, NJ

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 – present
- 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., 2022: Observations of boundary layer structure and dynamics over a coastal urban area during extreme heat events. *In preparation.*
2. **Rios, G.** and Ramamurthy, P., 2022: Boundary layer turbulence over a coastal urban area – a New York City case study. *In preparation.*
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.** 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 (accepted)
2. **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.
3. **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)
4. **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.
5. **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

Princeton University President's Fellowship Apr 2022

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
  - ⇒ Created chapter volunteering programs to increase participation in Metro Nashville
  - ⇒ Organized & led professional development events (e.g. resume preparation, interview drills)

VOLUNTEER EXPERIENCE

Mentor, *HGS-NSBP Mentoring Program,* Hamilton Grange Middle School; 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

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