**Gabrielle R. Leung**

**Contact Information**

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Fort Collins, CO 80523

**Education**

Spring 2025 *(expected)* Ph.D. Atmospheric Science

**Colorado State University** (CSU), Fort Collins, CO, USA

2022 M.S. Atmospheric Science

**Colorado State University** (CSU), Fort Collins, CO, USA

*Thesis Title:* “Processes Driving Shallow Convective Development and their Interactions with Aerosols: Aerosol Transport and Aerosol Breezes”

2019 B.S. Physics, *magna cum laude*

**Ateneo de Manila University** (ADMU), Quezon City, Philippines

*Thesis Title*:“Atmospheric Tracer Composition over the West Philippine Sea: Volatile Organic Compound Sources, Transport, and Impacts”

**Research and Work Experience**

Aug 2020 – Present Graduate Research Assistant

*van den Heever Research Group*

Colorado State University, Fort Collins, CO, USA

2015 – 2020 Researcher

*Air Quality Dynamics & Instrumentation Laboratory*

Manila Observatory, Quezon City, Philippines

2018 – 2019 Researcher

*Regional Climate Systems Laboratory* Manila Observatory, Quezon City, Philippines

Summer 2018 Student Intern

*Climatology Laboratory*

Tokyo Metropolitan University, Tokyo, Japan

**Grant and Fellowship Funding**

NASA FINESST 2022  
*Future Investigators in NASA Earth and Space Science and Technology Fellowship*

CSU Walter Scott Jr. College of Engineering Graduate Fellowship 2020

**Publications**

1. **Leung, G.R.**, L.D. Grant, and S.C. van den Heever, 2023: Deforestation-driven increases in shallow clouds are greatest in drier, low-aerosol regions in Southeast Asia. Accepted with revisions, *Geophys. Res. Lett.* re-print doi: 10.22541/essoar.170224476.62466891/v1
2. Sokolowsky, G.A.\*, S.W. Freeman\*, [and co-authors, including **G.R. Leung**], 2023. *tobac* v1.5: Introducing Fast 3D Tracking, Splits and Mergers, and Other Enhancements for Identifying Meteorological Phenomena. \*these authors contributed equally to this work. In review at *Geoscientific Model Development.* doi: 10.5194/egusphere-2023-1722
3. **Leung, G.R.**, S.M. Saleeby, G.A. Sokolowsky, S.W. Freeman, and S.C. van den Heever, 2023: Aerosol-cloud impacts on aerosol detrainment and rainout in shallow maritime tropical clouds. *Atmos. Chem. Phys.* doi: 10.5194/acp-23-5263-2023
4. **Leung, G.R.**, and S.C. van den Heever, 2023: Aerosol breezes drive cloud and precipitation increases. *Nat. Comm.* doi: 10.1038/s41467-023-37722-3
5. Reid, J.S., [and co-authors, including **G.R. Leung**], 2023. The coupling between tropical meteorology, aerosol lifecycle, convection, and radiation, during the Clouds, Aerosol and Monsoon Processes Philippines Experiment (CAMP2Ex). *Bull. Am. Metero. Soc..* doi: 10.1175/BAMS-D-21-0285.1
6. **Leung, G.R.**,S.C. van den Heever, 2022. Controls on the development and circulation of terminal and transient congestus clouds and implications for midlevel aerosol transport. *J Atmos. Sci.*. doi: [10.1175/JAS-D-21-0314.1](https://doi.org/10.1175/JAS-D-21-0314.1)
7. Crosbie, E., [and co-authors, including **G.R. Leung**], 2022. Measurement report: Closure analysis of aerosol-cloud composition in tropical maritime warm convection. *Atmos. Chem. Phys*. doi: 10.5194/acp-22-13269-2022
8. Stahl, C., [and co-authors, including **G.R. Leung**], 2021. Total organic carbon and the contribution from speciated organics in cloud water: airborne data analysis from the CAMP2Ex field campaign. *Atmos. Chem. Phys*. doi: 10.5194/acp-21-14109-2021
9. Lorenzo, G.R., [and co-authors, including **G.R. Leung**], 2021. Measurement report: Firework impacts on air quality in Metro Manila, Philippines, during the 2019 New Year revelry. *Atmos. Chem. Phys*. doi: 10.5194/acp-21-6155-2021

**Publications in Progress**

* **Leung, G.R.,** L.D. Grant, and S.C. van den Heever: Cloud-type dependent impacts of land cover changes on precipitation and radiative forcing over Borneo. In preparation.
* **Leung, G.R.,** P.J. Marinescu, J.B. Bukowski, I.T. Singh, L.D. Grant, S.C. van den Heever: Representation of updraft velocity and precipitation rate distributions as a function of grid spacing. In preparation

**Honors and Awards**

JPL Center for Climate Sciences Summer School participant 2023

Herbert Riehl Memorial Award 2023  
*CSU Department of Atmospheric Science, for best publication based on thesis work*

David L. Dietrich Honorary Scholarship 2022   
*CSU Department of Atmospheric Science, for outstanding aerosol & air quality research*

AMS Outstanding Student Presentation Award 2022

*19th Conference on Mesoscale Processes*

NASA Group Achievement Award (CAMP2Ex) 2020

St. Ignatius de Loyola Award *ADMU, for outstanding performance of a graduating student*  2019

ADMU Special Award for Excellent Research in the Environmental Sciences 2019

ADMU Department of Physics Program Award 2019

International Global Atmospheric Chemistry (IGAC) Travel Grant 2018

ADMU Freshman Merit Scholarship 2014

**Field and Science Team Experience**

2023 – Present Science Team Member

*Radiative-Convective Equilibrium Model Intercomparison Project – Aerosol-Cloud Interactions*

**RCEMIP-ACI Experiment**

2022 – Present Science Team Member

*NASA INvestigation of Convective UpdraftS (INCUS)*

**INCUS Mission**

2023 Operations Manager

*BioAerosols and Convective Storms – Phase II*

**BACS-II**, Fort Collins, Colorado, USA

2022 Radiosonde Operator, Drone Pilot

*BioAerosols and Convective Storms – Phase I*

**BACS-I**, Fort Collins, Colorado, USA

2019 Flight Scientist, Ground Controller, Weather Forecaster

*Cloud, Aerosol, and Monsoon Processes Philippines Experiment*

**CAMP2Ex**, Clark, Philippines

2019 – 2020 Instrumentation Set-up & Maintenance

*CAMP2Ex Weather and Composition Monitoring***CHECSM**, Quezon City, Philippines

**Teaching Experience**

CSU Graduate Teaching Certificate program 2023 – Present

Drone and radiosonde instructor for van den Heever Group 2022 – Present

GTA for ATS620: Thermodynamics and Cloud Physics 2023

**Selected Conference Presentations**

* **Leung, G.R.,** L.D. Grant, S.C. van den Heever, 2023. Deforestation-driven changes in clouds over Southeast Asia are modulated by moisture and aerosols. *AGU Fall Meeting*. San Francisco, CA. Poster.
* S.C. van den Heever, P.J. Marinescu, **Leung, G.R.**\*,N.M. Falk, L.D. Grant, S.M Saleeby, 2023. Aerosol impacts on convective cold pools. *AGU Fall Meeting*. San Francisco, CA. Lightning talk. \*delivered on behalf of S.C. van den Heever.
* **Leung, G.R.,** S.C. van den Heever, 2023. “Aerosol breezes” from mesoscale aerosol gradients drive precipitation increases. *AMS 3rd Symposium on Mesoscale Processes.* Denver, CO. Oral.
* **Leung, G.R.,** S.C. van den Heever, 2022. Thermal circulations and precipitation increases driven by mesoscale aerosol gradients. *AMS 16th Conference on Cloud Physics*. Madison, WI. Oral.
* **Leung, G.R.,** S.C. van den Heever, 2022. Updraft structure and detrainment in transient and terminal congestus clouds. *AMS 19th Conference on Mesoscale Processes*. Virtual. Oral. \*Outstanding Student Presentation Award.
* **Leung, G.R.,** S.C. van den Heever, J.S. Reid, 2021. Convective transport and midlevel detrainment from congestus clouds. *AGU Fall Meeting*. New Orleans, LA. Oral.
* **Leung, G.R.**, [and co-authors],2018: Volatile organic compound emissions in the South China Sea during the 2011 *Vasco* cruise: sources, emission rates, and ozone formation*. 15th International Global Atmospheric Chemistry (IGAC) Science Conference*.Takamatsu, Japan. Poster.
* **Leung, G.R.**, [and co-authors],2018: Volatile organic compound emissions in the South China Sea during the 2011 *Vasco* cruise: emission ratios and source apportionment*. AOGS 14th Annual Meeting*.Singapore. Poster.

**Service/Outreach Activities**

*Atmospheric Chemistry and Physics*, reviewer 2023 – Present

*CSU/CIRA Diversity, Equity, and Inclusion Committee*, member 2022 – Present

*CSU Graduate Students of Color*, member 2022 – Present

*CSU ATS International Student and Scholar Association,* board 2022 – 2023

*CSU Little Shop of Physics,* science demonstration volunteer 2022 ­– 2023

*The Mind Museum,* science communicator 2018

*Ateneo Mathematics Olympiad*, tutor 2015 – 2016