Gabrielle R. Leung

Contact Information

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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

9. **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
8. 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

7. **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
6. **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 (CAMP^{2}Ex). *Bull. Am. Metero. Soc.*. doi: 10.1175/BAMS-D-21-0285.1
4. **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
3. 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
2. 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
1. 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 (CAMP^{2}Ex) 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* **CAMP^{2}Ex**, Clark, Philippines
2019 – 2020	Instrumentation Set-up & Maintenance *CAMP^{2}Ex 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