

## Gabrielle R. Leung

### Contact Information

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### Education

Spring 2025 ( <i>expected</i> )	Ph.D. Atmospheric Science <b>Colorado State University</b> (CSU), Fort Collins, CO, USA
2022	M.S. Atmospheric Science <b>Colorado State University</b> (CSU), Fort Collins, CO, USA <i>Thesis Title:</i> “Processes Driving Shallow Convective Development and their Interactions with Aerosols: Aerosol Transport and Aerosol Breezes”
2019	B.S. Physics, <i>magna cum laude</i> <b>Ateneo de Manila University</b> (ADMU), Quezon City, Philippines <i>Thesis Title:</i> “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 <i>van den Heever Research Group</i> Colorado State University, Fort Collins, CO, USA
2015 – 2020	Researcher <i>Air Quality Dynamics &amp; Instrumentation Laboratory</i> Manila Observatory, Quezon City, Philippines
2018 – 2019	Researcher <i>Regional Climate Systems Laboratory</i> Manila Observatory, Quezon City, Philippines
Summer 2018	Student Intern <i>Climatology Laboratory</i> Tokyo Metropolitan University, Tokyo, Japan

### Grant and Fellowship Funding

NASA FINESST	2022
<i>Future Investigators in NASA Earth and Space Science and Technology Fellowship</i>	
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. Submitted to *Geophys. Res. Lett.* doi (pre-print): 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<sup>2</sup>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
<i>CSU Department of Atmospheric Science, for best publication based on thesis work</i>	

David L. Dietrich Honorary Scholarship	2022
<i>CSU Department of Atmospheric Science, for outstanding aerosol &amp; air quality research</i>	
AMS Outstanding Student Presentation Award	2022
<i>19<sup>th</sup> Conference on Mesoscale Processes</i>	
NASA Group Achievement Award (CAMP <sup>2</sup> Ex)	2020
St. Ignatius de Loyola Award	
<i>ADMU, for outstanding performance of a graduating student</i>	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 <i>Radiative-Convective Equilibrium Model Intercomparison Project – Aerosol-Cloud Interactions</i> <b>RCEMIP-ACI Experiment</b>
2022 – Present	Science Team Member <i>NASA INvestigation of Convective UpdraftS (INCUS)</i> <b>INCUS Mission</b>
2023	Operations Manager <i>BioAerosols and Convective Storms – Phase II</i> <b>BACS-II</b> , Fort Collins, Colorado, USA
2022	Radiosonde Operator, Drone Pilot <i>BioAerosols and Convective Storms – Phase I</i> <b>BACS-I</b> , Fort Collins, Colorado, USA
2019	Flight Scientist, Ground Controller, Weather Forecaster <i>Cloud, Aerosol, and Monsoon Processes Philippines Experiment</i> <b>CAMP<sup>2</sup>Ex</b> , Clark, Philippines
2019 – 2020	Instrumentation Set-up & Maintenance <i>CAMP<sup>2</sup>Ex Weather and Composition Monitoring</i> <b>CHECSM</b> , 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 3<sup>rd</sup> 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 16<sup>th</sup> 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 19<sup>th</sup> 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. *15<sup>th</sup> 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 14<sup>th</sup> Annual Meeting*. Singapore. Poster.

### Service/Outreach Activities

<i>Atmospheric Chemistry and Physics</i> , reviewer	2023 – Present
<i>CSU/CIRA Diversity, Equity, and Inclusion Committee</i> , member	2022 – Present
<i>CSU Graduate Students of Color</i> , member	2022 – Present
<i>CSU ATS International Student and Scholar Association</i> , board	2022 – 2023
<i>CSU Little Shop of Physics</i> , science demonstration volunteer	2022 – 2023
<i>The Mind Museum</i> , science communicator	2018
<i>Ateneo Mathematics Olympiad</i> , tutor	2015 – 2016