KEVIN SMALLEY

Clouds and Aerosol Group, Jet Propulsion Laboratory, 4800 Oak Grove Dr Building 233-305G, Pasadena, California 91109
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EMPLOYMENT

Jet Propulsion Laboratory (JPL) *November 2020 - Present*
JPL Postdoctoral Fellow
Advisor: Matthew Lebsock

EDUCATION

Texas A&M University *January 2017 - December 2020*
Ph.D in Atmospheric Science
Advisor: Anita Rapp

Texas A&M University *August 2014 - December 2016*
M.S. in Atmospheric Science
Advisor: Andrew Dessler

Iowa State University *August 2011 - May 2014*
B.S. in Meteorology (magna cum laude)
Advisor: William Gutowski Jr.

HONORS/AWARDS

Texas A&M University Office of Graduate and Professional Studies Research & Presentation Travel Award *2019*
Phi Beta Kappa *2014 - Present*
ISU Undergraduate Research Assistantship *2013 - 2014*
ISU Dean's List *2011 - 2014*

RESEARCH EXPERIENCE

Corrections of GOES-R cloud drop number concentrations using CALIPSO *2023 - present*
Advisor: Matthew Lebsock *Pasadena* CA.

Analysis of ship-track evolution over the northeast Pacific using geostationary satellite observations *2022 - Present*
Advisor: Matthew Lebsock *Pasadena* CA.

Analysis of the liquid-water-path adjustment over the southeast Pacific using geostationary satellite observations *2022 - Present*
Advisor: Matthew Lebsock *Pasadena* CA.

Corrections of GOES-R cloud liquid-water path using Microwave Imagers *2022 - 2023*
Advisor: Matthew Lebsock *Pasadena* CA.

Analysis of the environmental/cloud characteristics of pockets of open cells over the southeast Pacific and how those compare to closed-cell stratocumulus using geostationary

satellite observations *2020 - 2021*
Advisor: Matthew Lebsock *Pasadena* CA.
Collaborators: Ryan Eastman, Mark Smalley, Mikael Witte

Analysis of the the relationship between cloud fraction, spacing, and warm rain production in the southeast Pacific using CloudSat/CALIPSO observations *2020 - 2021*
Advisor: Anita Rapp *College Station* TX.

Analysis of the the efficiency of warm rain production using CloudSat/CALIPSO and MODIS observations *2018 - 2020*
Advisor: Anita Rapp *College Station* TX.

Analysis of the characteristics of shallow cumulus using CloudSat/CALIPSO observations *2016 - 2018*
Advisor: Anita Rapp *College Station* TX.

Tropical Lower stratospheric water vapor simulated by chemistry climate models *2014 - 2016*
Advisor: Andrew Dessler *College Station* TX.

Using the GEOSCCM chemistry-climate model to analyze upper-tropospheric and lower-stratospheric water vapor *2015*
Advisor: Luke Oman *Greenbelt* MD.

Extreme precipitation simulated by climate models over Alaska *2012 - 2014*
Advisor: William Gutowski *Ames* IA.

TEACHING EXPERIENCE

ATMO-202 **Atmospheric Science Laboratory** *Spring 2020*
Role: Lecturer

ATMO-441 **Satellite Meteorology and Remote Sensing** *Spring 2020*
Role: Grader

ATMO-443 **Radar Meteorology** *Spring 2017*
Role: Grader

FIELD EXPERIENCE

EPCAPE Field Deployment *Spring 2023*, La Jolla CA.
Data Collection
I helped operate the Vapor In-cloud Profiling Radar (VIPR).

MESO18-19 *Fall 2018 - Spring 2019*, College Station TX.
Data Collection
I helped launch weather balloons and automate soundings for the MESO18-19 as part of the VORTEX-SE field campaign.

REFEREED PUBLICATIONS

Smalley K. M. and M. D. Lebsock 2023: Corrections for Geostationary Cloud Liquid Water Path Using Microwave Imagery, *Journal of Atmospheric and Oceanic Technology* doi: 10.1175/JTECH-D-23-0030.1.

Smalley K. M., M. D. Lebsock, R. Eastman, M. Smalley, and M. Witte 2022: Analysis of Pockets of Open Cells over the Southeast Pacific, *Atmos. Chem. Phys.*, **22**, 8197-9219 doi: 10.5194/acp-22-8197-2022.

Smalley K. M., and A. D. Rapp 2021: The impact of rain rate, raining patch size, and spacing on southeastern Pacific cloud fraction transitions, *Environmental Research Communications*, **3**(5), doi: 10.1088/2515-7620/abf9ad.

Smalley K. M., and A. D. Rapp 2021: A-Train estimates of the sensitivity of the cloud-to-rain-water ratio to cloud size, relative humidity, and aerosols, *Atmos. Chem. Phys.*, **21**, 2765-2779, doi: 10.5194/acp-21-2765-2021.

– **Highlighted by ACP**

Smalley K. M., and A. D. Rapp 2020: The role of cloud size and environmental moisture in shallow cumulus precipitation, *Journal of Applied Meteorology and Climatology*, **59**(3), 535-550, doi: 10.1175/JAMC-D-19-0145.1.

Smalley K. M., J. M. Glisan, and W. J. Gutowski Jr. 2019: Alaska Daily Extreme Precipitation Processes in a Subset of CMIP5 GCMs, *JGR-Atmospheres*, **124**, 4584-4600, doi: 10.1029/2018JD028643.

Smalley K. M., A. E. Dessler, S. Bekki, M. Deushi, M. Marchand, O. Morgenstern, D. A. Plummer, K. Shibata, Y. Yamashita, and G. Zeng 2017: Contribution of different processes to changes in tropical lower-stratospheric water vapor in chemistryclimate models, *Atmos. Chem. Phys.* **17**, 8031-8044, doi: 10.5194/acp-17-8031-2017.

THESES

Smalley K. 2020: A-train Analysis of Low Cloud Structure, Organization, and Warm Rain. *PhD Dissertation, Texas A&M University.*

Smalley K. 2016: Lower Stratospheric Water Vapor from Chemistry-Climate Models Using a Multivariate Linear Regression. *Masters Thesis, Texas A&M University.*

Smalley K., J.M. Glisan, and W. J. Gutowski Jr. 2014: Daily Extreme Precipitation over Southern Alaska by CMIP5 GCMs using SOMs. *Undergraduate Thesis, Department of Geological and Atmospheric Sciences, Iowa State University*, 9 pp.

ORAL PRESENTATIONS

Smalley K. M. and M. D. Lebsock 2023: A Geostationary View of the Liquid water Path Adjustment dependence on Cloud Regime *European Geophysical Society Annual Meeting*, Vienna Austria.

– **Highlighted by ACP**

Smalley K. M. and M. D. Lebsock 2023: An Observational View of a Liquid water Path Adjustment dependence on Cloud Regime *American Meteorological Society Annual Meeting*, Denver CO.

Smalley K. M., M. D. Lebsock, R. Eastman, M. Smalley, and M. Witte 2022: A Lagrangian Perspective on the evolution of Pockets of Open Cells and the Surrounding Environment *CloudSat/Calipso Science Team Meeting*, Fort Collins CO.

Smalley K. M. and M. D. Lebsock 2021: GOES-16 Analysis of the Evolution of Pockets of Open Cells and the Surrounding Environment. *American Geophysical Union Fall Meeting*, New Orleans LA.

Smalley K. M., J. M. Glisan, and W. J. Gutowski Jr. 2014: Pysical Processes that determine Daily Extreme Precipitation over Southern Alaska by CMIP5 GCMs using SOMs. *21st Annual Iowa State University Atmospheric Science Undergraduate Research Symposium*, Ames IA.

POSTER PRESENTATIONS

K. M. Smalley, and M. D. Lebsock 2022: GOES-16 Cloud Water Path Corrections using Microwave Imagery *American Geophysical Union Fall Meeting*, Chicago IL.

K. M. Smalley, and A. D. Rapp 2022: Inferring the Sensitivity of Warm Rain Efficiency to Cloud Size and the Environment using A-Train Observations *CloudSat/Calipso Science Team Meeting*, Fort Collins CO.

K. M. Smalley, M. D. Lebsock, R. Eastman, M. Smalley, and M. Witte 2022: A Lagrangian Perspective on the evolution of Pockets of Open Cells and the Surrounding Environment *American Meteorological Society Collective Meeting*, Madison WI.

A. D. Rapp and **K. M. Smalley** 2020: Multiscale impacts of precipitation on a boundary layer cloud fraction transition. *American Geophysical Union Fall Meeting*, Online.

K. M. Smalley and A. D. Rapp 2019: A-Train estimates of the sensitivity of warm rain likelihood and efficiency to cloud size. *American Geophysical Union Fall Meeting*, San Fransisco, CA, doi: 10.1002/essoar.10501693.1.

Rapp A. D., L. Sun, **K. M. Smalley**, and T L'Ecuyer 2019: Environmental modulation of the strength of cloud-radiation-precipitation coupling. *American Geophysical Union Fall Meeting*, San Fransisco, CA.

Smalley K. M., A. D. Rapp 2019: Cloud size impacts on precipitation likelihood in different environments using CloudSat. *Gordon Research Radiation and Climate Conference*, Lewiston, ME.

Smalley K. M., A. E. Dessler et al. 2017: The contribution of water vapor to the tropical lower stratosphere within Chemistry Climate Models. *AMS Conference*, Austin, TX.

Smalley K. M. and A. D. Rapp 2017: The contribution of water vapor to the tropical The differences between raining and non-raining warm clouds. *AMS Conference*, Austin, TX.

Slaughter, N., A. D. Rapp, K. Wodzicki, and **K. M. Smalley** 2017: Cloud Structures in the Pacific ITCZ using CloudSat-CALIPSO. *American Geophysical Union Fall Meeting*, New Orleans LA.

Rapp A. D., L. Sun, and **K. M. Smalley** 2017: Drivers in the Scaling Between Precipitation and Cloud Radiative Impacts in Deep Convection. *American Geophysical Union Fall Meeting*, New Orleans LA.

Smalley K. M., J. M. Glisan, and W. J. Gutowski Jr. 2015: CMIP5 GCM Alaskan Extreme Precipitation Events and Their Physical Processes Analyzed Using Self-Organizing Maps. *14th Annual AMS*

Student Conference, Phoenix, AZ.

Gutowski W. J. Jr., J. M. Glisan, S. Kawazoe, and **K. M. Smalley** 2014: Extreme Daily Precipitation in North American Climate Simulations: Scales and Processes. *American Geophysical Union Fall Meeting*, San Francisco CA.

LEADERSHIP POSITIONS

Outreach Seminar Co-Chair *Fall 2019 - Spring 2020*
TAMU Atmospheric Science Graduate Council

Graduate Seminar Chair *Spring 2016 - Spring 2020*
TAMU Atmospheric Science Graduate Council

President *Fall 2013 - Spring 2014*
ISU American Meteorological Society

COMMITTEE POSITIONS

Graduate Representative on Department Website Committee *Spring 2019*
TAMU Atmospheric Science Department

Member of Atmospheric Sciences Recruitment Committee *Spring 2016*
TAMU Atmospheric Science Department

OUTREACH

Texas A&M Physics Fest *Spring 2016,2017,2018, and 2019*
I helped do various weather demonstrations for the public.

Los Angeles County Science Fair *Spring 2023*
I judged 6th-12th grade earth and space science projects.

PEER REVIEWER

Atmospheric Chemistry and Physics (3)
Geophysical Research Letters (1)
Atmospheric Research (1)
Nature Communications (1)

PANEL REVIEWER

NASA ROSES 2020 The Science of Terra, Aqua, and Suomi NPP *2021*

Future Investigators in NASA Earth and Space Science and Technology (FINESST21) Atmospheric Composition *2022*

TECHNICAL AND COMPUTING SKILLS

Operating Systems: Linux, Mac, Windows
Programming Languages: Fortran 77/90/95, NCL, Python, Cython, C++, Matlab, Java
Markup Languages: HTML, Markdown, Rmarkdown, Latex
Others: Microsoft Office Suites

PROFESSIONAL AFFILIATIONS

European Geophysical Union *2017 - Present*
American Geophysical Union *2014 - Present*
American Meteorological Society *2012 - Present*
National Weather Association *2011 - 2014*