MATTHEW D. LEBSOCK

Jet Propulsion Laboratory
4800 Oak Grove Drive, M/S 233-300
Pasadena, CA 91109
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EDUCATION

Ph.D. *Atmospheric Science* (2009)
Colorado State University, Fort Collins, Colorado
Dissertation: '*Relationships Between Aerosol, Cloud, and Precipitation as Observed from the A-Train Constellation of Spaceborne Sensors*'
Co-Advisors: Prof. Graeme Stephens and Prof. Christian Kummerow

M.S. *Atmospheric Science* (2005)
Colorado State University, Fort Collins, Colorado
Thesis: '*Modeling Polarized Radiances Towards an Aerosol Retrieval Method*'
Advisor: Prof. Graeme Stephens

B.A. *Physics* (Major), *Mathematics* (Minor) (2002)
The Colorado College, Colorado Springs, Colorado

POSITIONS

Jet Propulsion Laboratory, Pasadena CA

- Atmospheric Observing System, Doppler Radar Instrument Scientist (2021-Present)
- CloudSat Deputy Principal Investigator (2015-Present)
- Scientist, Aerosol and Clouds group (2015-Present)
- Scientist, Climate Physics Group (2011-2015)

Joint Institute for Regional Earth System Science and Engineering, Los Angeles CA

- Assistant Researcher (2013-Present)

Department of Atmospheric Science, Colorado State University

- Research Scientist (2009-2011)
- Graduate Research Assistant (2003-2009)
- Graduate Teaching Assistant, Atmospheric Radiation (Spring 2007, Spring 2009)

AWARDS

- JPL Voyager Award (2019)
- NASA Team Excellence Award: Satellite Needs Assessment Team (2017)
- CSU Atmospheric Science Alumni Award: For outstanding research by a senior PhD student (2009)
- Outstanding Student Paper Award (AGU Fall Meeting) (2008)
- NASA Earth and Space Science Fellowship (NESSF) (2007-2009)
- Ball Aerospace Fellow, Colorado State University (2003-2005)

RESEARCH INTERESTS

- Remote sensing of clouds, precipitation, water vapor and aerosol
- Evaluation of climate and weather model physics
- Global climate and energetics

PEER REVIEWED PUBLICATIONS

Summary:
H-index = 26
Total Articles = 71
First Author Articles = 10

2022

Richardson, M. T., Thompson, D. R., Kurowski, M. J., and **Lebsock**, M. D.: New sampling strategy mitigates a solar-geometry-induced bias in sub-kilometre vapour scaling statistics derived from imaging spectroscopy, Atmos. Meas. Tech., 15, 117–129, https://doi.org/10.5194/amt-15-117-2022, 2022.

R. J. Roy *et al*., "First Airborne Measurements With a G-Band Differential Absorption Radar," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1-15, 2022, Art no. 5108115, doi: 10.1109/TGRS.2021.3134670.

Diamond MS, Gettelman A, **Lebsock** MD, McComiskey A, Russell LM, Wood R, Feingold G. Opinion: To assess marine cloud brightening's technical feasibility, we need to know what to study-and when to stop. Proc Natl Acad Sci U S A. 2022 Jan 25;119(4):e2118379119. doi: 10.1073/pnas.2118379119.

2021

Cooper K. B. *et al*., "G-Band Radar for Humidity and Cloud Remote Sensing," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 59, no. 2, pp. 1106-1117, Feb. 2021, doi: 10.1109/TGRS.2020.2995325.

Takahashi, H., **Lebsock**, M., Luo, Z. J., Masunaga, H., & Wang, C. (2021). Detection and Tracking of Tropical Convective Storms Based on Globally Gridded Precipitation Measurements: Algorithm and Survey over the Tropics, *Journal of Applied Meteorology and Climatology*, *60*(3), 403-421.

Thompson, D. R., Kahn, B. H., Brodrick, P. G., **Lebsock**, M. D., Richardson, M., and Green, R. O.: Spectroscopic imaging of sub-kilometer spatial structure in lower-tropospheric water vapor, Atmos. Meas. Tech., 14, 2827–2840, https://doi.org/10.5194/amt-14-2827-2021, 2021.

Richardson, M. T., Thompson, D. R., Kurowski, M. J., and **Lebsock**, M. D.: Boundary layer water vapour statistics from high-spatial-resolution spaceborne imaging spectroscopy, Atmos. Meas. Tech., 14, 5555–5576, https://doi.org/10.5194/amt-14-5555-2021, 2021.

Roy, R. J., **Lebsock**, M., and Kurowski, M. J.: Spaceborne differential absorption radar water vapor retrieval capabilities in tropical and subtropical boundary layer cloud regimes, Atmos. Meas. Tech., 14, 6443–6468, https://doi.org/10.5194/amt-14-6443-2021, 2021.

R. J. Roy *et al*., "First Airborne Measurements With a G-Band Differential Absorption Radar," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1-15, 2022, Art no. 5108115, doi: 10.1109/TGRS.2021.3134670.

2020

Battaglia, A. et al. (2020). Spaceborne cloud and precipitation radars: Status, challenges, and ways forward. *Reviews of Geophysics*, 58, e2019RG000686. https://doi.org/10.1029/2019RG000686

Millán, L., Roy, R., and **Lebsock**, M.: Assessment of global total column water vapor sounding using a spaceborne differential absorption radar, Atmos. Meas. Tech., 13, 5193–5205, https://doi.org/10.5194/amt-13-5193-2020, 2020.

Suselj, K., Posselt, D., Smalley, M., **Lebsock**, M. D., & Teixeira, J. (2020). A New Methodology for Observation-Based Parameterization Development, *Monthly Weather Review*, *148*(10), 4159-4184

Richardson, M., **Lebsock**, M. D., McDuffie, J., and Stephens, G. L.: A new Orbiting Carbon Observatory 2 cloud flagging method and rapid retrieval of marine boundary layer cloud properties, Atmos. Meas. Tech., 13, 4947–4961, https://doi.org/10.5194/amt-13-4947-2020, 2020.

Roy, R. J., **Lebsock**, M., Millán, L., & Cooper, K. B. (2020). Validation of a G-Band Differential Absorption Cloud Radar for Humidity Remote Sensing, *Journal of Atmospheric and Oceanic Technology*, *37*(6), 1085-1102.

Hotta, H., Suzuki, K., Goto, D., & **Lebsock**, M. (2020). Climate Impact of Cloud Water Inhomogeneity through Microphysical Processes in a Global Climate Model, *Journal of Climate*, *33*(12), 5195-5212

2019

Takahashi, H., **Lebsock**, M. D., Richardson, M., Marchand, R., & Kay, J. E. (2019). When will spaceborne cloud radar detect upward shifts in cloud heights? *Journal of Geophysical Research: Atmospheres*, 124, 7270– 7285. https://doi.org/10.1029/2018JD030242.

Stephens, GL, Christensen, M, Andrews, T, et al. Cloud physics from space. *Q J R Meteorol Soc*. 2019; 1– 22. https://doi.org/10.1002/qj.3589.

Smalley, M., K. Sušelj, M. **Lebsock**, and J. Teixeira, 2019: A Novel Framework for Evaluating and Improving Parameterized Subtropical Marine Boundary Layer Cloudiness. *Mon. Wea. Rev.,* **147**, 3241–3260, https://doi.org/10.1175/MWR-D-18-0394.1

Richardson, M., Leinonen, J., Cronk, H. Q., McDuffie, J., **Lebsock**, M. D., and Stephens, G. L.: Marine liquid cloud geometric thickness retrieved from OCO-2's oxygen A-band spectrometer, Atmos. Meas. Tech., 12, 1717-1737, https://doi.org/10.5194/amt-12-1717-2019, 2019.

Stephens, G. L., Smalley, M. A., **Lebsoc**k, M. D. (2019). The cloudy nature of tropical rains. Journal of Geophysical Research: Atmospheres, 124, 171– 188. https://doi.org/10.1029/2018JD029394.

Millán, L. F., **Lebsock**, M. D., and Teixeira, J.: Variability of bulk water vapor content in the marine cloudy boundary layers from microwave and near-infrared imagery, Atmos. Chem. Phys., 19, 8491–8502, https://doi.org/10.5194/acp-19-8491-2019, 2019.

Jiang, J. H., Yue, Q., Su, H., Kangaslahti, P., **Lebsock**, M., Reising, S., et al. (2019). Simulation of remote sensing of clouds and humidity from space using a combined platform of radar and

multifrequency microwave radiometers. *Earth and Space Science*, 6, 1234– 1243. https://doi.org/10.1029/2019EA000580

Eastman, R., M. **Lebsock**, and R. Wood, 2019: Warm Rain Rates from AMSR-E 89-GHz Brightness Temperatures Trained Using CloudSat Rain-Rate Observations. *J. Atmos. Oceanic Technol.,* **36**, 1033–1051, https://doi.org/10.1175/JTECH-D-18-0185.1

2018

Stephens, G. L., Hakuba, M. Z., Webb, M. J., **Lebsock**, M., Yue, Q., Kahn, B. H., et al. (2018). Regional intensification of the tropical hydrological cycle during ENSO. *Geophysical Research Letters*, 45, 4361–4370. https://doi.org/10.1029/2018GL077598

Roy, R. J., Lebsock, M., Millán, L., Dengler, R., Rodriguez Monje, R., Siles, J. V., and Cooper, K. B.: Boundary-layer water vapor profiling using differential absorption radar, Atmos. Meas. Tech., 11, 6511-6523, https://doi.org/10.5194/amt-11-6511-2018, 2018.

Leinonen, J., Lebsock, M. D., Tanelli, S., Sy, O. O., Dolan, B., Chase, R. J., Finlon, J. A., von Lerber, A., and Moisseev, D.: Retrieval of snowflake microphysical properties from multifrequency radar observations, Atmos. Meas. Tech., 11, 5471-5488, https://doi.org/10.5194/amt-11-5471-2018, 2018.

Greenwald, T. J., Bennartz, R., Lebsock, M., & Teixeira, J. (2018). An Uncertainty Data Set for Passive Microwave Satellite Observations of Warm Cloud Liquid Water Path. *Journal of Geophysical Research: Atmospheres*, 123, 3668–3687. https://doi.org/10.1002/2017JD027638

Naud, C.M., J.F. Booth, M. Lebsock, and M. Grecu, 2018: Observational Constraint for Precipitation in Extratropical Cyclones: Sensitivity to Data Sources. *J. Appl. Meteor. Climatol.,* **57**, 991–1009, https://doi.org/10.1175/JAMC-D-17-0289.1

Stephens, G., D. Winker, J. Pelon, C. Trepte, D. Vane, C. Yuhas, T. L'Ecuyer, and M. Lebsock, 2018: CloudSat and CALIPSO within the A-Train: Ten Years of Actively Observing the Earth System. *Bull. Amer. Meteor. Soc.,* **99**, 569–581, https://doi.org/10.1175/BAMS-D-16-0324.1

Cooper, K.B. et al., "Atmospheric Humidity Sounding Using Differential Absorption Radar Near 183 GHz," in *IEEE Geoscience and Remote Sensing Letters*, vol. 15, no. 2, pp. 163-167, Feb. 2018. doi: 10.1109/LGRS.2017.2776078

2017

Elsaesser, G.S., C.W. O'Dell, M.D. Lebsock, R. Bennartz, T.J. Greenwald, and F.J. Wentz, 2017: The Multisensor Advanced Climatology of Liquid Water Path (MAC-LWP). *J. Climate,* **30**, 10193–10210, https://doi.org/10.1175/JCLI-D-16-0902.1

Lebsock, M.D., L'Ecuyer, T.S. & Pincus, R. Surv Geophys (2017): An Observational View of Relationships Between Moisture Aggregation, Cloud, and Radiative Heating Profiles, https://doi.org/10.1007/s10712-017-9443-1

Nehrir, A.R., Kiemle, C., **Lebsock**, M.D. et al. Surv Geophys (2017) Emerging Technologies and Synergies for Airborne and Space-Based Measurements of Water Vapor Profiles, 38: 1445. https://doi.org/10.1007/s10712-017-9448-9.

Kahn, B. H., Matheou, G., Yue, Q., Fauchez, T., Fetzer, E. J., **Lebsock**, M., Martins, J., Schreier, M. M., Suzuki, K., and Teixeira, J.: An A-train and MERRA view of cloud, thermodynamic, and dynamic variability within the subtropical marine boundary layer, Atmos. Chem. Phys., 17, 9451-9468, https://doi.org/10.5194/acp-17-9451-2017, 2017.

Takahashi, H., M. **Lebsock**, K. Suzuki, G. Stephens, and M. Wang (2017), An investigation of microphysics and subgrid-scale variability in warm-rain clouds using the A-Train observations and a multiscale modeling framework, J. Geophys. Res. Atmos., 122, 7493–7504, doi:10.1002/2016JD026404.

Kalmus, P. and M. **Lebsock** (2017), Correcting Biased Evaporation in CloudSat Warm Rain. IEEE Transactions on Geoscience and Remote Sensing. PP. 1-11. 10.1109/TGRS.2017.2722469.

2016

Leinonen, J., M. D. **Lebsock**, L. Oreopoulos, and N. Cho (2016), Interregional differences in MODIS-derived cloud regimes, *J. Geophys. Res. Atmos.*, 121, 11,648–11,665, doi:10.1002/2016JD025193.

Leinonen, J., M. Lebsock, G. Stephens, and K. Suzuki, 2016: Improved Retrieval of Cloud Liquid Water from CloudSat and MODIS. *J. Appl. Meteor. Climatol.,* **55**, 1831–1844, doi: 10.1175/JAMC-D-16-0077.1.

Christensen, M., A. Behrangi, T. L'ecuyer, N. Wood, M. **Lebsock**, and G. Stephens, 2016: Arctic Observation and Reanalysis Integrated System: A New Data Product for Validation and Climate Study. *Bull. Amer. Meteor. Soc.,* **97**, 907–915, doi: 10.1175/BAMS-D-14-00273.1.

Millán, L., **Lebsock**, M., Livesey, N., and Tanelli, S., 2016: Differential absorption radar techniques: water vapor retrievals, Atmos. Meas. Tech., 9, 2633-2646, doi:10.5194/amt-9-2633-2016.

Mace, G. G., S. Avey, S. Cooper, M. **Lebsock**, S. Tanelli, and G. Dobrowalski, 2016: Retrieving co-occurring cloud and precipitation properties of warm marine boundary layer clouds with A-Train data, J. Geophys. Res. Atmos., 121, 4008–4033, doi:10.1002/2015JD023681.

Behrangi, A., et al. 2016: Status of high-latitude precipitation estimates from observations and reanalyses, J. Geophys. Res. Atmos., 121, 4468–4486, doi:10.1002/2015JD024546.

Lebsock M.D. and Kentaroh Suzuki, 2016: Uncertainty Characteristics of Total Water Path Retrievals in Shallow Cumulus Derived from Spaceborne Radar/Radiometer Integral Constraints. *J. Atmos. Oceanic Technol.* **33**, 1597–1609, doi: 10.1175/JTECH-D-16-0023.1.

Millán, L., **Lebsock**, M. Fishbein, E., Teixeira, J. (2016) Quantifying Marine Boundary Layer Water Vapor beneath Low Clouds with Near-Infrared and Microwave Imagery, Journal of Applied Meteorology and Climatology 2016 55:1, 213-225. DOI:10.1175/JAMC-D-15-0143.1

2015

Lebsock, M. D., Suzuki, K., Millán, L. F., and Kalmus, P. M. (2015), The feasibility of water vapor sounding of the cloudy boundary layer using a differential absorption radar technique, Atmos. Meas. Tech., 8, 3631-3645, doi:10.5194/amt-8-3631-2015.

Cho, H.-M., Z. Zhang, K. Meyer, M. **Lebsock**, S. Platnick, A. Ackerman, L. DiGiralamo, L. Labonnote, C. Cornet, J. Riedi, R. Holz (2015), Frequency and causes of failed MODIS cloud property retrievals for liquid phase clouds over global oceans, J. Geophys. Res. Atmos., 120, 4132–4154. doi:10.1002/2015JD023161.

Sanghavi, S., **Lebsock**, M., and Stephens, G.: Sensitivity analysis of polarimetric O_2 A-band spectra for potential cloud retrievals using OCO-2/GOSAT measurements (2015), Atmos. Meas. Tech., 8, 3601-3616, doi:10.5194/amt-8-3601-2015.

Leinonen, J., **Lebsock**, M. D., Tanelli, S., Suzuki, K., Yashiro, H., and Miyamoto, Y.: Performance assessment of a triple-frequency spaceborne cloud–precipitation radar concept using a global cloud-resolving model (2015), Atmos. Meas. Tech., 8, 3493-3517, doi:10.5194/amt-8-3493-2015.

Kubar, T.L., G.L. Stephens, **M. Lebsock**, V.E. Larson, and P.A. Bogenschutz, (2015), Regional Assessments of Low Clouds against Large-Scale Stability in CAM5 and CAM-CLUBB Using MODIS and ERA-Interim Reanalysis Data. *J. Climate*, **28**, 1685–1706. doi: http://dx.doi.org/10.1175/JCLI-D-14-00184.1

2014

Kalmus, P., M. **Lebsock**, J. Teixeira (2014), Observational Boundary Layer Energy and Water Budgets of the Stratocumulus-to-Cumulus Transition (2014), *J. Climate,* 27(24), doi:10.1175/jcli-d-14-00242.1.

Millán, L., M. **Lebsock**, N. Livesey, S. Tanelli, and G. Stephens (2014), Differential absorption radar techniques: Surface pressure. *Atmos. Meas. Tech.*, **7**, 3959–3970, doi:10.5194/amt-7-3959-2014.

Lebsock, M. and H. Su (2014), Application of Active Spaceborne Remote Sensing for Understanding Biases Between Passive Cloud Water Path Retrievals. *J. Geophys. Res. Atmos*. **119**, 8962-8979, DOI: 10.1002/2014JD021568.

Behrangi, A., G. Stephens, R.F. Adler, G.J. Huffman, B. Lambrigtsen, M. **Lebsock** (2014), An Update on the Oceanic Precipitation Rate and Its Zonal Distribution in Light of Advanced Observations from Space. *J. Climate*, **27**, 3957–3965. doi: http://dx.doi.org/10.1175/JCLI-D-13-00679.1

Smalley, M., T. L'Ecuyer, M. **Lebsock**, J. Haynes (2014), A Comparison of Precipitation Occurrence from the NCEP Stage IV QPE Product and the CloudSat Cloud Profiling Radar. *J. Hydrometeor*, **15**, 444–458. doi: http://dx.doi.org/10.1175/JHM-D-13-048.1

2013

Lebsock, M., H. Morrison, and A. Gettelman (2013), Microphysical implications of cloud-precipitation covariance derived from satellite remote sensing, *J. Geophys. Res. Atmos*., 118, doi:10.1002/jgrd.50347.

Suzuki, K., G.L. Stephens, and M.D. **Lebsock** (2013), Aerosol effect on the warm rain formation process: Satellite observations and modeling, *J. Geophys. Res. Atmos.*, 118, 170–184, doi:10.1002/jgrd.50043.

Rapp, A.D., M.D. **Lebsock** and T.S. L'Ecuyer (2013), Low cloud precipitation climatology in the southeastern Pacific marine stratocumulus region using CloudSat. *Environ. Res. Lett.* 8, 014027, doi:10.1088/1748-9326/8/1/014027.

Christensen, M. W., G. L. Stephens, and M. D. **Lebsock** (2013), Exposing biases in retrieved low cloud properties from CloudSat: A guide for evaluating observations and climate data, J. *Geophys. Res. Atmos.*, **118**, 12,120–12,131, doi:10.1002/2013JD020224.

2012

Behrangi, A., M. **Lebsock**, S. Wong, and B. Lambrigtsen (2012), On the quantification of oceanic rainfall using spaceborne sensors, *J. Geophys. Res.*, 117, D20105, doi:10.1029/2012JD017979.

Boening, C., M. **Lebsock**, F. Landerer, and G. Stephens (2012), Snowfall-driven mass change on the East Antarctic ice sheet, *Geophys. Res. Lett*., 39, L21501, doi:10.1029/2012GL053316.

Stephens, G.L., J. Li, M. Wild, C.A. Clayson, N. Loeb, S. Kato, T. L'Ecuyer, P.W. Stackhouse, M. **Lebsock**, T. Andrews. (2012), An Update on the Earth's energy balance in light of new surface energy flux estimates., *Nature Geosci*. 5, 691–696, doi:10.1038/ngeo1580.

Wood, R., D. Leon, M. **Lebsock**, J. Snider, and A. D. Clarke (2012), Precipitation driving of droplet concentration variability in marine low clouds, *J. Geophys. Res.*, 117, D19210, doi:10.1029/2012JD018305.

2011

Lebsock, M.D., and T.S. L'Ecuyer (2011), The retrieval of warm rain from CloudSat, *J. Geophys. Res.*, 116, D20209, doi:10.1029/2011JD016076

Lebsock, M.D., T.S. L'Ecuyer, and G.L. Stephens (2011), Detecting the ratio of rain and cloud water in low-latitude shallow marine clouds, *J. Appl. Meteor. Clim.*, 50, 419-432, doi:10.1175/2010JAMC2494.1

2010

Sorooshian, A., G. Feingold, M. D. **Lebsock**, H. Jiang, G. L. Stephens (2010), Deconstructing the Precipitation Susceptibility Construct: Improving Methodology for Aerosol-Cloud-Precipitation Studies, *J. Geophys. Res.*, 115, D17201, doi:10.1029/2009JD013426.

Lebsock, M.D**.**, C. Kummerow, G.L. Stephens (2010), An Observed Tropical Oceanic Radiative-Convective Cloud Feedback, *J. Climate*, 23, 2065-2078, doi:10.1175/2009JCLI3091.1.

2009

Sorooshian A., G. Feingold, M.D. **Lebsock**, H. Jiang, G.L. Stephens (2009), On the precipitation susceptibility of clouds to aerosol perturbations, *Geophys. Res. Lett.*, 36, L13803, doi:10.1029/2009GL038993.

Rapp, A.D., M. **Lebsock**, C. Kummerow (2009), On the consequences of resampling microwave radiometer observations for use in retrieval algorithms, *J. Appl. Meteor. Clim.*, 48, 1981-1993, doi: 10.1175/2009JAMC2155.1.

L'Ecuyer, T. S., W. Berg, J. Haynes, M. **Lebsock**, and T. Takemura (2009), Global observations of aerosol impacts on precipitation occurrence in warm maritime clouds, *J. Geophys. Res.*, doi:10.1029/2008JD011273.

2008

Lebsock, M.D., G.L. Stephens, and C. Kummerow (2008), Multisensor satellite observations of aerosol effects on warm clouds, *J. Geophys. Res*., 113, D15205, doi:10.1029/2008JD009876.

Stephens, G.L., D.G. Vane, S. Tanelli, E. Im, S. Durden, M. Rokey, D. Reinke, P. Partain, G.G. Mace, R. Austin, T. L'Ecuyer, J. Haynes, M.D. **Lebsock**, K. Suzuki, D. Waliser, D. Wu, J. Kay, A. Gettleman, Z. Wang,R. Marchand (2008), The CloudSat Mission: Performance and early science after the first year of operation, *J. Geophys. Res.*, 113, D00A18, doi:10.1029/2008JD009982.

2007

Lebsock, M.D., T.S. L'Ecuyer, and G.L. Stephens (2007), Information content of near-infrared spaceborne multiangular polarization measurements for aerosol retrievals, *J. Geophys. Res.*, 112, D14206, doi:10.1029/2007JD008535.

BOOK CHAPTERS

Lebsock, M., D., T. S. L'Ecuyer, N. B. Wood, J. M. Haynes and M. A. Smalley, 'Status of the CloudSat Mission, in Satellite Precipitation Measurement', Eds: Vincenzo Levizzani, Chris Kidd, Dalia Kirschbaum, Chris Kummerow, Kenji Kummerov and F Joseph Turk, Springer Nature, Switzerland, 2019.

Lebsock, M.D and S. Cooper, 'Cloud Properties', in Encyclopedia of Remote Sensing, Ed. Eni Njoku, Springer, 2013

PRESENTATIONS

CONFERENCES (ORAL)

American Meteorological Society Annual meeting, Phoenix, AZ, January 2019
NASA Sounder Science Team Meeting, Greenbelt, MD, October 2018
American Meteorological Society Radiation Conference, Vancouver, CA, July 2018
CloudSat/CALIPSO Science Team Meating, Boulder, CO, April 2018
AGU Fall Meeting, New Orleans, LA, December 2017
Cloud Feedback Model Intercomparison Project Meeting, Tokyo, Japan, September 2017
American Meteorological Society Annual meeting, Seattle, WA, January 2017
AGU Fall Meeting, San Francisco, CA, December 2016
CloudSat/CALIPSO Science Team Meeting, Newport News, VA, February 2016
American Meteorological Society Annual meeting, New Orleans, LA, January 2016
Cloud Feedback Model Intercomparison Project Meeting, Monterey, CA, June 2015
CloudSat/CALIPSO Science Team Meeting, Paris, France, August 2012
AGU Fall Meeting, San Francisco, CA, December 2011
AMSR-E Science Team Meeting, Asheville, NC, July 2011
CloudSat Science Team Meeting, Montreal, Canada, June 2011
A-Train symposium (Data Users Workshop), New Orleans, LA, October 2010
IEEE IGARRS, Honolulu, HI, July, 2010
AMS 13th Conference on Atmospheric Radiation, Portland, OR, June 2010
AMSR-E Science Team Meeting, Huntsville, AL, June 2010
AGU Fall Meeting, San Francisco, CA, December 2009
CERES Science Team Meeting, Fort Collins, CO, November 2009
AGU Fall Meeting, San Francisco, CA, December 2008
CloudSat Science Team Meeting, Seattle, WA, August 2008
12th International Symposium on Remote Sensing, Bruges, Belgium, September 2005

CONFERENCES (POSTER)

Cloud Feedback Model Intercomparison Project Meeting, Tokyo, Japan, September 2017
3rd International A-Train Symposium, Pasadena, CA*,* April, 2017

International Conference on Clouds and Precipitation, July, 2016
AGU Fall Meeting, San Francisco, CA, December 2015
Gordon radiation conference, Lewiston, ME, July, 2015
AGU Fall Meeting, San Francisco, CA, December 2014
CloudSat/CALIPSO Science Team Meeting, Alexandria, VA, November, 2014
AGU Fall Meeting, San Francisco, CA, December 2013
AGU Fall Meeting, San Francisco, CA, December 2012
Pan-GASS, Boulder, CO, September 2012
Chapman conference on remote sensing of the terrestrial water cycle, Kona, HI, February, 2012
Gordon radiation conference, Colby, ME, June, 2011
A-Train Symposium, New Orleans, Louisiana, October 2010

INVITED TALKS
NCAR – EOL Seminar, April, 2018
American geophysical Union, Fall Meeting, December 2017
International Space Studies Institute (ISSI), 'Workshop on Shallow Clouds, circulation and climate sensitivity', February 2016
ECMWF Workshop on Parameterization of clouds and precipitation across model resolutions, Reading, England, November, 7, 2012
NASA Goddard Space Flight Center, Greenbelt, MD, September 8, 2010
NASA Jet Propulsion Lab, Pasadena, CA, May 28, 2010

UNDERGRADUATE STUDENTS ADVISED

- Francisco Miranda – Fall 2013
- Maziyar Boustiani – Summer 2012

POSTDOCTORAL ADVISEES

- Rick Schulte – 2022 – present
- Kevin Smalley – 2020 – present
- Jussi Leinonen – 2014 – 2017
- Mark Smalley – 2016 – present
- Ethan Nelson – 2018 – 2019
- Richard Roy – 2017 – 2019

PROFESSIONAL ACTIVITIES

- Steering Committee: 3rd International A-Train Symposium, April 2017, Pasadena, CA.
- Scientific Committee: CALIPSO-CloudSat Ten Year Progress Assessment and Path Forward, Paris France, June 8-10, 2016, Paris France
- Session Convener: Process-Oriented Evaluation of Climate Model Physics Using Observations and High-Resolution Models
- Contributing Author: Intergovernmental Panel on Climate Change, Fifth Assessment Report
- Instructor: JPL Climate Sciences summer school, 2012 - 2014
- Member: American Meteorological Society (2003 - Present)
- Member: American Geophysical Union (2011 - Present)

- CloudSat Algorithm Developer Working Group (2009 - Present)
- Instrument Scientist, Airborne Precipitation Radar, NASA ORACLES field Campaign, Sao Tome, (August 2017)
- Mission Scientist, NASA IPHEX field campaign, Asheville, NC (May 2014)
- Flight Scientist, NASA LPVEx field campaign, Turku, Finland (Fall 2010)
- Peer Reviewer
  Journal of Advances in Modeling Earth Systems
  Journal of Geophysical Research
  Journal of Quantitative Spectroscopy and Radiative Transfer
  Journal of Applied Meteorology and Climatology
  Journal of Hydrometeorology
  Journal of the Atmospheric Sciences
  Atmospheric Measurement Techniques
  Atmospheric Chemistry and Physics
  Journal of Climate
  Geophysical Model Development
  Geophysical Research Letters
  Nature
  Remote Sensing of the Environment
  Advances in Atmospheric Sciences
- Proposal Panel Reviewer
  NASA
  DOE
  NSF