Mark A. Miller

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Present

2014-	**Professor of Atmospheric Science, Rutgers University**
2015-	**Eastern North Atlantic ARM Facility Site Science Team**
2012-	**Director, NJ Department of Environment Protection Photochemical Assessment Monitoring Station (PAMS) at Rutgers University**

Education

1994	**Ph.D. Meteorology: The Pennsylvania State University** - Dissertation: Surface-Based Remote Sensing of Marine Boundary-Layer Clouds
1986	**M.S. Meteorology: The Pennsylvania State University** - Thesis: Aerosol Generation in the Marine Boundary Layer
1982	**B.S. The Ohio University** **-** Pre-Meteorology / Physics

Awards

2013	Research Excellence Award, Rutgers School of Environment and Biological Sciences
2009	US Department of Energy Agency Award
2006-7	ARM Science Team Poster Design Award
2002	Research Program Development Award, Brookhaven National Laboratory
1988	Väisäla Quality Certificate (instrumental scientific support)
1984	President, Chi Epsilon Pi Meteorology National Honor Society (PSU Chapter)
1983	Hans Neuberger Teaching Award, PSU Department of Meteorology

Research Objectives

- Discover the basic physical mechanisms that regulate the Earth's clouds and radiation budget
- Investigate atmosphere-biosphere-cryosphere-ocean interactions within the climate system
- Advance technologies used to measure cloud and atmospheric structure
- Develop, analyze, and promote new climate-change adaptation strategies such as renewable energy

Teaching (past five years)

New Frontiers in Earth System Science (1 credit): graduate (new course, spring 2017; average instructor effect: 5.00/5.00)
Physical Meteorology (3 credits); junior/senior undergraduate (average instructor effect:4.77/5.00 [5 semesters])
Remote Sensing of Oceans and Atmospheres (3 credits): junior/senior/graduate (average instructor effect:4.65/5.00 undergraduate [5 semesters]; 4.86/5.00 graduate*)
Atmospheric Physics; graduate (average instructor effect:4.79/5.00 [2 semesters])
Atmospheric Thermodynamics (3 credits); junior/senior undergraduate (average instructor effect: 4.56/5.00)
Seminar in Atmospheric Science; (average instructor effect: 4.81/5.00)
Portals to Academic Study Success; freshmen on academic probation (average instructor effect: 4.89/5.00)
Byrne Seminar: Watching the Earth Breathe: Validation of the Space-Based Carbon Observatory (fall 2015; average instructor effect: 4.71/5.00)

Grants (2008-2020)

-US Department of Energy, 747K (Rutgers portion of a larger grant), (2015-2020): Microphysical-Macrophysical Interactions in Low Cloud Systems over the Eastern North Atlantic-(PI: 100% participation)

- US Department of Energy, 439 K, 2017-2020: Connecting the Radiative Influences of Aerosol upon the Mass Flux Profiles of Shallow Cumuli across the Southeast Atlantic Ocean Basin and its Boundaries (PI: 100% participation with former Ph.D. student in my group as Co-I)

- NJ Department of Environmental Protection, 483 K, 2012-2022: Photochemical Assessment Monitoring Site Meteorological Observations (PI: 100% participation)

-National Science Foundation, Wyoming King Air Deployment, aircraft hours, 2017: The Student Experience in Airborne Research in the Mid-Atlantic Region (SEAR-MAR); in collaboration with Millersville University, Penn State University, and University of Maryland-Baltimore County (Co-I, 30% participation)

-National Science Foundation, Cheyenne Supercomputer Time Allocation; 800 hours, 2019-2020: simulations of Eastern North Atlantic clouds (Kazemi-Rad and Miller, 2020)
- US Department of Energy, 2.29 M, PI, 2008-2015: Atmospheric Systems Research Program Mobile Facility Site Science

Graduate Student and Professional Staff Supervision

Post Ph.D. Qualifier and Graduated:

Qiuxuan Zheng, Ph.D. 2022, Drizzle Evaporation and Sub-cloud Turbulence in Marine Boundary Layer Clouds (Post-Qualifier)
Melissa Kazemi-Rad, Ph.D. 2020, Summertime Post-Cold Frontal Marine Stratocumulus Transition Processes over the Eastern North Atlantic (graduated)
Jennifer Kafka, Ph.D., 2020, Solar Energy Collection in Complex Radiation Fields: Implications for Large and Infrastructure-Constrained Panel Arrays (graduated)
Kwang, Zhongyou, Ph.D, ABD, 2018, terminated graduate study to accept a position in industry
Lynne Trabachino, Ph.D. ,2016, The Significance of Convective Cloud Microphysics for Climate Model Simulations of Rainfall in the West African Sahel at Seasonal Time Scales (graduated)
Allison Marquardt Collow, Ph.D.,2015, An Analysis of the Radiation Budget in Two Tropical Continental Atmospheric Columns (graduated)
David Langer, M.S., 2015, non-thesis essay: An Analysis of Hadley Cell Polar Extent Indicators Derived from Radiosonde Data (graduated)
Preethi Ganapathy, M.S., 2012, non-thesis essay: Simulating 3-D Clouds and Radiation (graduated)
Greg Lehenbauer, M.S., 1997, Using the WSR-88D to Determine Cloud Heights and Fractional Coverage (Primary supervision for University of Kansas – completed in absentia)

Post-Doctoral Students and Professional Staff Supervised (Rutgers only):

Dr. Virendra Ghate, Research Faculty, Department of Environmental Sciences (2010-2013); acquired first independent grant in 2012 and second in 2013
Dr. Byung-Gon Kim, (Co-mentor); Post-doctoral student; Brookhaven National Laboratory (2001-2002)
Dr. Kirstie Stramler- Post-doctoral student; Brookhaven National Laboratory (2006)
Dr. Bryan Raney - Research Associate (current; partial supervision)
Matt Drews B.S. – Research Support (hourly, current)
Lu Wang, M.S. – Research Support (hourly) – currently a Ph.D. student (Colorado)
Robert Zahn B.S. - Research Support (hourly)

Current Graduate Students:

Quixuan Zheng, post-qualifier, Ph.D. (expected 2022 grad)
Matthew Drews, M.S. (expected 2020 grad)
John Plavacic, M.S. (expected 2020 grad)

Graduate Committees:

Juan Perex Arango -- Ph.D. (current)

Alexandra Ramos – Ph.D. (completed 2020)
Zhiren Wang – Ph.D. (completed 2013)
Natasha Hodas – Ph.D. (completed 2013)
Brian Marmo – M.S. (completed 2013)
Jessie Sagona – Ph.D. (completed 2013)
Ben Kravitz - Ph.D. (completed 2011)
Andy Sandy – Ph.D. (completed 2010)
Brian Cerruti - M.S. (completed 2010)
Craig Anderson- M.S. (completed 2009)

Ph.D. Oral Examination Committees

Brian Zambri (Spring 2017), Melissa Kazemi Rad (Spring 2017), Jennifer Kafka (Spring 2014), Zhongyu Kuang (Spring 2013), David Langer (Spring 2013), Allison Marquardt (Spring 2012), Lynne DiPretore Trabachino (Spring 2011), Lili Xia (Spring 2011), Natasha Hodas (Fall 2010), Zhiren Wang (Spring 2010), Michael Erb (Spring 2009), Jessie Sagona (Spring 2009)

G.H. Cook Undergraduate Honors Thesis Advisees:

Zachary Mages (2019-2020), Joey Fogarty (2017-2018), Alexa Marcovecchio (2017-2018), Valerie Thaler (2017-2018), Jacob Carlin (Spring 2012; Co-Advisor with V. Ghate), Jeffrey Deppa (2010-2011)

Rutgers Honors Undergraduate Students Supervised

Zachary Mages, (2017-2020)

Undergraduate Research Projects Supervised

Derek Maciolek(2020), Joseph Slezak (Spring, 2015), Michael Lee (Spring, Summer 2014), David Grace (Summer 2013), Ross Giarratana (Fall 2012), Samantha Motley (Fall 2012), Matthew Drews (Spring 2012), Teresa Sikorski (Spring 2012), Daniel Manzo (Summer 2011), Kelly Ann Cicalese (Summer 2010), Nick Mangieri (Fall 2009), Courtney Tait (Summer 2010), Allison Parker, Nick Mangieri (Spring 2008)

Chronology of Positions

2015- **Eastern North Atlantic ARM Facility Site Science Team**

2014- **Professor, Rutgers University**

2012- **Director, NJ Department of Environment Protection Photochemical Assessment Monitoring Station (PAMS) at Rutgers University**
-Trace gas and aerosol monitoring
-Wind profiler and tower-based meteorological monitoring

2016-2019 **Chair, Chancellor's Advisory Committee on Metrics and Analytics, Rutgers University**

2015-2017 **Director, Institute for Earth, Ocean and Atmospheric Science, Rutgers University**

2012-2016 **Associate Editor, *Journal of Climate and Applied Meteorology***
-Specialization: Remote Sensing, Cloud and Radiation Physics

2008-2014 **Director, Graduate Program in Atmospheric Science, Rutgers University**

2007-2013 **Associate Professor, Rutgers University (Tenure 2007)**

2003-2014 **Site Scientist, Atmospheric Radiation Measurement (ARM) Mobile Facility**
- Transportable cloud, aerosol, and climate observatory (www.arm.gov)
- Deployments: Africa, Germany, China, Portuguese Azores, India, USA, Brazil

2004-2007 **Associate Chief Scientist, ARM, www.arm.gov**
-DOE climate science program (Annual Budget ~ $60 M/year)
-Responsibilities included scientific guidance and vision

2001-2007 **Leader, Cloud Properties Group, Brookhaven National Laboratory**
-Created group in 1998 and recruited 4 new PI's
-5 Pi's, 6 M.S.-level support staff, 2 post-docs (2.5 M/yr. budget)
-Group focus: surface and satellite remote sensor measurements of cloud, aerosol, and radiation interaction

2001-2007 **Scientist, Brookhaven National Laboratory**

1999-2000 **Associate Scientist, Brookhaven National Laboratory**

1997-1999 **Associate Editor: *Weather and Forecasting***
-Specialization: Remote Sensing, Cloud and Radiation Physics

1997-1998 **Assistant Scientist, Brookhaven National Laboratory**
Adjunct Faculty: Course Instructor, State University of New York (Stony Brook)
-Weather Prediction II (ATM 347), senior level synoptic meteorology

1994-1996 **DOE Global Change Post-Doctoral Fellowship, Brookhaven National Laboratory**

1989-1994 **Course Instructor and Research Assistant, The Pennsylvania State University**
-Instructor Oceans (Meteo 22), non-major Physical Oceanography
-Teaching assistant (Meteo 422/522), Advanced Synoptic Meteorology
-Two large field deployments of prototype cloud observing system; FIRE II and ASTEX

1987-1988 **Tycho Technology Inc. (subsidiary of Vaisala Inc.), Boulder, Colorado**
-Designed and manufactured UHF and VHF radar systems
-Responsibilities: staff meteorologist, radar product design

1984 **Summer Scientific Associate Naval Postgraduate School, Monterey, California**
--Marine aerosol research

1982-1986 **Course Instructor and Research Assistant, The Pennsylvania State University**

-Site Manager (1985): Cross-Appalachian Tracer Experiment
–Instructor Meteorology 3, Non-Major Meteorology (over 1000 students during period)
-Instructor Meteorology 3 Laboratory (1982)

Peer-Reviewed Publications

[69] Wang, J., R.Wood, M.Jensen, C. Chiu, **M.A. Miller** and co-authors, 2021: Aerosol and Cloud Experiments in the Eastern North Atlantic (ACE-ENA), *Bull. Amer. Met. Soc.*, (submitted)

[68] Collow, A.M, **M. A. Miller**, L.C. Trabachino, M.P. Jensen, M. Wang, 2020: Radiative heating profiles over the South-East Atlantic Ocean during the 2016 and 2017 biomass burning seasons, *Atmos. Chem. Phys.,* 20, 1–18, https://doi.org/10.5194/acp-2020-106

[67] Kazemirad, M. and **M.A. Miller**, 2020: Summertime post-cold-frontal marine stratocumulus transition processes over the Eastern North Atlantic. *J. Atmos. Sci.,* 77, 2011–2037, https://doi.org/10.1175/JAS-D-19-0167.1.

[66] Kafka, J. and **M.A. Miller**, 2020: The dual angle solar harvest (DASH) method: a new method for organizing large solar panel arrays in partly cloudy climates, *Renewable Energy*, 155, 531-546, https://doi.org/10.1016/j.renene.2020.03.025

[65] Kafka, J. and **M.A.Miller**, 2018: A climatology of solar irradiance and its controls across the United States: implications for solar panel orientation, *Renewable Energy,* 135, 897-907, https://doi.org/10.1016/j.renene.2018.12.057.

[64] Lin, Q, Zhang G., Yang, Y., Peng, L, Bi, X, Fu, Y, Li, M., Chen, D, **Miller, M.A.**, Liu, F., Lian, X., Ou, X., Wang, Peng, P., Sheng, G., and Zhou, Z., 2018: In-cloud formation of secondary species in the iron-containing particles, Atmospheric Chemistry and Physics Discussions. 1-34. 10.5194/acp-2018-894. DOI: 10.5194/acp-2018-894

[63] Zhang, G., L.Peng, Q.Lin, Y. Yang, F. Jiang, F. Liu, W. Song, D. Chen, Z. Cai, X. Bi, **M.A. Miller**, M. Tang, X. Wang, W. Huang, P.Peng, and G. Sheng ,2018: Investigation of the enhanced oxalate formation in Fe-containing particles, , *Envir. Sci. Tech.* https://doi.org/10.1021/acs.est.8b05280.

[62] Salmon, O.E., P.B. Shepson, X. Ren, A.M. Collow, **M.A. Miller**, A.G. Carlton, M.L. Cambaliza, A. Heimburger, D.P. Sarmiento, J.D. Fuentes, B.H. Stirm, R. Grundman, R.R. Dickerson, J. Whetstone, 2017: Urban Emissions of of Water Vapor in winter, J. Geophys. Res. Atmos. *J. Geophys. Res. Atmos*., 122, 9467–9484, doi: 10.1002/2016JD026074.

[61] Wood, R, M. Jensen, J. Wang, **M.A. Miller**, and co-authors, 2016: Planning the next decade of coordinated research to better understand marine low clouds, *Bull. Amer. Met. Soc.*, 97, 1699-1702.

[60] Collow, A.M. and **M.A. Miller**, 2016: The seasonal cycle of the radiation budget and cloud radiative effect in the Amazon rainforest, *J. Climate,* 29, 7703-7722.

[59] Collow, A.M., **M.A. Miller**, and L. Trabachino, 2016: Cloudiness over the Amazon rainforest: meteorology and thermodynamics, *J. Geophys. Res.*, 121, 7990-8005.

[58] Martin, S., P.Artaxo, L.Machado, A. Manzi, R. Souza, C. Schumacher, J. Wang, J. Brito, J. Brito, K. Jardine, A. Medeiros, de Sa, S., Biscaro, T., Calheiros, A., Portela, B., **M.A. Miller**, and co-authors, 2016: The Green Ocean Amazon Experiment (GoAmazon2014/15) observes pollution affecting gases, aerosols, clouds, and rainfall over the rainforest, *Bull. Amer. Met. Soc.*, 98, 981-997.

[57] Ghate, V.P., **M.A. Miller**, and B.A. Albrecht, 2015: Similarities and differences between cumulus-topped marine boundary layers, *Mon. Wea. Rev., 144, 681-701,* DOI: 10.1175/MWR-D-15-0110.1.

[56] Moustafa, S.E., A.K. Rennermalm, L.C. Smith, **M.A. Miller**, and J.R. Mioduszewski, L.S. Koenig, M.G. Hom, and C.A. Shuman, 2015: Multi-modal albedo distributions in the ablation zone of southwest Greenland's ice sheet, *The Cryosphere*, 9, 905-923, doi:10:5194/tc-9-905-2015.

[55] Collow, A.M., V.P. Ghate, **M.A. Miller**, and L. Trabachino, 2015: A one-year study of the diurnal cycle of meteorology, clouds, and radiation in the West African Sahel region, *Quart. J. Royal Met. Soc., **142**,* 16-29, doi:10.1002/qj.2623.

[54] Berg, L.K., J.D. Fast, J.C. Barnard, **M.A. Miller**, and co-authors, 2016: The two column aerosol project: phase I overview and impact of elevated aerosol layers on aerosol optical depth, *J. Geophys. Res. Atmos*., 121, 336–361, doi: 10.1002/2015JD023848.

[53] **Miller, M.A**., K. Nitschke, T.P. Ackerman, W.R. Ferrell, N. Hickmon, and M. Ivey, 2016: The ARM Mobile Facilities. *Meteorological Monographs,* **57**, 9.1–9.15, https://doi.org/10.1175/AMSMONOGRAPHS-D-15-0051.1

[52] Kollias, P., E.E.Clothiaux, T.P.Ackerman, B.A. Albrecht, K. B. Widener; K.P. Moran; E.P. Luke; K.L. Johnson; N. Bharadwaj; J. B. Mead; **M.A. Miller**; J. Verlinde; R.T. Marchand; G.G. Mace, 2015: Development and Applications of ARM Millimeter Wavelength Cloud Radars, *Chapter, AMS Monograph, The first 20 years of ARM (in press)*

[51] Ghate, V.P., **M.A. Miller**, B.A. Albrecht, and C.W. Fairall, 2014: Thermodynamic and radiative structure of stratocumulus-topped boundary layers, *J. Atmos. Sci*., **72**, 430-451.

[50] Wood, R., M. Wyant, C. Bretherton, **M.A. Miller** and co-authors, 2014: Clouds, aerosol, and precipitation in the marine boundary layer: an ARM Mobile Facility Deployment, *Bull. Amer. Met Soc*.,,doi:10.1175/BAMS-D-13-00180.1

[49] Ghate, V.P, B.A. Albrecht, **M.A. Miller**, A. Brewer, and C.W. Fairall, 2014: Turbulence and Radiation in Stratocumulus Topped Marine Boundary Layer: A Case Study from VOCALS-Rex, *J. Appl. Meteor. Climatol*., 53 (1), 117-135. doi:10.1175/JAMC-D-12-0225.1

[48] Kravitz, B., A. Robock, D.T. Shindell, and **M.A. Miller**, 2012, Sensitivity of stratospheric geoengineering with black carbon to aerosol size and altitude of injection, *J. Geophys. Res.*, **117**, D09203, doi:10.1029/2011JD017341.

[47] **Miller, M.A.**, V.P. Ghate, R. Zahn, 2012, The radiation budget of the West African Sahel and its controls: a perspective from observations and global climate models, *J. Climate, **25**,* DOI: 10.1175/JCLI-D-11-00072.1.

[46] Kim, Y.G., B.G. Kim, **M.A. Miller**, Q. Min, and C.K. Song, 2012, Enhanced aerosol-cloud relationships in more stable adiabatic clouds, Asia-Pacific J. Atmos. Sci., 48, 283-293, doi: 10.1007/s13143-012-0028-0.

[45] Ghate, V.P., **M.A. Miller**, L. DiPretore, 2011, Vertical velocity structure of marine boundary layer trade wind cumulus clouds, *J. Geophys. Res.* 116, D16206, doi:10.1029/2010JD015344.

[44] Ching, J., N. Riemer, M. Dunn, and **M.A. Miller**,2010, In-cloud turbulence structure of marine stratocumulus, *Geophys. Res. Lett*., doi:10.1029/2010GL045033.

[43] Kollias, P., **M.A. Miller**, K. Johnson, M. Jensen, and D. Troyan, 2009: Cloud, thermodynamic, and precipitation observations in West Africa during 2006, *J. Geophys. Res.*, 114, D00E08, doi:10.1029/2008JD010641.

[42] McComiskey, A., G. Feingold, S. Frisch, D. Turner, **M.A. Miller**, and J. Ogren, 2009: An assessment of aerosol-cloud interactions in marine stratus clouds based on surface remote sensing, *J. Geophys. Res.,* 114, D09203, doi:10.1029/2008JD011006.

[41] Williams, E., N. Nathou, E. Hicks, C. Pontikis, B.Russell, **M.A. Miller**, and M.J. Bartholomew, 2009: The electrification of dust-lofting gust fronts ('Haboobs') in the Sahel, *Atmospheric Research*, 91, 292-298.

[40] Slingo, A., N.A. Bharmal, G.J. Robinson, J.J. Settle, R.P. Allan, H.E. White, P.J. Lamb, M.A. Lele, D.D. Turner, S. McFarlane, E. Kassianov, J. Barnard, C. Flynn, and **M. A Miller**, 2008: Overview of observations from the RADAGAST experiment in Niamey, Niger. Part 1: meteorology and thermodynamic variables. *J. Geophys. Res*, 113, doi: 10.1029/2008JD009909.

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[38] Kim, B.G., **M.A. Miller**, S.E. Schwartz, Y. Liu, and Q. Min, 2008: The role of adiabaticity in the aerosol first indirect effect, *J. Geophys. Res* , 113, D05210, doi:10.1029/2007JD008961.

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[36] Pinker, R.T., D. Sun, **M.A. Miller**, and G.J. Robinson, 2007: Diurnal cycle of land surface temperature in a desert encroachment zone as observed from satellites, *Geo. Res. Lett*. 34, L11809, doi:10.1029/2007GL030186.

[35] **Miller, M.A.** and A. Slingo, 2007: The Atmospheric Radiation Measurement (ARM) Mobile Facility (AMF) and its first international deployment: measuring radiative flux divergence in West Africa, *Bull. Amer. Met Soc.*, Bulletin of the American Meteorological Society, 88, 1229-1244.

[34] Kollias, P., E.E. Clothiaux, **M.A. Miller**, B.A. Albrecht, G.L. Stephens, and T.P. Ackerman, 2007: Millimeter-Wavelength Radars-New Frontier in Atmospheric Cloud Research, *Bull. Amer. Met Soc*., 88, 1608-1624.

[33] Liu, Y, P.H. Daum, R. McGraw, **M.A. Miller**, and S. Niu, 2006: Theoretical expression for the autoconversion rate of the cloud droplet number concentration, Geo. Res. Lett., L16821,doi:10.1029/2007GL030389.

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[31] Mather, J.H., S.A. McFarlane, **M.A. Miller**, and K.L. Johnson, 2006: Cloud properties and associated heating rates in the Tropical Western Pacific, *J. Geophys. Res,* 112, doi:10.1029/2006JD007555.

[30] Kollias, P., E.E. Clothiaux, **M. A. Miller**, E. Luke, K.L. Johnson, K.P. Moran, K.P. Widener, and B.A. Albrecht, 2006: The Atmospheric Measurement Program

cloud profiling radars: second generation sampling strategies, processing, and cloud data products, *J. Atmos. Ocean. Tech*., 24, 1199-1214.

[29] Liu, Y., P. Daum, P.H. Daum, R. McGraw, and **M.A. Miller**, 2006: Generalized threshold function accounting for effect of relative dispersion on threshold behavior of autoconversion process, *Geophys. Res*. *Let*. 33, L11804, doi: 10.1029/2005GL025500.

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[27] Turner, D., A. Vogelmann, **M.A. Miller** and coauthors, 2006: Optically thin liquid water clouds: their importance and our challenge, *Bull. Amer. Met Soc*., 88, 177–190.

[26] Xie, S., Zhang, M.A., Branson, M., Cederwall, R.T., Del Genio, A.D., Eitzen, E.A., Ghan, S.J., Iacobellis, S.F., Johnson, K.L., Khairoutdinov, M., Klein, S.A., Kreuger, S.K., Wuyin, L., Lohmann, U., **M.A. Miller** and coauthors, 2005: Simulations of midlatitude frontal clouds by SCMs and CRMs during the March 2000 IOP, *J. Geophys. Res*., 110, D15S03, doi:10.1029/2004JD005119.

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[23] Benkovitz, C.M., S.E. Schwartz, M. P. Jensen, **M. A. Miller**, R. C. Easter and T.S. Bates, 2004:Modeling atmospheric sulfur over the Northern Hemisphere during the Aerosol Characterization Experiment 2 experimental period. *J. Geophys. Res*., 109, D22207,doi:10.1029/2004JD004939.

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[21] Kahn, R.A., J. Ogren, T.P. Ackerman, J. Bösenberg, R.J. Charlson, D.J. Diner, B.N. Holben, **M.A. Miller**, R.T. Menzies, and J.H. Seinfeld, 2004: Aerosol data sources and their roles within PARAGON, *Bull. Amer. Met Soc*., 85, 1511-1522.

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[19] Halthore, R.N., **M.A. Miller**, J. Ogren, P. Sheridan, D. Slater, and T. Stoffel, 2004: Further developments in closure experiments for surface diffuse irradiance under cloud-free skies at a continental site. *Geophys. Res. Let*., 31, L07111.

[18] Knobelspiesse, K.D., C. Pietras, G.S. Fargion, M. Wang, R. Frouin, **M.A. Miller**, A. Subramaniam and W.M. Balch, 2003: Maritime aerosol optical properties measured by handheld sun photometers. *Remote Sen. of Env.*, 93, 87-106.

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[15] Kim, B.G., S.E. Schwartz, **M.A. Miller**, and Q. Min, 2003: Effective radius of cloud droplets by ground-based remote sensing: relationship to aerosol. *J. Geophys. Research*, 108(D23), 4740-4758.

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Presentations Since 2000

2020 Summertime Post-Cold-Frontal Marine Stratocumulus Transition Processes during ACE-ENA, ACE-ENA Breakout, June 25.

2019 - A Three-Year Study of the Summertime Thermodynamic, Cloud, Sub-Cloud Turbulent Kinetic Energy, and Sub-Cloud Mixing Length from ENA Site-DOE Atmospheric Systems Research PI Meeting, June 10–13, 2019, Rockville, MD.

2018 - New Perspectives on Marine Stratocumulus over the Eastern North Atlantic (**invited**, State University of New York at Stony Brook, October 17).

2017 - Eastern north Atlantic (ENA) Graciosa Island ARM Facility-An Opportunity for International Cooperation on Ocean/Atmospheric Sciences (**invited**, E. Azevado, K. Nitschke, P. Ortega, and M.A. Miller—presented by Azevado, Round Table and Workshop on German-Portuguese Cooperation in Research held at the German Research Centre for Geosciences, Building H , Telegrafenberg, 14473 Potsdam on 22 May, 2017)

-Eastern north Atlantic (ENA) Graciosa Island ARM Facility-An Opportunity for International Cooperation on Ocean/Atmospheric Sciences (**invited,** E. Azevado, K. Nitschke, P. Ortega, and M.A. Miller—presented by Azevado, International Workshop on Marine & Atmospheric Sciences in West Africa. Mindelo, Cabo Verde, Nov. 12-17, 2017)

2016 -Global Climate Change Forecasts: Partly Cloudy with a Chance of Progress (**invited,** City College of New York, September 23, 2016)

-Solving the Cloud and Radiation Conundrum (**invited**, Rutgers Climate Institute, October 7, 2016)

2014 -The Climate of the West African Sahel: A Perspective from Observations, Global Climate Models, and the Drinking Water Adviser (**invited**, NASA Goddard Institute for Space Studies, May 30, Manhattan, NY)

-Relevant Findings and Scientific Tasks for the Eastern North Atlantic (ENA) Graciosa Island ARM Facility (**invited**, January 30, 2015, University of Lisbon, Lisbon, Portugal).

-A Synopsis of ARM Measurements at the Eastern North Atlantic Site (**invited**, January 30, 2015, University of Lisbon, Lisbon, Portugal).

2013 - St/Sc/Cu Cloud Processes Breakout Session, Charter and Overview of Low Cloud Science, ASR Science Team Meeting, Potomac, Maryland, March 21

- Clouds and Climate: New Strategies to Address Old Questions (**keynote speaker**, 50th Anniversary Meeting of the Korean Meteorological Society, April 18, Seoul, Korea)

- Superstorm Sandy; A Perspective from Ground Zero (**invited**, Experts Forum, Korea Institute of Atmospheric Prediction Systems, April 17, Seoul, Korea)

2012 - Unraveling the Life Cycle of Low Clouds (**invited**, ASR Working Group Meeting, November 1, Rockville, MD (V. Ghate presented)
- Cloud and Radiative Effects over West Africa using a Top-Down, Bottom-Up Approach (**invited**, Brookhaven National Laboratory, June 5, Upton, NY)

2011 - On the Real and Simulated Life of Photons over the West African Sahel-Rutgers University, November 18
- Morphology and Dynamics of Non-precipitating Marine Fair Weather Cumulus Clouds, V.P. Ghate and M.A. Miller (**invited**, ASR STM, Miller presented)

2010 -Integrity of Global Climate Model Simulations of the West African Climate
-Lamont-Doherty Observatory of Columbia University (**invited**)
-University of Illinois (**invited**)
-Purdue University (**invited**)

2009 - On the performance of the IPCC and NCAR climate models in West Africa (**invited**), Atmospheric Systems Research (ASR), Cloud Modeling Working Group Meeting, September 29, Boulder, CO.
-To See or Not to See: Adventures in Visibility (**invited**), Federal Aviation FAA Team Aviation Safety Seminar, May 19, Middletown HS South.
- Miller, M.A. Controls on the Atmospheric Radiative Divergence Budget in West Africa, 3rd International African Monsoon Multidisciplinary Analysis Conference, July 20-24, Ouagadougou, Burkina Faso, Africa (presentation by P. Lamb)
-RADAGAST Reprise: new results from West Africa, (**invited**), ARM Science Team Meeting, Louisville, KY, April 2.
-AMF MBL-CAP Site Selection: Clouds, Aerosol, Precipitation in the Marine Boundary Layer (CAP-MBL) Breakout Session, ARM Science Team Meeting, Louisville, KY, (April 2).
-An AMF Ancillary Site on Pico Island, Azores:MBL-CAP Breakout Session, ARM Science Team Meeting, Louisville, KY (April 2)
-Cloud Properties Working Group Meeting: shallow convection as a CPWG initiative, ARM Science Team Meeting, Louisville, KY (April 1)
-ARM Science and Infrastructure Steering Committee Meeting, ARM Science Team Meeting, Louisville, KY (April 3)

2008 -DOE ARM Cloud Properties Working Group, Landsdowne, VA (November 12-13): A case for shallow convection as an ARM science question; final plenary (November 13).

-American Geophysical Union Spring Meeting, Ft. Lauderdale, FL (May 27-30): The Cloud and Land Surface Interaction Campaign: CLASIC (**May 29, Session H43D, invited**)
-US Consulate, Lisbon Portugal: The US Department of Energy's ARM Mobile Facility: Monitoring Marine Stratocumulus at Graciosa, Azores; US Consulate Staff, (August 5)
-Monmouth Flying Club: "To See or Not to See: Adventures in Visibility"; **(April 19, invited).**
-ARM Heating Rate Profile Workshop (January 8)-University of Niamey, Niger, Africa: Subject: An ARM Mobile Facility Primer (January 16-17: rescheduled due to travel restriction)
-Cloud and Land-Surface Interaction Campaign (CLASIC) Planning Meeting, Dallas, TX; Overview of CLASIC (February 1)
-NASA Goddard Institute for Space Studies: Subject: Regimes within the First Aerosol Indirect Effect **(February 9, invited)**
-ARM Science Team Meeting: Cloud Droplet Nucleation and Aerosol Indirect Effects (March 26)
-ARM Science Team Meeting: The Cloud and Land-Surface Interaction Campaign (CLASIC) (March 28)
- The ARM Mobile Facility: Cloud and Aerosol Interaction Science Institute of Atmospheric Science, Chinese Academy of Science, Beijing, China **(April 18, invited)**
-Nanjing Institute of Geography and Limnology, Chinese Academy of Science, Nanjing, China: The ARM Mobile Facility: Cloud and Aerosol Interaction Science **(April 20, invited)**
-Lanzhou University, Lanzhou, China: The ARM Mobile Facility: Cloud and Aerosol Interaction Science **(April 23, invited)**
- The Cloud and Land Surface Interaction Campaign (CLASIC): (invited) American Geophysical Union Spring Meeting (May 22-25)
- The Cloud and Land Surface Interaction Campaign (CLASIC), Division Seminar, Brookhaven National Laboratory (early July)
- Greenland as a potential new ARM Site, DOE ARM Futures Meeting, Reston, VA (October 31-November 1)
-Early Results from the Cloud and Land Surface Interaction Campaign (CLASIC), DOE ARM Science Team Executive Committee Meeting, December 17

2006 -Convective Orographic Precipitation Study Organizing Workshop (COPS): The ARM Mobile Facility (invited; presented by Dr. Dave Turner, University of Wisconsin on my behalf)
-African Monsoon Multi-disciplinary Analysis US Workshop: The ARM Mobile Facility in West Africa **(invited)**
-African Monsoon Multi-disciplinary Analysis US Workshop: The Cloud and Land Surface Interaction Campaign **(invited)**
-US Interagency Water Cycle Steering Committee, Washington, D.C., The Cloud and Land Surface Interaction Campaign **(invited)**

-ARM Science Team Meeting, Albuquerque, NM: The ARM Mobile Facility

2005 The Hyperspectral Imaging and Sounding of the Environment (HISE) Topical Workshop: Toward Continuously Remotely Sensed Cloud Microphysical Structure for the Calculation of Heating Rate Profiles **(invited)**
-ARM Science Team Meeting: The Influence of Stability on Cloud Droplet Effective Radius and Determined by Ground-based Remote Sensing (invited)
-ARM Science Team Meeting: The ARM Mobile Facility (AMF)
-ACHMED and IRD, West African Meteorological Agencies: The ARM Mobile Facility

2004 -NASA Goddard Institute for Space Studies: The ARM Broadband Heating Rate Profile Project **(invited)**
-BNL Executive Management Invited Lecture: Remote Sensing of Clouds **(invited)**
-Princeton Geophysical Fluid Dynamics Laboratory: Aerosols over the World's Oceans **(invited)**
-ARM Cloud Products: GEWEX Cloud Workshop, Reading, England **(invited)**
- Cloud and Land Surface Interactions: A Proposal for an Intensive Observation Period to the ARM Cloud Properties Working Group: ARM Cloud Properties Working Group Meeting

2003 -Active Remote Sensing of Cloud Layers (ARSCL) Statistics: a value-added product, ARM Cloud Properties Working Group
-ARM Value-Added Cloud Products: ARM Cloud Properties Working Group (annual report)

2002 -Brookhaven Lecture: Clouds and Climate through a Soda Straw (invited)
-Stevens Institute: Aerosols over the World's Oceans **(invited)**
-Goddard Space Flight Center: Aerosol Optical Thickness and Angstrom Exponent from a Marine Fast-Rotating Shadow-band Radiometer
-Water cycle variability in a small watershed: a one-month comparison of modeled and measured precipitation over the Southern Great Plains, American Meteorological Society Annual Meeting.
-ARM Value-Added Cloud Products: ARM Cloud Properties Working Group (annual report)

2001 -Development of a Regional Water and Energy Science Program: Laboratory-Directed Research and Development Review Committee
-ARM Value-Added Cloud Products: ARM Cloud Properties Working Group (annual report)

2000 -The DOE Water Cycle Pilot Study: USGCRP Water Cycle Steering Committee Meeting

-ARM Value-Added Cloud Products: Cloud Properties Working Group (annual report)

Posters (2014-2017)

Student Posters

Collow, A. and M.A. Miller, 2018: Characterizing Differences in the Aerosol Plume and Cloud Structure over Ascension Island during the 2016 and 2017 Biomass Burning Seasons, ASR PI Meeting, Vienna, VA, March 19-23.

Trabachino, L.C., M.A. Miller and *A.M. Collow*: The Influence of the Formulation of Parameterized Convective Processes on Global Climate Model Simulations of the West African Monsoon, Poster A21H-2251, Dec. 12, 2017, American Geophysical Union Fall Meeting, New Orleans, LA.

Miller, M.A. and *M.K. Rad*, How Drizzle Evaporation Impacts Below-Cloud Turbulent Kinetic Energy in Transition Marine Stratocumulus, March 13, 2017, Atmospheric Systems Research PI Meeting, Tysons Corner, VA.

Collow. A.M. and M.A. Miller, 2015: The Seasonal Cycle of the Radiation Budget and Cloud Radiative Effect in the Amazon Rainforest of Brazil, Poster A33G-0251, Dec. 15, 2015, American Geophysical Union Fall Meeting, San Francisco, CA.

Collow, A.M., M.A. Miller, and *L.C. Trabachino*, 2015: An Analysis of Clouds and Radiation from the First Year of Measurements from GOAmazon2014/15., March 16-20, 2015, Vienna, VA.

Trabachino, L.C and M.A. Miller, 2014: Thermodynamic Profiling Capabilities of Microwave Radiometer Profilers in Various Locations of Interest for Atmospheric Model Development, Atmospheric System Research PI Meeting, March 10-13, 2014, Potomac, MD.

Other Posters (2014-2018)

Miller, M.A., Rad, M., Wood, R, Kollias, P., Azevedo, E., 2018 Measurements of the Turbulence Master Length Scale Profile in Summertime Eastern North Atlantic Marine Boundary Layer Clouds, ASR PI Meeting, Vienna, VA, March 19-23

Miller, M.A., 2018: How Drizzle Evaporation Impacts Below-Cloud Turbulent Kinetic Energy in Transition Marine Stratocumulus, ASR PI Meeting, Vienna, VA, March 13-17.

Jensen, M.P., M.A. Miller, and J. Wang, 2017: Boundary Layer Thermodynamics and Cloud Microphysics for a Mixed Stratocumulus and Cumulus Cloud Field Observed during ACE-ENA, Poster A43B-2454, Dec. 14, 2017, American Geophysical Union Fall Meeting, New Orleans, LA.

E. Azevedo; K. Nitschke; P. Ortega; M.A. Miller - Eastern North Atlantic (ENA) Graciosa Island ARM Facility cloud aerosol precipitation interactions research platform - Atlantic Interactions - Integrating Space, Climate, Oceans and Data Sciences through North-South / South-North Cooperation - High-level Industry-Science-Government Dialogue Towards the Atlantic International Research Center (AIR Center) - Terceira, Azores, 20-21 April 2017.

Wood, R., P.Kollias, M.A. Miller, and Co-Authors, 2016: The Eastern North Atlantic ARM Site: Clouds, Aerosols and Their Interactions in the Remote Marine Boundary Layer, May 5, 2016, Atmospheric Systems Research PI Meeting, Vienna, VA.

Avevado, E., K. Nitschke, M.A. Miller and Co-Authors, 2016: Major Additions to the Eastern North Atlantic Site, May 5, 2016, Atmospheric Systems Research PI Meeting, Vienna, VA.

Ghate, V.P, M.A. Miller, and B.A. Albrecht, 2014: On the Dynamics and Radiation of Cumulus-topped Marine Boundary Layers. Atmospheric System Research PI Meeting, March 10-13, 2014, Potomac, MD.

Miller, M.A., B. Raney, V.P. Ghate, and S. Decker, 2014: A Large Eddy Simulation of Cloud Radar Observations, Atmospheric System Research PI Meeting, March 10-13, 2014, Potomac, MD.

Azavedo, E., K. Nitschke, Ortega, P., M.A. Miller and co-authors, 2016: Major Additions to the Eastern North Atlantic Site, May 2-5, 2016, Vienna, VA.

Wood, R., P. Kollias, M.A. Miller, and co-authirs, 2016: The Eastern North Atlantic ARM Site: Clouds, Aerosols, and their Interactions in the Marine Boundary Layer, May 2-5, 2016, Vienna, VA.

Community Service

-Journal Reviewer (journals served over the past five years): Journal of Geophysical Research (Atmospheres); Journal of Climate; Journal of the Atmospheric Sciences; Atmospheric Chemistry and Physics, Journal of Applied Meteorology and Climatology, Journal of Oceanic and Atmospheric Technology, Proceedings of the Royal Society, Reviews of Geophysics, Soil Science

2017-2018	-Co-Principal Investigator: Aerosol Characterization Experiment-Eastern North Atlantic (ACE-ENA) -Design missions for DOE Gulf Stream 1 research aircraft -Served as an on-site weather forecaster, June 2017, Terceira and Graciosa, Azores.
2017	-NASA Advanced Methods Proposal Review Panel, January 31-February 2 (Washington, DC)
2016	-DOE Atmospheric Systems Research Marine Low Clouds Workshop, January 27-29, Upton, NY -Chair-Precipitation Breakout Session
2015	-Co-Chair, ASR Low Cloud Science Group (ongoing) - Chaired ASR Warm Low Clouds Working Group Meeting, November 18, Bethesda, MD. -ASR Proposal Review Panel, February 18, Rockville, MD
2014	-Co-Chair, ASR Low Cloud Science Group (ongoing) - ASR Proposal Review Panel, April 9, Gaithersburg, MD -DOE ASR Science and Infrastructure Steering Committee Meeting, March 13-14, Potomac, MD

-Organized and conducted US-Brazilian Student Workshop for Go-Amazon 2014-15 October 16-17, 2014 University of Amazonia, Manaus, Brazil.

2013 - Co-Chair, ASR Low Cloud Science Group (ongoing)
- ASR Proposal Review Panel, July 18, Gaithersburg, MD
-DOE ASR Science and Infrastructure Steering Committee Meeting, March 21-22

2012 - ASR Proposal Review Panel, May 30, Gaithersburg, MD
- Two-Column Aerosol Project (TCAP) Opening Ceremony, July 25, Cape Cod National Seashore, North Truro, MA
- DOE Scientific Focus Area (SFA) Review Pacific Northwest National Laboratory, August 28-30, College Park, MD
- DOE ASR Science and Infrastructure Steering Committee, August 21, Herndon, VA

2011 -GOAmazon2014 Scientific Workshop, August 26-27, Crystal City, Arlington, VA
-DOE ASR Science and Infrastructure Steering Committee
-DOE ASR program Mobile Facility Survey Team Brazilan Consular and site visit, Manaus, Brazil, March 14-18
-DOE ASR program Mobile Facility Survey Team Cape Cod, MA, April 25

2010 -DOE ASR Science and Infrastructure Steering Committee
-DOE ARM program Mobile Facility Survey Team Indian Consular and site visit, Nainital, India, February 22-26.

2009 -DOE ARM Science and Infrastructure Steering Committee

2008 -DOE ARM Cloud Modeling Working Group Meeting, Princeton, NJ (11/11-13)
-DOE ARM program Mobile Facility Survey Team US Consular and site visit, Garciosa and San Miguel, Azores, Portugal, April 8-13.
-DOE ARM Futures Meeting, Reston Virginia, October 21-22, Reston, VA.
-Organizer and Chair: Cloud and Land Surface Interaction Experiment (CLASIC) First Annual Workshop, March 26-27, Norman, Oklahoma (25 participants).
-Co-Chair: Special Session on Radiative Atmospheric Divergence in West Africa; Atmospheric Radiation Measurement Program Science Team Meeting, March 10-14, Norfolk, Virginia.
-Chair: Special Session on AMF Measurements during the Convective Orographic Precipitation Study (COPS); Atmospheric Radiation Measurement Program Science Team Meeting, March 10-14, Norfolk, Virginia.
-Chair: Special Session on Cloud and Land Surface Interaction Experiment (CLASIC); Atmospheric Radiation Measurement Program Science Team Meeting, March 10-14, Norfolk, Virginia.
-ARM Science Team Executive Committee Meeting, March 13-14, Norfolk, Virginia.

2007	-DOE ARM Futures Workshop—invited participant, Washington, DC -Co-Chair, Land Surface Modeling Session, American Geophysical Union, Spring Session, Acapulco, Mexico
2004-2007	Principal Investigator: ARM Cloud and Land Surface Interaction Campaign (CLASIC): June 8-30, 2007 -Proposed experiment to examine land-surface cloud feedbacks -Developed Science Plan -Multi-agency, multi-platform, budget approximately $5.5M -Nine aircraft including NASA ER-2 and Helicopter Observation Platform (Duke University) -Four land surface super sites -CIRPAS Rapid Scanning X-Band Radar and NSF CASA Array -Enhanced radiosonde network
2005	Principal Investigator: Marine Stratus Radiation, Aerosol, and Drizzle Experiment -Won proposal competition for ARM Mobile Facility deployment - March-September 2005 at Pt. Reyes National Seashore, California -High quality cloud/aerosol data set collected
2003	Co-founded the ARM Broadband Heating Rate Profile Focus Group - Project to continuously compute atmospheric column absorption with realistic clouds
2001-2005	-United States Global Change Research Program Water Cycle Steering Committee -International Geophysical Observing Strategy: Water Cycle Theme Development -Commissioned Report: The ARM Atmospheric Emitted Radiance Interferometers
2005	-Organizing Committee: Hyperspectral Imaging and Sounding of the Environment
2004	-Faculty Search Committee-Marine Sciences Department (SUNY at Stony Brook)
2003-2008	-DOE ARM Science Team Executive Committee
2001	-Water Cycle Dynamics and Prediction Program: Science Plan Development Team
1998-2003	-Co-Chair, DOE ARM Cloud Properties Working Group (50 members)
1997-1999	-Associate Editor: Weather and Forecasting (Remote Sensing-specialty)

Service to Rutgers University

2020-2021	-Department of Environmental Sciences Centennial Celebration Committee
2010-2012	- Graduate Excellence Fellowship Committee (Chair, 2012)
2010-2012	- Physical and Mathematical Sciences and Engineering Area Committee
2008-2011	- University Senator for the School of Biological and Environmental Sciences
2008-2010	- Chair, Environmental Science Computer Committee, (2008-2010)
2008	-Rutgers Faculty Traveling Seminar, June 2-6, 2008

2007 -DES Space Committee

Service to DOE and Brookhaven National Laboratory

-Written contribution to DOE ARM Futures Report: Greenland as a new fixed ARM Site
-Supervised projects that met DOE quarterly metrics required by Office of Management and Budget
-Represented ARM Chief Scientist at DOE Biological and Environmental Research Advisory Committee (BERAC): Climate Focus Scientific oversight committee for DOEs BER Division
-BNL Cloud Properties Group that I led was responsible for 3 of 10 key research findings in past 5-years that were selected by DOE for presentation to BERAC (Co-author on two of these projects)
-Organized multiple ARM Working Group Meetings
-Served on BNL Continuing Scientist Review Committee

Notable Projects and Contributions

2007	-Supervised processing of cloud radar data from Pt. Reyes, CA: released to community.
2003	-Implemented first continuous cloud microphysical retrieval algorithm based on ARM data (MICROBASE).
2000	-Created operational infrastructure and processed entire ARM Cloud radar data set, Active Remote Sensing of Cloud Layers (ARSCL), which is the most frequently requested of all products in the ARM Archive.
1998-2003	NASA Sensor Inter-Comparison and Merger for Biological and Interdisciplinary Ocean Studies (SIMBIOS)—The Marine Shadow-band Network Database -aerosol corrections for satellite ocean color -Developed new technology (marine fast-rotating shadow-band radiometer) -First system to measure aerosol optical properties at sea without stabilized platform -System deployed on 130 separate cruises resulting in the largest ocean aerosol database collected to date—all oceans sampled during six year project -SIMBIOS project concluded in 2003; technology still deployed on several vessels
1994	Associate Site Scientist: Monterey Area Ship Tracks Experiment -Advised and participated in collection of cloud microphysical from ship
1992	Site Scientist, Atlantic Stratocumulus Transition Experiment (ASTEX) -Authored and Co-authored two of the first papers dealing with the use of 95-GHz cloud radar in cloud-related climate research -Designed and operated surface data acquisition system
1991	Associate Site Scientist for First International Satellite Climatology Project Regional Experiment -First deployment of prototype 95-GHz Doppler Cloud Radar

1988-1991 Co-Developer Pennsylvania State University Cloud Observing System
-Assisted in the design and calibration of a prototype 95-GHz Cloud Radar
-System contained multiple active sensors including a lidar, multiple-channel microwave radiometer, and UHF and VHF radars

Other Community Service

2009 *Clouds for Kids!* , Princeton Montessori School, Princeton, NJ
2011 Science Exposition-Littlebrook Elementary School, Princeton, NJ
-Short course: *Clouds-R-US*
2012 Science Exposition-Littlebrook Elementary School, Princeton, NJ
-Short course: Clouds-R-US Chapter 2 [K-3] and Clouds and Climate [4-5]
2013 Science Exposition-Littlebrook Elementary School, Princeton, NJ
-Short course: Buoyancy in a Bag [2] and Superstorm Sandy [4-5]