

Curriculum Vitae of Virendra Prakash Ghate
December 2020

PERSONAL INFORMATION

Name: Virendra Prakash Ghate
Place of Birth: Nagpur, India.
Date of Birth: 30 July 1981
Nationality: Indian (USA Permanent resident)
Office address: Building 240, Office#7126
Environmental Science Division,
Argonne National Laboratory,
9700 South Cass Avenue,
Argonne IL 60439.
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RESEARCH INTERESTS

Boundary Layer Meteorology, Cloud Physics, Radar Meteorology, Atmospheric Radiation.

TEACHING

11:670:431 Undergraduate Physical Meteorology, Spring 2011.

EDUCATION

2006-2009: PhD in Meteorology
RSMAS/MPO, University of Miami, FL USA
Academic advisor: Dr. Bruce A. Albrecht
Dissertation Title: Turbulence and mass-transport in stratocumulus clouds.
2003-2006: M.S. in Meteorology
RSMAS/MPO, University of Miami, FL USA
Academic advisor: Dr. Bruce A. Albrecht
Thesis Title: Characteristics of drizzle under stratocumulus using cloud Doppler radars.
1998-2002: B.S. in Mechanical Engineering
Nagpur University, Nagpur, India
Thesis Title: Design and fabrication of vortex tube.

EMPLOYMENT AND APPOINTMENTS

2014-present: Atmospheric Scientist, Environmental Science Division,
Argonne National Laboratory, IL

Spring, 2017: Guest Scientist, Max Planck Institute for Meteorology,
Hamburg, Germany
2013-2014: Assistant Atmospheric Scientist, Environmental Science Division,
Argonne National Laboratory, IL
2013-2015: Visiting Scientist, Department of Environmental Sciences,
Rutgers University, NJ
2013-present: Scientist at Large of the Consortium for Advanced Science and
Engineering, University of Chicago
2009-2013: Research Associate,
Department of Environmental Sciences,
Rutgers University, NJ.
2003-2009: Graduate Research Assistant,
Division of Meteorology and Physical Oceanography,
University of Miami, FL.

AWARDS AND HONORS

2007: Mary Roche fellowship in the recognition of outstanding research at sea and scientific excellence.

PUBLICATIONS IN REVIEW

Cadeddu, M. P., D. Cimini, **V. P. Ghate**, D. Lubin, A. Vogelmann, and I. Silber, 2020: Profiles of Humidity and Ice Supersaturation Observed with a Ground-Based G-Band Radiometer in Antarctica During AWARE. *Under review, IEEE Transactions on Geoscience and Remote Sensing*.

Tao, C., Y. Zhang, Q. Tang, H-Y. Ma, **V. P. Ghate**, S. Tang, and S. Xie, Joseph A. Santanello, 2020: Land-atmosphere coupling at the US Southern Great Plains: A comparison on local convective regimes between ARM observations, reanalysis, and climate model simulations. *Under review, Journal of Hydrometeorology*.

E. Ilotoviz, **V. P. Ghate**, S. Raveh-Rubin, 2020: The impact of slantwise descending dry intrusions on the marine boundary layer and surface fluxes over the ARM Eastern North Atlantic site. *Under review, Journal of Geophysical Research – Atmospheres*.

PEER-REVIEWED PUBLICATIONS

Vivekanandan, J., **Ghate, V. P.**, Jensen, J. B., Ellis, S. M., & Schwartz, M. C. (2020). A Technique for Estimating Liquid Droplet Diameter and Liquid Water Content in Stratocumulus Clouds Using Radar and Lidar Measurements, *Journal of Atmospheric and Oceanic Technology*, **37(11)**, 2145-2161.

Ghate, V. P., and D. B. Mechem, 2019: Planetary boundary layer and processes. *AGU Book Chapter*.

Ghate, V. P., Cadeddu, M. P., & Wood, R. 2020: Drizzle, turbulence, and density currents below post cold frontal open cellular marine stratocumulus clouds. *Journal of Geophysical Research: Atmospheres*, 125, e2019JD031586. <https://doi.org/10.1029/2019JD031586>

- Zheng, X., and Coauthors, 2020: Assessment of Precipitating Marine Stratocumulus Clouds in the E3SMv1 Atmosphere Model: A Case Study from the ARM MAGIC Field Campaign. *Mon. Wea. Rev.*, doi: <https://doi.org/10.1175/MWR-D-19-0349.1>.
- Cadeddu, M. P., **Ghate, V. P.**, and Mech, M.: Ground-based observations of cloud and drizzle liquid water path in stratocumulus clouds, *Atmos. Meas. Tech.*, **13**, 1485–1499, <https://doi.org/10.5194/amt-13-1485-2020>, 2020.
- Sarkar, M., P. Zuidema, B. Albrecht, **V. Ghate**, J. Jensen, J. Mohrmann, and R. Wood, 2020: Observations Pertaining to Precipitation within the Northeast Pacific Stratocumulus-to-Cumulus Transition. *Mon. Wea. Rev.*, **148**, 1251–1273, <https://doi.org/10.1175/MWR-D-19-0235.1>.
- Babila, J.E.; Carlton, A.G.; Hennigan, C.J.; **Ghate, V.P.**, 2020: On Aerosol Liquid Water and Sulfate Associations: The Potential for Fine Particulate Matter Biases. *Atmosphere*, **11**, 194.
- Mohrmann, J., and Coauthors, 2019: Lagrangian Evolution of the Northeast Pacific Marine Boundary Layer Structure and Cloud during CSET. *Mon. Wea. Rev.*, **147**, 4681–4700,
- Draxl, Caroline, Berg, L. K., Bianco, L., Bonin, T. A., Choukulkar, A., Clifton, A., Cline, J. W., Djalalova, I. V., **Ghate, V.**, Gritmit, E. P., Holub, K., Kenyon, J. S., Lantz, K., Long, C., Lundquist, Julie, McCaa, J., McCaffrey, K., Newman, J. F., Olson, J. B., Pichugina, Y., Sharp, J., Shaw, W. J., Smith, N. H., and Toy, M. D. The Verification and Validation Strategy Within the Second Wind Forecast Improvement Project (WFIP 2). United States: N. p., 2019. Web. doi:10.2172/1575910
- Ghate, V. P.**, & Cadeddu, M. P., 2019: Drizzle and turbulence below closed cellular marine stratocumulus clouds. *J. of Geophys. Res.: Atmos.*, **124**, 5724– 5737
- Ghate, V.P.**, P. Kollias, S. Crewell, A.M. Fridlind, T. Heus, U. Löhnert, M. Maahn, G.M. McFarquhar, D. Moisseev, M. Oue, M. Wendisch, and C. Williams, 2019: The Second ARM Training and Science Application Event: Training the Next Generation of Atmospheric Scientists. *Bull. Amer. Meteor. Soc.*, **100**, ES5–ES9,
- Christiansen, A., **V. P. Ghate**, and A. G. Carlton, 2019: Aerosol Optical Thickness: Organic Composition, Associated Particle Water, and Aloft Extinction. *ACS Earth and Space Chemistry*. **3**, 403-412
- Bretherton, C.S., I.L. McCoy, J. Mohrmann, R. Wood, **V. P. Ghate**, A. Gettelman, C.G. Bardeen, B.A. Albrecht, and P. Zuidema, 2019: Cloud, Aerosol, and Boundary Layer Structure across the Northeast Pacific Stratocumulus–Cumulus Transition as Observed during CSET. *Mon. Wea. Rev.*, **147**, 2083–2103,
- Schwartz, M.C., **V.P. Ghate**, B.A. Albrecht, P. Zuidema, M.P. Cadeddu, J. Vivekanandan, S.M. Ellis, P. Tsai, E.W. Eloranta, J. Mohrmann, R. Wood, and C.S. Bretherton, 2019: Merged Cloud and Precipitation Dataset from the HIAPER GV for the Cloud System Evolution in the Trades (CSET) Campaign. *J. Atmos. Oceanic Technol.*, **36**, 921–940,
- Sullivan, R. C., D. R. Cook, **V. P. Ghate**, V. R. Kotamarthi, and Y. Feng, 2019: Improved spatiotemporal representativeness and bias reduction of satellite-based evapotranspiration retrievals via use of in situ meteorology and constrained canopy surface resistance. *J. Geophys. Res.: Biogeosciences*, **124**, 342– 352.
- Ghate, V. P.**, D. B. Mechem, M. P. Cadeddu, E. Eloranta, M. P. Jensen, M. Nordeen, and W. Smith, 2019: Estimates of entrainment in closed cellular marine stratocumulus clouds from the MAGIC field campaign. *Q J R Meteorol Soc.*, **145**, 1589– 1602

- Klingebiel, M., **V.P. Ghate**, A.K. Naumann, F. Ditas, M.L. Pöhlker, C. Pöhlker, K. Kandler, H. Konow, and B. Stevens, 2019: Remote Sensing of Sea Salt Aerosol below Trade Wind Clouds. *J. Atmos. Sci.*, **76**, 1189–1202, <https://doi.org/10.1175/JAS-D-18-0139.1>
- Albrecht, B., **V. P. Ghate**, J. Mohrmann, R. Wood, P. Zuidema, C. Bretherton, C. Schwartz, E. Eloranta, S. Glienke, S. Donaher, M. Sarkar, J. McGibbon, A.D. Nugent, R.A. Shaw, J. Fugal, P. Minnis, R. Paliknoda, L. Lussier, J. Jensen, J. Vivekanandan, S. Ellis, P. Tsai, R. Rilling, J. Haggerty, T. Campos, M. Stell, M. Reeves, S. Beaton, J. Allison, G. Stossmeister, S. Hall, and S. Schmidt, 2019: Cloud System Evolution in the Trades (CSET): Following the Evolution of Boundary Layer Cloud Systems with the NSF–NCAR GV. *Bull. Amer. Meteor. Soc.*, **100**, 93–121, <https://doi.org/10.1175/BAMS-D-17-0180.1>
- Wilson, A., R. C. Scott, M. P. Cadetdu, **V. P. Ghate** and D. Lubin, 2018: Cloud optical properties over west Antarctica from shortwave spectroradiometer measurements during AWARE. *J. Geophys. Res.*, **123**, 9559-9570.
- Wood, R., K-T, O, C. S. Bretherton, J. Mohrmann, B. Albrecht, P. Zuidema, **V. P. Ghate**, M. C. Schwartz, E. Eloranta, S. Glienke, R. Shaw, J. Fugal, P. Minnis, 2017: Ultraclean layers and optically thin clouds in the stratocumulus to cumulus transition: Part I. Observations. *J. Atmos. Sci.*, **75**, 1631-1652.
- Helmus, J., and **V. P. Ghate**, 2017: Improved estimates of moments and winds from radar wind profiler. DOE Office of Science Atmospheric Radiation Measurement (ARM) technical report, *DOE-SC-ARM-TR-188*.
- Nguyen, T. K. V., **V. P. Ghate**, and A. G. Carlton, 2016: Reconciling satellite aerosol optical thickness and surface fine particle mass through aerosol liquid water, *Geophys. Res. Lett.*, **43**, doi:10.1002/2016GL070994.
- Reid, J. S., Lagrosas, N. D., Jonsson, H. H., Reid, E. A., Atwood, S. A., Boyd, T. J., **Ghate, V. P.**, Xian, P., Posselt, D. J., Simpas, J. B., Uy, S. N., Zaiger, K., Blake, D. R., Bucholtz, A., Campbell, J. R., Chew, B. N., Cliff, S. S., Holben, B. N., Holz, R. E., Hyer, E. J., Kreidenweis, S. M., Kuciauskas, A. P., Lolli, S., Oo, M., Perry, K. D., Salinas, S. V., Sessions, W. R., Smirnov, A., Walker, A. L., Wang, Q., Yu, L., Zhang, J., and Zhao, Y., 2016: Aerosol meteorology of Maritime Continent for the 2012 7SEAS southwest monsoon intensive study – Part 2: Philippine receptor observations of fine-scale aerosol behavior, *Atmos. Chem. Phys.*, **16**, 14057-14078, doi:10.5194/acp-16-14057-2016, 2016.
- Ghate, V. P.** and P. Kollias, 2016: On the controls of daytime precipitation in the Amazonian dry season. *J. Hydrometeor.*, **17(12)**, 3079-3097, doi: 10.1175/JHM-D-16-0101.1.
- Wood, R., M. Jensen, J. Wang, C. Bretherton, S. Burrows, A. Del Genio, A. Fridlind, S. Ghan, **V. P. Ghate**, P. Kollias, S. Krueger, R. McGraw, M. Miller, D. Painemal, L. Russell, S. Yuter, and P. Zuidema, 2016: Planning the Next Decade of Coordinated Research to Better Understand and Simulate Marine Low Clouds. *Bull. Amer. Meteor. Soc.*, **97**, 1699–1702, doi: 10.1175/BAMS-D-16-0160.1
- Albrecht, B. A., M. Fang, and **V. P. Ghate**, 2016: Exploring stratocumulus cloud-top entrainment processes and parameterizations by using Doppler cloud radar observations. *J. Atmos. Sci.*, **73**, 729-742.
- Ghate, V. P.**, M. A. Miller and P. Zhu, 2016: Differences in tropical and trade wind cumulus topped marine boundary layers. *Mon. Weather. Rev.* **144**, 681-701.
- Collow, A., **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. *Q. J. R. Meteorol. Soc.* doi: 10.1002/qj.2623

- Ghate, V. P.**, Mark A. Miller, B. A. Albrecht and C. W. Fairall, 2015: Thermodynamic and radiative structure of stratocumulus topped boundary layers. *J. Atmos. Sci.*, **72**, 430-451
- Wood, R. and co-authors, 2015: Clouds, aerosols and precipitation in marine boundary layer: An ARM mobile facility deployment. *Bull. Amer. Meteor. Soc.*, **96**, 419-440.
- Fang, M., B. A. Albrecht, **V. P. Ghate** and P. Kollias: Turbulence in continental stratocumulus part I: External forcings and turbulence structures, *Bound. Layer. Meteor.* doi 10.1007/s10546-013-9873-3
- Fang, M., B. A. Albrecht, **V. P. Ghate** and P. Kollias: Turbulence in continental stratocumulus part II: Eddy dissipation rates and large eddy coherent structures, *Bound. Layer. Meteor.* doi 10.1007/s10546-013-9872
- Ghate, V. P.**, B. A. Albrecht, M. A. Miller, A. Brewer and C. W. Fairall, 2013: Turbulence and radiation in a stratocumulus topped marine boundary layer: A case-study from VOCALS REx, *J. Appl. Meteor. Climatol.*, **53**, 117-135
- Miller, M. A., **V. P. Ghate** and R. Zahn, 2012: The radiation budget of West African Sahel and its controls: A perspective from observations and global climate models, *J. Climate*, **25**, 5976-5996.
- Moran, K., S. Pezoa, C. W. Fairall, C. Williams, T. Ayers A. Brewer, S. P. deSzoek and **V. P. Ghate**, 2011: A motion-stabilized w-band radar for shipboard observations of marine boundary-layer clouds. *Bound. Layer. Meteor.*, doi:10.1007/s10546-011-9674-5
- Zheng, X., B. Albrecht, H. H. Jonsson, D. Khelif, G. Feingold, P. Minnis, K. Ayers, P. Chuang, S. Donaher, D. Rossiter, **V. P. Ghate**, J. Ruiz-Plancarte, and S. Sun-Mack, 2011: Observations of the boundary layer, cloud, and aerosol variability in the southeast Pacific coastal marine stratocumulus during VOCALS-REx, *Atmos. Chem. Phys.*, **11**, 9943-9959, doi:10.5194/acp-11-9943-2011.
- Ghate, V. P.**, M. A. Miller and L. DiPretore, 2011: Vertical velocity structure of marine boundary layer trade wind cumulus clouds. *J. Geophys. Res.* **115**, D23201, doi:10.1029/2010JD014400.
- Zhu, P., B. A. Albrecht, **V. P. Ghate** and Z. Zhu, 2010: Multiple scale simulations of stratocumulus clouds. *J. Geophys. Res.*, **115**, D23201, doi:10.1029/2010JD014400
- Ghate, V. P.**, B. A. Albrecht and P. Kollias, 2010: Turbulence structure of non-precipitating continental stratocumulus clouds. *J. Geophys. Res.*, **115**, D13204, doi:10.1029/2009JD013091.
- Ghate, V. P.**, B. A. Albrecht, C. W. Fairall and R. Weller, 2009: Climatology of surface meteorology, surface fluxes, cloud fraction and radiative forcing over South-East Pacific from buoy observations. *J. Climate*, **22**, 5527–5540.
- Rauber, R. M. and co-authors, 2007: In the driver's seat: RICO and education. *Bull. Amer. Meteor. Soc.*, **88**, 1929-1937.
- Ghate, V. P.**, B. A. Albrecht, P. Kollias, H. H. Jonsson and D. W. Breed, 2007: Cloud seeding as a technique for studying aerosol-cloud interactions in marine Stratocumulus., *Geophys. Res. Lett.*, **34**, L14807, doi:10.1029/2007GL029748.

CONFERENCE PRESENTATIONS AND INVITED TALKS

* denotes conference presentation; # denotes invited talks.

- #**Ghate, V. P.**, J. B. Olson, J. M. Wilczak, V. R. Kotamarthi, D. D. Turner, L. K. Berg, and K. E. Szoldatits, 2019: Locally Forced Gap Flows Along the Columbia River Observed During

- the WFIP2 Field Campaign. *NOAA-ESRL Atmospheric Science and Renewable Energy Seminar*, Summer 2019
- #**Ghate, V. P.**, and M. P. Cadeddu, 2019: Turbulence and drizzle below closed cellular marine stratocumuli. *Seminar at Lawrence Livermore National Laboratory*.
- ***Ghate, V. P.**, V. R. Kotamarthi, J. Olson, J. Wilczak, and C. Draxl, 2019: Boundary layer wind jet observed during the WFIP-2. *99th AMS annual meeting, Phoenix, AZ*.
- ***Ghate, V. P.**, and Maria P. Cadeddu, 2019: Drizzle and turbulence below open cellular marine stratocumulus clouds. *99th AMS annual meeting, Phoenix, AZ*.
- ***Ghate, V. P.**, and B. Stevens, 2018: Boundary layer cloud transition in the North Atlantic: Lagrangian perspective from surface and satellite observations. *98th AMS annual Meeting, Austin, TX*.
- #**Ghate, V. P.**, D. Mechem, M. Cadeddu, E. Eloranta, and M. Jensen, 2017: Exploring shallow cloud processes using ship-based observations from the MAGIC field campaign. Colloquium at the department of geography and atmospheric sciences of the University of Kansas.
- ***Ghate, V. P.**, and M. Cadeddu. 2017: Drizzle drop size distributions in marine warm stratocumulus clouds derived from Doppler cloud radar and lidar. *38th conference on radar meteorology, Chicago, IL, August, 2017*.
- #**Ghate, V. P.**, 2017: Controls of precipitation during the Amazonian dry season. *University of Cologne, Germany*.
- *Bretherton, C. S., R. Wood, B. Albrecht, P. Zuidema, **V. P. Ghate**, J. Mohrmann, K-T O, P. Blossey, 2017: Cloud System Evolution in the Trades (CSET): Airborne sampling of lagrangian air mass evolution in the Northeast Pacific stratocumulus-cumulus transition. *EGU General Assembly, Vienna, April, 2017*
- #**Ghate, V. P.**, 2017: Controls of precipitation during the Amazonian dry season. *Max Planck Institute for Meteorology*.
- ***Ghate V. P.**, M. C. Schwartz, B. Albrecht, R. Wood, C. S. Bretherton, P. Zuidema, J. Mohrmann, J. Vivekanandan, Y. Feng, 2017: Lagrangian Evolution of Cloud Systems in the North Pacific. *97th AMS annual meeting, January 2017, Seattle WA*.
- #**Ghate V. P.**, 2016: Controls of precipitation during the Amazonian dry season. *Rutgers University*.
- *Collis, S., J. Helmus, R. Kotamarthi, J. Wang, Y. Feng, and **V. P. Ghate**, 2016: Open science: investigating precipitation cycles in dynamically downscaled data using openly available radar data and open source software. *EGU General Assembly, Vienna Austria*.
- *Vivekanandan, J., J. Jensen, S. Ellis, B. Morley, P. Tsai, S. Spuler, **V. P. Ghate** and C. Schwartz, 2016: Estimation of droplet size and liquid water content using radar and lidar: marine cumulus clouds. *EGU General Assembly, Vienna Austria*.
- #Albrecht, B. A., P. Zuidema, C. S. Bretherton, R. Wood, and **V. P. Ghate**, 2015: Cloud System Evolution in the Trades – CSET. *AGU Fall Meeting*.
- #**Ghate, V. P.**, M. A. Miller and P. Zhu, 2015: Differences in tropical and trade-wind cumulus topped marine boundary layers. *Jet Propulsion Laboratory*.
- ***Ghate, V. P.**, M. A. Miller and P. Zhu, 2015: Similarities and differences in tropical and trade-wind cumulus topped marine boundary layers. *ARM/ASR Joint user facility PI meeting, Vienna, VA*.
- ***Ghate, V. P.**, M. P. Jensen and T. Toto, 2014: Transport of mass and water vapor in cumulus topped boundary layers: A case-study from ARM Darwin facility. *AGU Fall Meeting*.

- ***Ghate, V. P.**, M. P. Jensen, 2014: Transport of mass and water vapor in cumulus topped boundary layers: A case-study from ARM Darwin facility. *ASR working group meeting*.
- ***Ghate, V. P.**, M. A. Miller and B. A. Albrecht, 2014: On the dynamics and radiation of cumulus topped marine boundary layers. *Warm Low Cloud Thematic Group Breakout Session. ASR PI meeting 2014*.
- *Collis, S., S. Giangrande, K. North, **V. P. Ghate**, J. Helmus, A. Theisen, 2014: Prove It! ARM's progress towards a suite of verified precipitating cloud system retrievals. *ASR PI Meeting 2014*
- *Collis, S., J. Helmus, J. Leinonen, S. Giangrande, **V. P. Ghate**, C. Sivaraman, K. Gaustad, N. Bharadwaj, J. Monroe and B. Ermold, 2014: Data fusion in remote sensing in the ARM program using Python, *Fourth Symposium on Advances in Modeling and Analysis Using Python, American Meteorological Society Annual Meeting, Atlanta, Ga.*
- #**Ghate, V. P.**, 2013: Thermodynamics and radiation in stratocumulus topped boundary layers, *Department of Atmospheric and Oceanic Sciences, McGill University, Montreal Canada.*
- ***Ghate V. P.**, S. G. Decker and Mark Miller, 2013: Velocity scaling in stratocumulus topped boundary layer, *4th ASR Science team meeting, Potomac, MD*
- #**Ghate, V. P.** and J. Comstock, 2013: Past year activities of the ASR vertical velocity focus group. *4th ASR Science team meeting, Potomac, MD*
- #**Ghate, V. P.**, 2013: Dynamics, thermodynamics and radiation in a stratocumulus topped boundary layer. *Invited talk Argonne National Lab, Argonne IL.*
- #**Ghate, V. P.**, R. Coulter, J. Helmus and T. Martin, 2014: Updates on ARM RWP work at ANL. *ARM Radar Science Meeting, Miami FL*
- *Decker, S. G., **V. P. Ghate** and M. A. Miller, 2013: Large Eddy Simulations over Cape Cod in support of the ARM Two-Column Aerosol Project. *11th symposium on the coastal environment.*
- *M. A. Miller and **V. P. Ghate**: Unraveling the life-cycle of low clouds. *2012 ASR Fall working group meeting. Rockville, MD*
- *Zhu, P. and **V. P. Ghate**, 2012: Evaluation of parameterizations of the vertical fluxes induced by boundary-layer clouds using ARM observations and high resolution simulations. *3rd ASR Science Team Meeting, Arlington, VA*
- *Fang, M., B. A. Albrecht, **V. P. Ghate** and P. Kollias, 2011: A case study on turbulence in continental stratocumulus clouds. *Annual ASR working group meeting, Annapolis, MD.*
- ***Ghate, V. P.** and M. A. Miller 2011: Regimes of boundary-layer structure in the Azores using data from the ARM mobile facility. *Extended abstracts, 2nd annual ASR science team meeting, San Antonio TX.*
- *Fang, M., B. A. Albrecht, P. Kollias and **V. P. Ghate**, 2011: Turbulence estimates in continental Stratocumulus using ARM cloud radar observations. *35th Conference on Radar Meteorology.*
- *Fairall, C. W., K. Moran, S. Pezoa, D.E. Wolfe, S. de Szoek and **V. P. Ghate**, 2010: A new motion-stabilized W-band (94-GHz) cloud radar for observations of marine boundary-layer clouds. *15th International Symposium for the advancement of boundary layer remote sensing. Paris, France.*
- *Fairall, C. W., S. P. de Szoek, A. Brewer, P. Zuidema and **V. P. Ghate**, 2010: Retrieval of cloud microphysical and turbulence profiles using the NOAA/PSD W-band cloud radar from R/V Ronald H. Brown during the VOCALS-REx field program. *19th Symposium on Boundary Layers and Turbulence.*

***Ghate, V. P.**, B A. Albrecht and P. Kollias, 2008: Turbulence structure of continental boundary layer clouds. *2008 Annual ARM Science Team Meeting*, Norfolk, Virginia

***Ghate, V. P.**, B. Albrecht, P. Kollias, H. Jonsson and D. Breed, 2006: Cloud seeding as a technique for studying aerosol-cloud interactions in marine stratocumulus. *2006 Annual ARM science team meeting*, Annapolis Maryland

STUDENT ADVISING AS PRIMARY ADVISOR

Jacob Carlin, Rutgers University undergraduate honors thesis, 09/2011 – 05/2012

STUDENT ADVISING AS COMMITTEE MEMBER

Mampi Sarkar, University of Miami [PhD Dissertation Committee], 2017-present.

Allison Collopy, Rutgers University [PhD Dissertation Committee], 2013-2015

Matthew Niznik, Rutgers University [Oral Comprehensive Exam Committee], 06/2012

Ross Alter, Rutgers University [Oral Comprehensive Exam Committee], 06/2011

POSTDOCTORAL ADVISING AS A PRIMARY ADVISOR

Michael Christian Schwartz, University of Chicago Computation Institute, 08/2014-07/2017

POSTDOCTORAL ADVISING AS A SECONDARY ADVISOR

Paytsar Muradyan, Argonne National Laboratory, 06/2015-09/2017

Gokhan Sever, Argonne National Laboratory, 07/2016-present

CONFERENCE ABSTRACTS

Iltoviz, E., Raveh-Rubin, S., and **Ghate, V.**: Impact of Dry Intrusions on the Marine Boundary Layer, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-13042, <https://doi.org/10.5194/egusphere-egu2020-13042>, 2020

Mechem, D., and **V. P. Ghate**, 2019: Cloud, Precipitation, and Aerosol Properties for Open Cellular Convection Associated with a Cold-Air Outbreak over the Eastern North Atlantic. AGU Fall Meeting Abstracts.

Jensen, M.P., **Ghate, V.P.**, Wang, D., Apoznanski, D.K., Bartholomew, M.J., Giangrande, S.E., Johnson, K.L., and Thieman, M.M., 2019: Contrasting characteristics in open- and closed-cell stratocumulus in the Eastern North Atlantic. AGU Fall Meeting Abstracts 2019

Carlton, A. G., **Ghate, V. P.**, Cadeddu, M. P., Christiansen, A., Flesch, M., 2019: Cloudy and clear-sky differences in particle chemical composition and potential radiative impacts near the Southern Great Plains of Oklahoma. AGU Fall Meeting Abstracts 2019, A32H-05.

M. M. Flesch, A. G. Carlton, **V. P. Ghate**, and M. P. Cadeddu, 2019: Cloudy and clear-sky differences in particle chemical composition and the potential radiative impacts near the Southern Great Plains of Oklahoma. AGU Annual meeting, San Francisco, CA

Christiansen, A., **V. P. Ghate**, A. Carlton, 2018: Aerosol optical thickness: Organic composition, associated particle water and extinction aloft. *AGU annual meeting, Washington DC.*

- Sullivan, R., D. Cook, **V. P. Ghate**, V. R. Kotamarthi, and Y. Feng, 2018: Improved Spatiotemporal Representativeness and Bias Reduction of Satellite-Based Evapotranspiration Retrievals via Use of In Situ Meteorology and Constrained Canopy Surface Resistance. *AGU annual meeting, Washington DC*.
- Mohrmann, J., R. Wood, I. McCoy, and **V. P. Ghate**, 2018: An Assessment of Cloud Morphology Classification to Identify Boundary Layer Regimes in the Subtropical Stratocumulus-to-Cumulus Region. *AGU annual meeting, Washington DC*.
- Ghate, V. P.**, and M. P. Cadeddu, 2018: Microphysical and dynamical properties of drizzling marine boundary layer stratocumulus clouds. *AMS 5th Conference on Cloud Physics/15th Conference on Atmospheric Radiation*. Vancouver, Canada. July 9 -14, 2018
- Cadeddu, M. and **V. P. Ghate.**, 2017: Eight months of microwave and millimeter-wave tropospheric observations from the ARM West Antarctic Radiation Experiment (AWARE). *International Symposium on tropospheric profiling*, Fort Collins, CO USA, May 30, 2017 - June 2, 2017.
- Sever, Gökhan, S. Collis and **V. P. Ghate**, 2017: Large-eddy simulations of airflow dynamics and physics over the island of Graciosa. Abstract of presentation at the *18th WRF Workshop*, Boulder, CO, June 12, 2017 - June 16, 2017.
- Ghate, V. P.**, D. Mechem, E Eloranta, Maria Cadeddu and Michael Jensen, 2017: Stratocumulus-to-Cumulus Transition – A Case Study from North Pacific. *European Geophysical Union General Assembly*, Vienna Austria, April 23, 2017-April 28, 2017
- Cadeddu, M., D Lubin, A. Vogelmann and **V. P. Ghate**, 2017: Determination of cloud phase from active and passive sensors during AWARE. *2017 Atmospheric Radiation Measurement (ARM) /Atmospheric System Research (ASR) Joint User Facility and Principal Investigator Meeting*, Vienna, VA US, March 13, 2017-March 17, 2017.
- Ghate, V. P.**, D. Mechem, E Eloranta, M. Cadeddu and M. Jensen, 2017: Stratocumulus to cumulus transition: a case-study from the MAGIC field campaign. *2017 Atmospheric Radiation Measurement (ARM) Atmospheric System Research (ASR) Joint User Facility and Principal Investigator Meeting*, Vienna, VA US, March 13, 2017-March 17, 2017
- Sever, Gökhan, S. Collis and **V. P. Ghate**, 2017: Large-eddy simulations of airflow dynamics and physics over the island of Graciosa. *2017 Atmospheric Radiation Measurement (ARM)/Atmospheric System Research (ASR) Joint User Facility and Principal Investigator Meeting - Vienna, VA USA*, March 13, 2017 - March 17, 2017.
- Jensen, M. P., S. E. Giangrande, C. Gostic, D. Mechem, T. Toto, and **V. P. Ghate**, 2016: The shallow-to-deep transition in convective clouds during GOAmazon, *ARM/ASR Joint user facility PI meeting*.
- Ghate, V. P.**, and P. Kollias, 2016: Precipitation controls during the Amazonian dry season: Observations from the GOAmazon field campaign. *ARM/ASR Joint user facility PI meeting*
- Albrecht, B. A., **V. P. Ghate**, P. Kollias, and X. Zheng, 2016: Using ARM Nauru observations to evaluate a cloud-base mass flux parameterization for shallow marine cumuli. *ARM/ASR Joint user facility PI meeting*
- Muradyan, P., V. Rao Kotamarthi, R. Coulter, and **V. P. Ghate**, 2016: Estimates of lower-tropospheric divergence and average vertical motion in the southern great plains region. *ARM/ASR Joint user facility PI meeting*
- Nguyen, T. K., **V. P. Ghate**, and A. M. Carlton, 2015: Seasonal differences in aerosol water pay reconcile AOT and surface mass measurements in the Southeast US. *AGU Fall Meeting*.

- Ghate, V. P.**, B. A. Albrecht, H. H. Jonsson, and I. PopStefanija, 2015: On the use of radar echo from Chaff to study entrainment in Stratocumulus topped marine boundary layers. *AGU Fall Meeting*.
- Mohrmann, J., B. A. Albrecht, C. S. Bretherton, **V. P. Ghate**, P. Zuidema, and R. Wood, 2015: A novel approach to Lagrangian sampling of marine boundary layer cloud aerosol in the northeast Pacific: case studies from CSET. *AGU Fall Meeting*.
- Schwartz, M. C., **V. P. Ghate**, J. Vivekanandan, P. Tsai, and S. Ellis, 2015: Retrievals of vertical air motion from the HIAPER cloud radar during CSET. *AGU Fall Meeting*.
- Schwartz, M. C., and **V. P. Ghate**, 2015: Transition from Stratocumulus to Cumulus cloud regime: A case-study from MAGIC field campaign. *ARM/ASR Joint user facility PI meeting*.
- Ghate, V. P.**, R. Coulter and P. Kollias, 2015: Climatology of boundary layer depth at the ARM SGP central facility. *ARM/ASR Joint user facility PI meeting*.
- Ghate, V. P.**, M. A. Miller and B. A. Albrecht, 2014: On the dynamics and radiation of cumulus topped marine boundary layers. *2014 ASR PI meeting*.
- Troyan, D., K. Johnson, M. Jensen, P. Kollias and **V. P. Ghate**, 2014: WACR-ARSCL: Current status and future plans. *2014 ASR PI meeting*
- Miller, M. A., B. Raney, **V. P. Ghate** and S. Decker, 2014: A large eddy simulation of cloud radar observations. *2014 ASR PI meeting*.
- Zheng, X., B. A. Albrecht and **V. P. Ghate**, 2014: A numerical study on factors controlling the cumulus cloudiness variations at the ARM TWP Nauru site. *2014 ASR PI meeting*.
- Decker, S. D., **V. P. Ghate** and M. A. Miller, 2014: The mesoscale structure of drizzling stratocumulus clouds: Perspective from observations and large eddy simulations, *2014 Annual AMS meeting*, Atlanta Georgia.
- Ghate, V. P.** and M. A. Miller, 2013: Effects of clouds on cross-atmospheric radiative flux divergence: case studies in different cloud conditions. *AGU Fall Meeting*, San Francisco, CA.
- Ghate, V. P.**, Mark A. Miller and B. A. Albrecht, 2013: Thermodynamic and radiative structure of cumulus topped marine boundary layers, *4th ASR science team meeting*, Potomac MD.
- Newsom, R., **V. P. Ghate**, P. Kollias, L. Berg and J. Comstock, 2013: The Doppler lidar boundary-layer turbulence statistics value-added product, *4th ASR science team meeting*, Potomac MD.
- Miller, M., **V. P. Ghate**, S. G. Decker and B. Raney, 2013: Forward modeling of radar observables using a large eddy simulation model: A new approach to optimization of cloud radar scan strategies. *4th ASR science team meeting*, Potomac MD.
- Ghate, V. P.**, M. A. Miller and B. A. Albrecht, 2012: Thermodynamic and radiative structure of stratocumulus topped boundary layer. *3rd ASR Science Team Meeting*, Arlington, VA
- DiPreto, L., M. A. Miller and **V. P. Ghate**, 2012: Observation and model comparison of the thermodynamic environment using the microwave radiometer profiler. *3rd ASR Science Team Meeting*, Arlington, VA
- Wyant, M and co-authors, 2012: Science highlights from the CAP-MBL field campaign at Graciosa Island. *3rd ASR Science Team Meeting*, Arlington, VA
- Albrecht, B. A., **V. P. Ghate** and P. Kollias, 2012: What controls the fractional cloudiness of fair-weather cumuli in a tropical marine environment? *3rd ASR Science Team Meeting*, Arlington, VA

- Marquardt, A., M. A. Miller and **V. P. Ghate**, 2012: A one-year study of the diurnal cycle of clouds and radiation in the West African Sahel region. *3rd ASR Science Team Meeting*, Arlington, VA
- Miller, M. A., **V. P. Ghate**, L. DiPreto and R. Zahn, 2011: The radiation budget of the West African Sahel and its controls: A perspective from observations and global climate models. *Annual ASR working group meeting*, Annapolis, MD.
- Ghate, V. P.**, M. A. Miller and B. A. Albrecht, 2011: Thermodynamic structure of stratocumulus topped boundary layer. *Annual ASR working group meeting*, Annapolis, MD.
- Fang, M., B. A. Albrecht and **V. P. Ghate**, 2011: Turbulence Estimates in Continental Stratocumulus Using ARM Cloud Radar Data. Extended abstracts, *2nd annual ASR science team meeting*, San Antonio, TX.
- Albrecht, B. A., P. Kollias and **V. P. Ghate**, 2011: Controls on cloud base mass flux and cloudiness of fair-weather cumuli in a marine environment. *Extended abstracts, 2nd annual ASR science team meeting*, San Antonio, TX.
- Miller, M. A., R. Zahn and **V. P. Ghate**, 2011: Pico and Graciosa cloud optical thickness experiment. *Extended abstracts, 2nd annual ASR science team meeting*, San Antonio, TX.
- Ghate, V. P.**, B. A. Albrecht, M. A. Miller, C. W. Fairall and A. Brewer, 2010: A case-study on stratocumulus topped marine boundary layer observed during VOCALS-Rex. *Fall meeting, AGU*, San Francisco, Cali, 13-17 Dec
- Albrecht, B. A., **V. P. Ghate** and P. Kollias, 2010: Factors controlling boundary layer cloud fraction and mass flux at the ARM Nauru Site. *Extended abstracts, ARM-CONF-2010*, Washington DC
- Miller, M. A., **V. P. Ghate** and R. Zahn, 2010: Global climate model performance in west Africa: realizing the goals of RADAGAST. *Extended abstracts, ARM-CONF-2010*, Washington DC
- Ghate, V. P.**, and M. A. Miller, 2010: Morphology and dynamics of non-precipitating marine fair weather cumulus clouds. *Extended abstracts, ARM-CONF-2010, Washington DC*.
- Ghate, V. P.**, B. A. Albrecht and P. Kollias, 2009: Diurnal variations in turbulence and mass- transports in continental boundary layer stratocumulus clouds from millimeter wavelength radar observations. Extended abstracts, *34th Conf. on Radar Meteorology*, Williamsburg, VA
- Ghate, V. P.**, B. A. Albrecht and P. Kollias, 2008: Turbulence structure of continental stratocumulus clouds. Extended abstracts, *15th Internat. conf. on cloud and precip. (ICCP)*, Cancun, Mexico.
- Albrecht, B. A., P. Kollias and **V. P. Ghate**, 2007: Observations and parameterization of boundary layer structures and clouds at ARM TWP Nauru site, *ARM-CONF-2007*, Monterey California.
- Ghate, V. P.**, B. A. Albrecht, C. W. Fairall, R. A. Weller, 2007: Climatology of marine stratocumulus cloud fraction in south-east pacific using surface longwave radiative flux observations. *Eos Trans. AGU*, 88(23), *Jt. Assem. Suppl.*, Abstract A23B-07
- Ghate, V. P.**, B. Albrecht, P. Kollias, H. Jonsson and D. Breed 2006: A new Technique for Studying Aerosol-Cloud Interactions in Marine Stratocumulus., *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract A33B-1005
- Ghate, V. P.**, I. Jo, E. Serpetzoglou, B. A. Albrecht, P. Kollias and J. B. Mead, 2005: High resolution observations of drizzle from stratocumulus using a 95 GHz FMCW radar.

Extended abstracts, 32nd Conf. on Radar Meteorology, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, P1R.1.

FIELD EXPERIMENT PARTICIPATION

Cloud System Evolution in the Trades (CSET) 2015

- Research flights made in summer 2015 using the NCAR's High Performance Instrumented Airborne Platform for Environmental Research (HIAPER) to study transition of stratocumulus to cumulus clouds in the North Pacific. I was part of the site operations and instrumentation teams.

Stratocumulus Entrainment and Precipitation Studies (SEPS) 2014

- An aircraft field campaign to study the effects of entrainment and precipitation on marine stratocumulus clouds. I was part of the team responsible for planning and conducting the flights as well as the team for analyzing collected data.

Southeast Asia Composition, Cloud, Climate Coupling Regional Study (SEAC⁴RS) 2012

- Research cruise conducted off of the coast of Philippines to characterize the aerosol and cloud structure in the region. Responsible for operating cloud radar and lidar.

Key West Aerosol Cloud Experiment (KWACEX) 2012

- Flight experiment conducted to study aerosol-cloud interaction pertaining to tropical cumulus clouds. Part of a group conducting routine research flights to observe the tropical cumuli.

Cloud and Precipitation Study (CPS) 2008

- Field campaign to study the cloud and precipitation structure associated with tropical cyclones. Part of the group operating two Doppler cloud radars.

VAMOS Ocean-Cloud-Atmosphere-Land Study Regional Experiment (VOCALS Rex) 2008

- Multi-institution field campaign conducted to study marine stratocumulus clouds. Part of the science team conducting routine research flights to observe cloud and boundary layer structure over the South-East Pacific region.

Monterey 2006

- Flight experiment conducted to do cloud seeding experiment in the stratocumulus cloud deck observed in the North-East Pacific. Part of a team to conduct routine research flights.

Stratus 2005 and Stratus 2006;

- Research cruises conducted to overhaul buoy and observe stratocumulus clouds in the South-East Pacific. Responsible for operating cloud radars.

Rain In Cumulus over Ocean (RICO) 2005

- Multi-institution field campaign conducted to study trade wind cumulus clouds over the tropical Atlantic. Part of the scientific crew onboard R/V Seaward Johnson operating cloud radars.

Tropical Atmosphere Ocean (TAO) 2004

- Research cruise conducted to overhaul buoys and to observe clouds over tropical East Pacific. Part of a team operating the meteorological instrumentation onboard R/V Ronald H. Brown.

WEB PRESENCE

Argonne Homepage

<https://www.anl.gov/profile/virendra-p-ghate>

Google Scholar Page

<https://scholar.google.com/citations?user=nU-ILyoAAAAJ&hl=en>

News Highlight on AWARE field campaign,

<https://www.anl.gov/article/clouds-with-a-chance-of-warming>

News Highlight on CSET field campaign

<https://www.ci.uchicago.edu/blog/real-cloud-computing>

News Highlight on SEPS field campaign

<http://www.evs.anl.gov/research-areas/highlights/seps.cfm>

News Highlight on the VOCALS article

<http://www.evs.anl.gov/research-areas/highlights/vocals.cfm>

Research Highlight on the Aerosol Liquid Water article

<https://www.arm.gov/research/highlights/722>

Research Highlight on the GO Amazon article

<https://www.arm.gov/research/highlights/721>

Research Highlight on the Entrainment article

<https://www.arm.gov/research/highlights/657>

Research Highlight on Cumulus article

<https://www.arm.gov/research/highlights/648>

Research Highlight on the VOCALS article

<https://www.arm.gov/research/highlights/537>

Research Highlight on SGP turbulence article

<https://www.arm.gov/research/highlights/527>

ARM RWP Value Added Product (VAP) Highlight

<https://www.arm.gov/capabilities/vaps/rwpwind-134>

ARM PI Product Highlight

<https://www.arm.gov/data/data-sources/rwp-93>

ARM RWP Data Announcement

<https://www.arm.gov/news/data/post/43881>

DOE ASR Scientist Profile

<https://asr.science.energy.gov/?p=8943>

SERVICE

Member of Organizing Committee, Workshop for Research Needs for Offshore Wind Resource Characterization, Scheduled March 5-6, 2019. Washington DC.

Session Co-chair (with Alison Nugent), shallow cloud session during the tenth symposium on aerosol-cloud-climate interactions during the AMS's 99th annual meeting held in Phoenix, AZ in January 2019.

Instructor in the second ARM summer training and science application event on observations and modeling of aerosols, clouds, and precipitation. National Weather Service, Norman, OK. 07/14-07/21, 2018.

Session Co-chair (with Alison Nugent), shallow cloud session during the tenth symposium on aerosol-cloud-climate interactions during the AMS's 98th annual meeting held in Austin, TX in January 2018.

Session Co-chair (with Ya-Chien Feng), Studies of non-hydrometeorological returns during the AMS's 38th conference on radar meteorology held in Chicago, IL. August 2017.

Member of Organizing Committee, Workshop for Lightweight and Low-power Sensors for Environmental Measurements, Argonne National Laboratory, September 20, 2016. <http://www.mcs.anl.gov/~beckman/LowPowerSensors2016.html>

Instructor in the first ever ARM summer training and science application event on observations and modeling of aerosols, clouds, and precipitation. National Weather Service, Norman, OK. 07/15-07/24, 2015.

Session Co-Convener (with M. Jensen and P. Kollias), Convective Cloud Processes, AGU Joint assembly, Montreal 2015.

Co-lead (with J. Comstock, PNNL) of the Vertical Velocity Focus Group (VVFG) within the Atmospheric System Research (ASR) program. 2012 – Present

Session Co-Convener (with J. Mather and J. Comstock), Observing and modeling atmospheric vertical motion, American Geophysical Union Fall Meeting, 2013

Member, Department of Environmental Sciences graduate admissions committee, 2012 – 2014

Instructor, Designed and conducted a 5 day workshop aimed to give an overview of instrumentation at the ARM Mobile Facility and the possible usage of the collected data at the Aryabhata Research Institute of Observational Sciences (AIRES), Nainital India, 11/2011

PUBLICATION REVIEW SERVICE

Journal of Atmospheric Sciences; Journal of Atmospheric and Oceanic Technology; Journal of Applied Meteorology and Climatology; Journal of Climate; Monthly Weather Review; Bulletin of American Meteorological Society; Geophysical Research Letters; Journal of Geophysical Research; Reviews of Geophysics; Atmospheric Chemistry and Physics; Atmospheric Measurement Techniques; Journal of Atmospheric Research; Boundary Layer Meteorology; Quarterly Journal of Royal Meteorological Society.

GRANT REVIEW SERVICE

National Science Foundation Physical Meteorology Program
National Science Foundation Atmospheric Chemistry Program
Department of Energy – Atmospheric System Research Program
Department of Energy – Wind Technology Program
National Aerospace and Space Administration (NASA)

PROFESSIONAL AFFILIATIONS

American Meteorological Society (AMS)
American Geophysical Union (AGU)
Department of Energy (DOE)'s Atmospheric Radiation Measurement (ARM) program
DOE Atmospheric System Research (ASR) Program

COLLABORATORS DURING LAST 5 YEARS

In alphabetical order and excluding coworkers

Bruce Albrecht (U. Miami), Chris Bretherton (U. Washington), Ann Marie Carlton (U. California, Irvine), Susan Crewell (U. Cologne), Edward Eloranta (U. Wisconsin), Scott Ellis (EOL-NCAR), Michael Jensen (BNL), Pavlos Kollias (BNL), Yangang Liu (BNL), Dan Lubin (U. California, San Diego), David Mechem (U. Kansas), Mark Miller (Rutgers U.), T. K. V. Nguyen (EPA), Michelle Nordeen (SSAI), Joseph Olson (UC Boulder and NOAA ESRL), William Smith Jr. (NASA), Bjorn Stevens (MPI-Met), Pei Tsai (EOL-NCAR), J. Vivekanandan (EOL-NCAR), Jim Wilczak (NOAA-ESRL), Robert Wood (U. Washington), Xue Zheng (LLNL), Ping Zhu (Florida International U.), Paquita Zuidema (U. Miami),