

## CURRICULUM VITAE

CYNTHIA H. TWOHY

### EDUCATION:

Ph.D., Atmospheric Sciences, University of Washington, 1992.

M.S., Atmospheric Sciences, University of Washington, 1988.

B.S., Summa Cum Laude, University of California at Davis, 1981.

### EXPERIENCE:

#### *Sr. Research Scientist—Northwest Research Associates (2014-present)*

Conducts independent and collaborative research on aerosol particles and clouds, using both field research and modeling. Current interests include the effects of mineral dust and biological particles on cloud microphysics and climate.

#### *Visiting Researcher—Scripps Institution of Oceanography (2013-present)*

#### *Professor--Oregon State University (2009-2014)*

#### *Associate Professor--Oregon State University (2003-2009)*

#### *Assistant Professor--Oregon State University (1998-2003)*

#### *Scientist--National Center for Atmospheric Research (1994-1998)*

Developed and supported the research applications of NCAR aircraft and instrumentation, including airborne aerosol and cloud microphysical measurement capabilities at the Research Aviation Facility. Performed wind tunnel studies and airflow modeling and developed inlets. Conducted independent and collaborative research on aerosols, cloud physics and cloud chemistry. Provided support for the Counterflow Virtual Impactor.

#### *Postdoctoral Fellow--National Center for Atmospheric Research (1992-1994)*

#### *Graduate Research Fellow--National Center for Atmospheric Research (1990-1992)*

#### *Scientific Visitor--National Center for Atmospheric Research (1988-1990)*

#### *Research/Teaching Assistant--University of Washington (1985-1988)*

#### *Senior Food Technologist--Case-Swayne Co, Inc. (1981-1985)*

*Airborne Atmospheric Research (Over thirty projects between 1987 and present):*

Airborne Research Instrumentation and Testing Opportunity (NCAR G-V), 2017.  
Instrument Development and Education in Atmospheric Science-IV (NCAR G-V), 2013.  
Ice in Clouds--Tropical Experiment (NCAR C-130), 2011.  
Pre-Depression Investigation of Cloud-systems in the Tropics (NCAR Gulfstream-V), 2010.  
VAMOS Ocean-Cloud-Atmosphere-Land Study (NCAR C-130), 2008.  
Ice in Clouds--Layer Experiment (NCAR C-130), 2007.  
Tropical Composition, Cloud and Climate Coupling (NASA DC-8), 2007.  
Pacific Dust Experiment (NCAR Gulfstream-V), 2007  
NASA African Monsoon Multidisciplinary Analysis (NASA DC-8), 2006.  
Costa-Rica AURA Validation Experiment (NASA WB-57F), 2006.  
Rain in Cumulus over the Ocean (NCAR C-130), 2004-2005.  
Mid-latitude Cirrus Experiment (NASA WB-57F), 2004.  
Alliance Icing Research Study-II (NCAR C-130), 2003.  
Instrument Development and Education in Atmospheric Science-III (NCAR C-130), 2003.  
Cirrus Regional Study of Tropical Anvils and Cirrus Layers (UND Citation), 2002.  
Instrument Development and Education in Atmospheric Science-II (NCAR C-130), 2002.  
Convection and Moisture Experiment-IV (NASA DC-8), 2001.  
Dynamics and Chemistry of Marine Stratocumulus (NCAR C-130), 2001.  
Atmospheric Radiation Measurement (ARM) Cloud IOP (UND Citation), 2000.  
Indian Ocean Experiment (NCAR C-130), 1999.  
Stratosphere-Troposphere Experiment: Radiation, Aerosols, and Ozone (WB-57F), 1998.  
Lake-Ice (NCAR Electra), 1997/1998.  
C-130 Aerosol Inlet Evaluation-II (NCAR C-130), 1997.  
Subsonic Aircraft: Contrail and Cloud Effects Special Study (NASA DC-8), 1996.  
C-130 Aerosol Inlet Evaluation (NCAR C-130), 1995.  
Southern Ocean Cloud Experiment II (CSIRO F-27), 1995.  
Winter Storms Project (NCAR Electra), 1994.  
Stratospheric Photochemistry, Aerosols, and Dynamics Exp. (NASA ER-2), 1993.  
Southern Ocean Cloud Experiment (CSIRO F-27), 1993.  
Kuwait Oil-Fire Smoke Experiment (NCAR Electra), 1991.  
Hawaiian Rainband Project (NCAR Electra), 1990.  
Cloud Droplet Chemistry (NCAR King Air), 1989.  
ERICA (NCAR Electra and Sabreliner), 1989.  
First ISCCP Regional Experiment (U. Washington Convair), 1987.  
NSF Cloud Chemistry Program (U. Washington Convair), 1987.

**HONORARY AND PROFESSIONAL ACTIVITIES:**

Proposal and paper reviewer for NSF, NASA, European and Middle Eastern science foundations,  
U.S. and international journals, including panel reviews for NASA and NSF (1992-present)  
Editor (Aerosols and Clouds), Bulletin of the American Meteorological Society (2010-present)  
Editorial Board, Atmospheric Chemistry and Physics Special Issue on VOCALS (2009-present)

Commissioner, International Commission on Clouds and Precipitation, IUGG (2008-2016)  
Frontiers in Global Change Invited Speaker, Pacific Northwest National Laboratory (2013)  
Invited Speaker, European HALO-HIAPER Aircraft Workshop (2013)  
National Science Foundation Committee of Visitors Review Panel, Atmospheric and Geospace Sciences Division (2013)  
Conference Chair, American Association for Aerosol Research (2009-2010)  
Invited Author, European Facility for Airborne Research (EUFAR) book on Airborne Measurements (2009-2013)  
Steering Committee, NSF/NASA/DOE Measurement of Ice in Clouds Workshop (2010)  
Editorial Board, Aerosol Science and Technology (2003-2011)  
Invited Speaker, IGBP/IGAC/GEWEX International Workshop (2007)  
Attributed Reviewer, WMO/UIGG Report on Aerosol Pollution Impact on Precipitation (2007)  
NASA Group Achievement Award, NAMMA Experiment (2007)  
NASA Group Achievement Award, TC-4 Experiment (2007)  
Invited Speaker, U.C. Berkeley 5th Annual Atmospheric Science Symposium (2005)  
Board of Directors, American Association for Aerosol Research (2003-2006)  
Editor, American Association for Aerosol Research Newsletter (2005-2006)  
Assistant Editor, American Association for Aerosol Research Newsletter (2003-2005)  
NASA Group Achievement Award, CRYSTAL-FACE Experiment (2003)  
NSF Geosciences Education Review Panel (2003)  
NSF Observing Facilities Advisory Panel, (2002-2005, 3 year term)  
Chair, Atmos. Aerosols Working Group, American Assn for Aerosol Research (2001-2002)  
Vice-Chair, Atmos. Aerosols Working Group, Am. Assn for Aerosol Research (2000-2001)  
Co-Chair, NSF HIAPER Working Group on Inlets and Airflow (2002-2005)  
Mentor at Association for Women in Science Workshop (2002)  
Marquis Who's Who in Science and Engineering (2005, 2007, 2008-2009)  
Marquis Who's Who in America (2002, 2007, 2013, 2014)  
Marquis Who's Who in the World (2001)  
NCAR WB-57F Aircraft Mission Scientist (1997-1998)  
NCAR Aerosol Program Steering Committee (1996-1998)  
Science Fair Judge, Kohl Elementary School, Broomfield, CO (1996-1998)  
Chair, NCAR C-130 Working Group on Aerosols and Inlets (1995-1996)  
NASA Astronaut Candidate Finalist (1995)  
Chair, NCAR Atmospheric Technology Divisional Equity Committee (1994)  
United Way Math Tutor, Lafayette, CO (1992-1993)  
NCAR Postdoctoral Fellowship (1992-1994)  
NCAR Graduate Research Fellowship (1990-1992)  
Panhellenic Scholarship Award, University of California at Davis (1980)  
Phi Kappa Phi (US National Honor Society)  
Prytanean Women's Honor Society  
American Meteorological Society  
American Geophysical Union  
American Association for Aerosol Research  
Multiple committees at Oregon State University

## FUNDED PROPOSALS:

- “Collaborative Research: Field Measurements of Clouds and Aerosol Particles over the Southern Ocean in SOCRATES”, funded by NSF AGS. Funding (2017-20): *\$341K*
- “Collaborative Research: Western wildfire Experiment for Cloud chemistry, Aerosol absorption and Nitrogen (WE-CAN)”, subcontract through University of Colorado funded by NSF AGS. Funding (2017-20): *\$95K*
- “Collaborative Research: The Influence of Tropical Convection on the Evolution and Transport of the Saharan Air Layer”, funded by NSF AGS. Funding (2014-17): *\$305K*
- “Impact of Mineral Dust on Lifecycle of Tropical Convection”, funded by NSF ATM. Funding (10-14): *\$325K + \$13K Supplement*.
- “Collaborative Research: Interaction of Aerosols with Marine Boundary Layer Clouds in the VOCALS Regional Experiment”, funded by NSF ATM. Funding (08-12): *\$187K*.  
Research Experience for Undergraduates—Supplement funded by NSF-ATM. Funding (09): *\$7K*.
- “Ubiquitous Small Ice Crystals in Cirrus Clouds: Fact or Fiction?”, funded by NASA. Funding (08-13): *\$225K*.
- “An Aircraft Study of the Characterization and Evolution of Supercooled and Mixed-Phase Clouds—PACDEX SUPPLEMENT”, funded by NSF ATM. Funding (07-09): *\$80K*.
- “Microphysical Measurements and Analysis in Support of the Tropical Composition, Cloud, and Climate Coupling Experiment”, subcontract to NCAR, funded by NASA. Funding (07-10): *\$73K*
- “Effects of Aerosols on Microphysical Properties of Springtime Clouds Containing Ice”, funded by NSF ATM. Funding (06-09): *\$311K*.
- “Microphysical Measurements and Analysis in Support of the NASA African Monsoon Multidisciplinary Activities (NAMMA)”, funded by NASA. Funding (06-09): *\$193K*.
- “Investigations of Aerosol Radiative Forcing in Cloudy Regions”, funded by NOAA AGP. Funding (06-09): *\$305K*. (*Co-investigator with Jim Coakley*)
- “Research Experience for Undergraduates—Supplement funded by NSF-ATM. Funding (05-06): *\$7K*.
- “Droplet Nuclei and Condensed Water Content in Mixed-Phase Clouds”, funded by NSF-ATM. Funding (03-06): *\$280K*.
- “Droplet Nuclei and Condensed Water Content in Mixed-Phase Clouds”, funded by NSF-ATM. Supplemental Funding for RICO Experiment (03-06): *\$56K*.
- “Ice Water Content in Mid-Latitude Cirrus”, funded by NASA Code YS. Funding (04-05): *\$40K*.
- “Interactions of Aerosol Particles and Marine Stratocumulus Clouds”, funded by NSF ATM. Funding (01-04): *\$202K*.
- “Parameterizations of the Vertical Variability of Tropical Cirrus Microphysical and Radiative Properties”, funded by NASA. Funding (01-03): *\$172K*.
- “Development of a Compact Cloud Spectrometer and Impactor (Phase II)”, funded by NSF STTR program. Funding (01-03): *\$138K*.
- “Microphysical Observations in Support of the Convection and Moisture Experiment (CAMEX-4)”, funded by NASA. Funding (01-03): *\$94K*.
- “Characteristics of Cloud Nucleating Aerosols in INDOEX”, funded by NSF ATM. Funding (00-02): *\$198K*.

“Development of a Compact Cloud Spectrometer and Impactor (Phase I)”, funded by NSF STTR program. Funding (00): \$35K.

“Deployment of a Counterflow Virtual Impactor in Support of the March, 2000 Cloud IOP”, funded by DOE/Battelle. Funding (99-00): \$63K.

"Optical Spectrometer", with D. Baumgardner of NCAR and Spec., Inc., funded by NASA SBIR program. Funding (98-00): \$150K.

"Analysis of SUCCESS Contrail and Cirrus Microphysical and State Parameter Data and Conceptual/Numerical Model Development", with A. Heymsfield of NCAR, funded by NASA's Atmospheric Effects of Aviation/Subsonic Assessment. Funding (97-99): \$301K.

"Lake-Ice CVI", with Ken Beard and Harry Ochs of University of Illinois, funded by National Science Foundation/ U. Illinois. Funding (97-99): \$7K.

“In-Situ Measurement of Cirrus Cloud Properties” with B. Gandrud of NCAR, funded by NASA's Atmospheric Effects of Aviation/Subsonic Assessment. Funding (95-97): \$320K.

“Southern Hemisphere Cloud Condensation Nuclei” with J. Hudson of Desert Research Institute, funded by NASA's Mission to Planet Earth. Total funding (93-96): \$115K.

“C-130 Aerosol Inlet Evaluation” with D. Rogers and L. Radke. *Thirty flight hours* on NCAR C-130 awarded by OFAP (4/95).

"Cloud Droplet Chemistry Experiment" with B. Huebert and R. J. Charlson. *Fifty flight hours* on NCAR King Air awarded by OFAP (9/89).

#### **PUBLIC & COMMUNITY SERVICE:**

Volunteer at Homeward Bound Pets (no-kill animal shelter), McMinnville, OR (2005-2013)

Association for Women in Science workshop mentor, Corvallis, OR (2001)

Science Fair Judge, Kohl Elementary School, Broomfield, CO (1996-1998)

Master Gardener, Colorado State University Cooperative Extension (1996-1997)

Convalescent Home Pet Visitation, Thornton, CO (1995-1997)

United Way Math Tutor, Lafayette, CO (1992-1993)

#### **PUBLICATIONS: Cynthia H. Twohy**

##### **Thesis:**

Twohy, C.H., 1988: Sampling and analysis of cloud droplets by aircraft using a counterflow virtual impactor. M.S. Thesis, University of Washington, Department of Atmospheric Sciences, 133 pp.

Twohy, C.H., 1992: On the size dependence of the chemical properties of cloud droplets: exploratory studies by aircraft. *NCAR Cooperative Thesis CT-137*, University of Washington (Department of Atmospheric Sciences) and National Center for Atmospheric Research, 239 pp

## Refereed (Published, In Press and Submitted):

- Charlson, R.J., C.H. Twohy and P.K. Quinn, 1988: Physical influences of altitude on the chemical properties of clouds and of water deposited from the troposphere. In *Acid Deposition at High Altitude Sites*. M. H. Unsworth and D. Fowler (eds.), Kluwer Academic Publishers.
- Twohy, C. H., P. Austin and R. J. Charlson, 1989: Chemical consequences of the initial diffusional growth of cloud droplets: a clean marine case. *Tellus*, **41B**, 51-60.
- Twohy, C. H., A. D. Clarke, S. G. Warren, L.F. Radke and R. J. Charlson, 1989: Light-absorbing material extracted from cloud droplets and its effect on cloud albedo. *J. Geophys. Res.*, **94**, 8623-8631.
- Twohy, C.H. and D. Rogers, 1993: Airflow and water drop trajectories at instrument sampling points around the Beechcraft King Air and Lockheed Electra. *J. Atmos. Oceanic Technol.*, **10**, 566-578.
- Drdla, K., A. Tabazadeh, R. P. Turco, M. Z. Jacobson, J.E. Dye, C. Twohy and D. Baumgardner, 1994: Analysis of the physical state of one Arctic polar stratospheric cloud based on observations. *Geophys. Res. Lett.*, **21**, 2475-2478.
- Twohy, C. H., P. A. Durkee, B. J. Huebert and R. J. Charlson, 1995: Effects of aerosol particles on the microphysics of coastal stratiform clouds. *J. Climate*, **8**, 773-783.
- Twohy, C. H., and J. G. Hudson, 1995: Measurements of cloud condensation nucleus spectra within maritime cumulus cloud droplets: Implications for mixing processes. *J. Appl. Meteor.*, **34**, 815-833.
- Twohy, C. H., A.J. Schanot and W. A. Cooper, 1997: Measurement of condensed water content in liquid and ice clouds using an airborne counterflow virtual impactor. *J. Atmos. Oceanic Tech.*, **14**, 197-202.
- DeMott, P. J., D. C. Rogers, S. M. Kreidenweis, Y. Chen, C. H. Twohy, D. Baumgardner, A. J. Heymsfield, and K. R. Chan, 1998: The role of heterogeneous freezing nucleation in upper tropospheric clouds: Inferences from SUCCESS. *Geophys. Res. Lett.*, **25**, 1387-1390.
- Gerber, H., C. H. Twohy, B. Gandrud, A. J. Heymsfield, G. M. McFarquhar, P. J. DeMott, and D. C. Rogers, 1998: Measurements of wave-cloud microphysical properties with two new aircraft probes. *Geophys. Res. Lett.*, **25**, 1117-1120.
- Heymsfield, A. J, L. M. Miloshevich, C. Twohy, G. Sachse, and S. Oltmans, 1998: Upper tropospheric relative humidity observations and implications for cirrus ice nucleation. *Geophys. Res. Lett.*, **25**, 1343-1346.
- Jensen, E. J., O. B. Toon, S. Kinne, G. W. Sachse, B. E. Anderson, K. R. Chan, C. H. Twohy, B. Gandrud, A. Heymsfield, and R. C. Mialke-Lye, 1998: Environmental conditions required for contrail formation and persistence. *J. Geophys. Res.*, **103**, 3929-3936.
- Jensen, E.J., O.B. Toon, A. Tabazadeh, G.W. Sachse, B. E. Anderson, K. R. Chan, C. Twohy, B. Gandrud, S. M. Aulenchbach, A. Heymsfield, J. Hallett, and B. Gary, 1998: Ice nucleation processes in upper tropospheric wave-clouds observed during SUCCESS. *Geophys. Res. Lett.*, **25**, 1363-1366.
- Laucks, M.L., and C. H. Twohy, 1998: Size-dependent sampling efficiency of an airborne counterflow virtual impactor. *Aer. Sci. and Tech.*, **28**, 40-61.
- Twohy, C.H., 1998: Model calculations and wind tunnel testing of an isokinetic shroud for high-speed sampling. *Aer. Sci. and Tech.*, **29**, 261-280.
- Twohy, C. H., and B. W. Gandrud, 1998: Electron microscope analysis of residual particles from

- aircraft contrails. *Geophys. Res. Lett.*, **25**, 1359-1362.
- Vay, S. A., B. E. Anderson, G.W. Sachse, J. E. Collins, J. R. Podolske, C. H. Twohy, B. Gandrud, K. R. Chan, S. L. Baughcum, and H. A. Wallio, 1998: DC-8-based observations of aircraft CO, CH<sub>4</sub>, N<sub>2</sub>O, and H<sub>2</sub>O emission indices during SUCCESS. *Geophys. Res. Lett.*, **25**, 1717-1720.
- Weinheimer, A. J., T. L. Campos, J. G. Walega, F. E. Grahek, B. A. Ridley, D. Baumgardner, C. H. Twohy, B. Gandrud, and E. J. Jensen, 1998: Uptake of NO<sub>y</sub> on wave-cloud ice particles. *Geophys. Res. Lett.*, **25**, 1725-1728.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2000: Mixing of atmospheric gas concentrations. *Phys. Res. Lett.*, **84**, 4010-4013.
- Blomquist, B. W., B. J. Huebert, S. G. Howell, M. Litchy, C. H. Twohy, A. Schanot, D. Baumgardner, B. Lafleur, R. Seebaugh and M. L. Laucks, 2001: An evaluation of the community aerosol inlet for the NCAR C-130. *J. Atmos. Ocean. Tech.*, **18**, 1387-1397.
- Clement, C. F., I. J. Ford and C.H. Twohy, 2001: Fluctuations in aerosols and trace gas concentrations following mixing in the upper troposphere, *J. Aerosol Sci.*, **32**, 1045-1046.
- Jensen, E. J., O. B. Toon, S. A. Vay, J. Ovarlez, R. May, P. Bui, C. H. Twohy, B. W. Gandrud, Pueschel, R.F. and U. Schumann, 2001: Prevalence of ice supersaturated regions in the upper troposphere: implications for optically thin ice cloud formation. *J. Geophys. Res.*, **106**, 17,253-17,266.
- Twohy, C. H., J. G. Hudson, S. S. Yum, J. R. Anderson, S. K. Durlak, and D. Baumgardner, 2001: Characteristics of cloud nucleating aerosols in the Indian Ocean region. *J. Geophys. Res.*, **106**, 28699-28710.
- Baumgardner, D., J-F. Gayet, H. Gerber, A. Korolev and C. Twohy, 2002: Clouds: Measurement Techniques In Situ. In *Encyclopedia of Atmospheric Sciences*. J. R. Holton, J. A. Curry and Pyle J (eds.), Academic Press, London, pp 489-498.
- Clement, C. F., I. J. Ford, C. H. Twohy, A. Weinheimer and T. Campos, 2002: Particle production in the outflow of a mid-latitude storm. *J. Geophys. Res.*, **107**, 4559, doi: 10.1029/2001JD001352.
- Heymsfield, A. J., A. Bansemer, S. Lewis, J. Iaquinta, M. Kajikawa and C. Twohy, 2002: A general approach for deriving the properties of cirrus and stratiform ice cloud particles. *J. Atmos. Sci.*, **59**, 3-29.
- Twohy, C. H., C. F. Clement, B. W. Gandrud, A. J. Weinheimer, T. Campos, D. Baumgardner, W. H. Brune, I. Faloona, D. Tan, G. W. Sachse and S. A. Vay, 2002: Deep convection as a source of new particles in the midlatitude upper troposphere. *J. Geophys. Res.*, **107**, 4560, doi: 10.1029/2001JD000323.
- Garrett, T. J., H. Gerber, D. G. Baumgardner, C. H. Twohy, and E. M. Weinstock, 2003: Small, highly reflective ice crystals in low-latitude cirrus. *Geophys. Res. Lett.*, **30** (21), 2132, doi:10.1029/2003GL018153.
- Stevens, B., D. H. Lenschow, G. Vali, H. Gerber, ...C. Twohy et al., 2003: Dynamics and chemistry of marine stratocumulus—DYCOMS-II. *Bull. of Amer. Meteor. Soc.*, **84**, 579-593.
- Twohy, C. H., J. W. Strapp, and M. Wendisch, 2003: Performance of a counterflow virtual impactor in the NASA Icing Research Tunnel. *J. Atmos. Ocean. Tech.*, **20**, 781-790.
- Beard, K.V., H. T. Ochs, and C. H. Twohy, 2004: Aircraft measurements of high average charges on cloud drops in stratiform clouds. *Geophys. Res. Lett.*, **31**, L14111, doi:10.1029/2004GL020465.

- Heymsfield, A. J., A. Bansemer, C. Schmitt, C. Twohy, and M. R. Poellot, 2004: Effective ice particle densities derived from aircraft data. *J. Atmos. Sci.*, **61**, 982-1003.
- Garrett, T. J., B. C. Navarro, C. H. Twohy, E. J. Jensen, D. G. Baumgardner, T. P. Bui, H. Gerber, R. L. Herman, A. J. Heymsfield, P. Lawson, P. Minnis, L. Nguyen, M. Poellot, S. K. Pope, F. P. J. Valero, and E. Weinstock, 2005: Evolution of a Florida cirrus anvil. *J. Atmos. Sci.*, **62**, 2352-2372.
- Heymsfield, A. J., L. M. Miloshevich, C. Schmitt, A. Bansemer, C. Twohy, M. R. Poellot, A. Fridland, and H. Gerber, 2005: Homogeneous ice nucleation in tropical convection and its influence on cirrus anvil microphysics. *J. Atmos. Sci.*, **62**, 41-64.
- Twohy, C. H. and M. R. Poellot, 2005: Chemical characteristics of ice residual nuclei in anvil cirrus clouds: implications for ice formation processes. *Atmos. Chem. Phys.*, 2289-2297, doi:10.5194/acp-5-2289-2005.
- Twohy, C. H., J. R. Anderson, and P. A. Crozier, 2005: Nitrogenated organic aerosols as cloud condensation nuclei. *Geophys. Res. Lett.*, **32**, L19805, doi:10.1029/2005GL023605.
- Twohy, C. H., M. D. Petters, J. R. Snider, B. Stevens, W. Tahnk, M. Wetzel, L. Russell and F. Burnet, 2005: Evaluation of the aerosol indirect effect in marine stratocumulus clouds: droplet number, size, liquid water path and radiative impact. *J. Geophys. Res.*, **110**, D08203, doi:10.1029/2004JD005116.
- Clement, C. F., L. Pirjola, C. H. Twohy, I. J. Ford, and M. Kulmala, 2006: Analytic and numerical calculations of formation of a sulphuric acid aerosol in the upper troposphere. *J. Aer. Sci.*, **37**, 1717-1729.
- Heymsfield, A. J., C. Schmitt, A. Bansemer, G-J. van Zadelhoff, M. McGill, D. Baumgardner, and C. Twohy, 2006: Effective Radius of Ice Cloud Particle Populations Derived from Aircraft Probes. *J. Atmos. Ocean. Tech.*, **23**, 361-380.
- Mace, G. G, S. Benson, K. L. Sonntag, S. Kato, Q. Min, P. Minnis, C. Twohy, M. Poellot, C. Long, Q. Zhang, and D. R. Doelling, 2006: Cloud radiative forcing at the ARM Climate Research Facility: Part 1. Technique, validation, and comparison to satellite-derived diagnostic quantities. *J. Geophys. Res.*, **111**, D11S90, doi:10.1029/2005JD005921.
- Davis, S., L. M. Avallone, E. M. Weinstock, C. H. Twohy, J. B. Smith, and G. L. Kok, 2007: Comparisons of in-situ measurements of cirrus cloud ice water content. *J. Geophys. Res.*, **112**, D10212, doi:10.1029/2006JD008214.
- Heymsfield, A. J., A. Bansemer and C. H. Twohy, 2007: Refinements to ice particle mass dimensional and terminal velocity relationships for ice clouds: Part I: temperature dependence. *J. Atmos. Sci.*, **64**, 1047-1067, doi: 10.1175/JAS3890.1.
- Prenni, A. J., P. J. DeMott, C. H. Twohy, M. R. Poellot, S. M. Kreidenweis, D. C. Rogers, S. D. Brooks, M. S. Richardson, and A. J. Heymsfield, 2007: Examinations of ice formation processes in Florida cumuli using ice nuclei measurements of anvil ice crystal particle residues. *J. Geophys. Res.*, **112**, D10221, doi:10.1029/2006JD007549.
- Park, S, R. Jiménez, B. C. Daube, L. Pfister, T. J. Conway, E. W. Gottlieb, V. Y. Chow, D. J. Curran, D. M. Matross, A. Bright, E. L. Atlas, T. P. Bui, R-S. Gao, C. H. Twohy, and S. C. Wofsy, 2007: The CO<sub>2</sub> tracer clock for the tropical tropopause layer. *Atmos. Chem. Phys.* acp-2007-0151, **7**, 3989-4000, www.atmos-chem-phys.net/7/3989/2007/.
- Heymsfield, A. J., C. Schmitt, A. Bansemer, G-J. van Zadelhoff, M. McGill, C. Twohy, and D. Baumgardner, 2007: Reply. *J. Atmos. Ocean. Tech.*, **24**, 1511-1518, doi: 10.1175/JTECH2077.1.
- Rauber, R. M., B. Stevens, H. T. Ochs III, C. Knight, ...C. H. Twohy, 2007: Rain in (Shallow)



- Cumulus over the Ocean — The RICO Campaign. *Bull. Amer. Meteor. Soc.*, **88**, 1912-1928.
- Field, P. R., A. J. Heymsfield, A. Bansemmer and C. H. Twohy, 2008: Determination of the combined ventilation factor and capacitance for ice crystal aggregates from airborne observations in a tropical anvil cloud. *J. Atmos. Sci.*, **65**, 376.
- Lasher-Trapp, S., S. Anderson-Bereznicki, A. Shackelford, C. Twohy and J. G. Hudson, 2008: An Investigation of the Influence of Droplet Number Concentration and Giant Aerosol Particles Upon Supercooled Large Drop Formation in Wintertime Stratiform Clouds. *J. Appl. Meteor. Clim.*, **47**, 2569-2678, doi: 10.1175/2008JAMC1807.1.
- Hawkins, L., L. M. Russell, C. H. Twohy and J. R. Anderson, 2008: Uniform particle-droplet partitioning of 18 organic and elemental components measured in and below DYCOMS-II stratocumulus clouds. *J. Geophys. Res.*, **113**, D14201, doi:10.1029/2007JD009150.
- Twohy, C. H., and J. R. Anderson, 2008: Droplet nuclei in non-precipitating clouds: Composition and size matter, *Environ. Res. Lett.*, **3**, doi: 10.1088/1748-9326/3/4/045002 (invited paper).
- Baumgardner, D., R. Subramanian, G. Kok, C. Twohy and J. Stith, 2008: Scavenging of black carbon by ice crystals over the northern Pacific. *Geophys. Res. Lett.*, **35**, L22815, doi:10.1029/2008GL035764.
- Twohy, C. H., Kreidenweis, T. Eidhammer, E. V. Browell, A. J. Heymsfield, A.R. Bansemmer, B. E. Anderson, G. Chen, S. Ismail, P. J. DeMott and S. Van den Heever, 2009: Saharan dust particles nucleate droplets in eastern Atlantic clouds. *Geophys. Res. Lett.*, **36**, L01807, doi:10.1029/2008GL035846 (selected as a Research Highlight in *Nature* and *Nature Geoscience*).
- Stith, J. L., V. Ramanathan, W. A. Cooper, G. Roberts, P. J. DeMott, G. Carmichael, C. Hatch, B. Adhikary, C. H. Twohy, D. C. Rogers, D. Baumgardner, A. Prenni, T. Campos, R. Gao, J. Anderson and Y. Fung, 2009: An overview of aircraft observations from the Pacific Dust Experiment campaign. *J. Geophys. Res.*, **114**, D05207, doi:10.1029/2008JD010924.
- Twohy, C. H., J. A. Coakley, Jr., and W. R. Tahnk, 2009: Effect of changes in relative humidity on aerosol scattering near clouds. *J. Geophys. Res.*, **114**, D05205, doi:10.1029/2008JD010991.
- Pratt, K. A., P.J. DeMott, J. R. French, Z. Wang, D.L. Westphal, A. J. Heymsfield, C. H. Twohy, A. J. Prenni, K. A. Prather, 2009: In-situ detection of biological particles in high altitude dust-influenced ice clouds. *Nature Geosci.*, doi:10.1038/ngeo521.
- Zipser, E.J., C. H. Twohy, S-C. Tsay, K. L. Thornhill, S. Tanelli, R. Ross, T.N. Krishnamurti, Q.J. Ji, G. Jenkins, S. Ismail, N.C. Hsu, R. Hood, G. Heymsfield., A. Heymsfield, J. Halverson, H. M. Goodman, R. Ferrare, J. Dunion, M. Douglas, R. Cifelli, G. Chen, E. Browell, and B. Anderson, 2009: The Saharan Air Layer and the fate of the African easterly waves: the NAMMA field program. *Bull. Amer. Meteor. Soc.*, **90**, 1137-1156, doi: 10.1175/2009BAMS2728.1.
- Tian, L., G. M. Heymsfield, A. J. Heymsfield, A. Bansemmer, L. Li, C. Twohy, R. C. Srivastava, 2010: A Study of Cirrus Ice Particle Size Distribution Using TC4 Observations. *J. Atmos. Sci.*, **67**, 195-216, doi: 10.1175/2009JAS3114.1.
- Avery, M., J. Joiner, C. Twohy, E. Atlas, D. Blake, P. Bui, J. Crouse, G. Diskin, P. Lawson, D. McCabe, M. McGill, P. Pilewski, D. Rogers, G. Sachse, R. Salawitch, S. Schmidt, K. Severance, A. Thompson, C. Trepte, and P. Wennberg, 2010: Convective Distribution of Tropospheric Ozone and Tracers in the Central American ITCZ Region: Evidence from Observations During TC4. *J. Geophys. Res.*, doi: 10.1029/2009JD013450.
- Pratt, K.A., C. H. Twohy, S. M. Murphy, A. J. Heymsfield, R. Subramanian, P. J. DeMott, J. G.

- Hudson, J. H. Seinfeld, and K. A. Prather, 2010: In-situ chemical characterization of aged biomass burning aerosols impacting cold wave clouds. *J. Atmos. Sci.*, **67**, 2451–2468, doi: 10.1175/2010JAS3330.1.
- Scheuer, E., C. H. Twohy, D. Rogers, A. J. Heymsfield and A. Bansemer, 2010: Evidence of nitric acid uptake in warm cirrus anvil clouds during the NASA TC-4 campaign. *J. Geophys. Res.*, **115**:10, doi:10.1029/2009JD012716.
- Twohy, C. H., P. J. DeMott, K. A. Pratt, R. Subramanian, G. L. Kok, S. M. Murphy, T. Lersch, A. J. Heymsfield, Z. Wang, K. A. Prather, and J. H. Seinfeld, 2010: Relationships of biomass burning aerosols to ice in orographic wave clouds. *J. Atmos. Sci.*, **67**, 2437–2450, doi: 10.1175/2010JAS3310.1.
- Pratt, K. A., C. H. Twohy, S. M. Murphy, R. C. Moffet, A. J. Heymsfield, C. J. Gaston, P. J. DeMott, P. R. Field, T. R. Henn, D. C. Rogers, M. K. Gilles, J. H. Seinfeld, and K. A. Prather, 2010: Observation of playa salts as nuclei of orographic wave clouds. *J. Geophys. Res.*, **115**, doi:10.1029/2009JD013606.
- Eidhammer, T., P. J. DeMott, A. J. Prenni, M. D. Petters, C. H. Twohy, D. C. Rogers, J. Stith, A. Heymsfield, Z. Wang, K. A. Pratt, K. A. Prather, S. M. Murphy, J. H. Seinfeld, R. Subramanian, and S. M. Kreidenweis, 2010: Ice initiation by aerosol particles: Measured and predicted ice nuclei concentrations versus measured ice crystal concentrations in an orographic wave cloud. *J. Atmos. Sci.*, **67**, 2417–2436, doi: 10.1175/2010JAS3266.1.
- Heymsfield, A. J., C. Schmitt, A. Bansemer and C. H. Twohy, 2010: Improved representation of ice particle masses based on observations in natural clouds. *J. Atmos. Sci.*, **67**, 1303–3318, doi: 10.1175/2010JAS3507.1
- DeMott, P. J., A. J. Prenni, X. Liu, S. M. Kreidenweis, M. D. Petters, C. H. Twohy, M. S. Richardson, T. Eidhammer, and D. C. Rogers, 2010: Predicting global ice nuclei distributions and their impacts on climate, *Proc. Nat. Acad. Sci.*, **107**, 11217–11222, doi: 10.1073/pnas.0910818107.
- Chen, G, LD Ziemba, DA Chu, KL Thornhill, GL Schuster, EL Winstead, GS Diskin, RA Ferrare, SP Burton, S Ismail, SA Kooi, AH Omar, DL Slusher, MM Kleb, JE Reid, C.H Twohy, H Zhang, and BE Anderson, 2011: Observations of Saharan dust microphysical and optical properties from the eastern Atlantic during NAMMA airborne field campaign. *Atmos. Chem. Phys.*, **11**, 723–740, doi:10.5194/acp-11-723-2011.
- Stith, J. L., C. H. Twohy, P. J. DeMott, D. Baumgardner, T. Campos, R. Gao, J. Anderson, 2011: Observations of ice nuclei and heterogeneous freezing in a Western Pacific extratropical storm. *Atmos. Chem. Phys.*, **11**, 6229–6243, doi:10.5194/acp-11-6229-2011.
- Heymsfield, A. J., P. Field, M. Bailey, D. Rogers, J. Stith, Z. Wang, S. Haimov and C. Twohy, 2011: Ice in Clouds Experiment—Layer Clouds Part I: Ice growth rates derived from lenticular wave cloud penetrations. *J. Atmos. Sci.*, **68**, 2628–2654, doi: 10.1175/JAS-D-11-025.1.
- Baumgardner, D., J. L. Brenguier, A. Bucholtz, H. Coe, P. Demott, T. Garret, J. F. Gayet, M. Hermann, A. Heymsfield, A. Korolev, M. Krämer, A. Petzold, W. Strapp, P. Pilewski, J. Taylor, C. Twohy, and M. Wendisch, 2011: Airborne Instruments to Measure Atmospheric Aerosol Particles, Clouds and Radiation: A Cook's Tour of Mature and Emerging Technology. *Atmos. Res.* **102**, 10–29, doi:10.1016/j.atmosres.2011.06.021.
- Baumgardner, (multiple authors), Twohy et al. 2011: Workshop Summary: In Situ, Airborne Instrumentation: Addressing and Solving Measurement Problems in Ice Clouds. *Bull. of Amer. Meteor. Soc.*, 10.1175/BAMS-D-11-00123.1.

- Phillips, V. T. J, P. J. DeMott, C. Andronache, K. Pratt, K. Prather, R. Subramanian and C. Twohy, 2013: Improvements to an empirical parameterization of heterogeneous ice nucleation and its comparison with observations. *J. Atmos. Sci.*, **70**, 378-409, doi: 10.1175/JAS-D-12-080.1.
- Twohy, C. H., J. R. Anderson, D. W. Toohey, M. Andrejczuk, A. Adams, M. Lytle, R. C. George, R. Wood, P. Saide, S. Spak, P. Zuidema, and D. Leon, 2013: Impacts of aerosol particles on the microphysical and radiative properties of stratocumulus clouds over the southeast Pacific ocean, *Atmos. Chem. Phys.*, **13**, 2541-2562, doi:10.5194/acpd-13-2541-2013.
- Kramer, M. and C. Twohy, 2013: Book chapter 6 of *Airborne Measurements: Methods and Instruments*. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany. Wendisch, M., and J.-L. Brenguier (Eds.) ISBN: 978-3-527-40996-9.
- Cziczo, D. J., K. D. Froyd, C. Hoose, E. J. Jensen, M. Diao, M.A. Zondlo, J. B. Smith, C. H. Twohy and D. M. Murphy, 2013: Clarifying the dominant sources and mechanisms of cirrus cloud formation. *Science*, doi:10.1126/science.1234145.
- Twohy, C. H., 2015: Measurements of Saharan dust in convective clouds over the tropical eastern Atlantic Ocean, *J. Atmos. Sci.*, **72**, 75-81, doi:10.1175/JAS-D-14-0133.1.
- Xu, L., D. W. Pierce, L. M. Russell, A. J. Miller, R. C. J. Somerville, C. H. Twohy, S. J. Ghan, B. Singh, J.-H. Yoon, and P. J. Rasch, 2015: Interannual to decadal climate variability of sea salt aerosols in the coupled climate model CESM1.0, *J. Geophys. Res.* **120**, doi: 10.1002/2014JD022888.
- Twohy, C. H., G. R. McMeeking, P. J. DeMott, C. S. McCluskey, T. C. J. Hill, G. R. Kulkarni, S. M. Burrows, M. Tanarhte, D. N. Kafle, and D. W. Toohey, 2016: Abundance of fluorescent biological aerosol particles at temperatures conducive to the formation of mixed-phase and cirrus clouds. *Atmos. Chem. Phys.* **16**, 8205-8225, doi:10.5194/acp-16-8205-2016.
- Herbener, S.R., S.M. Saleeby, S.C. van den Heever and C.H. Twohy, 2016: Tropical Storm Redistribution of Saharan Dust to the Upper Troposphere and Ocean Surface. *Geophys. Res. Lett.*, **43**, doi: 10.1002/2016GL070262.
- McFarquhar, G.M., D. Baumgardner, A. Bansemer, S.J. Abel, J. Crosier, J. French, P. Rosenberg, A. Korolev, A. Schwarzenboeck, D. Leroy, J. Um, W. Wu, A.J. Heymsfield, C. Twohy, A. Detwiler, P. Field, A. Neumann, R. Cotton, D. Axisa, and J. Dong, 2017: Processing of Ice Cloud in situ data collected by bulk water, scattering, and imaging probes: Fundamentals, uncertainties, and efforts toward consistency. *Meteorological Monographs*, **58**, 11.1–11.33, doi: 10.1175/AMSMONOGRAPHS-D-16-0007.1
- Twohy, C. H., B. E. Anderson, R. A. Ferrare, K. E. Sauter, T. S. L'ecuyer, S. C. van den Heever, A. J. Heymsfield, S. Ismail and G. S. Diskin, 2017: Saharan dust, tropical convection, and ice nucleating particles in the upper troposphere. *J. Geophys. Res.*, doi: 10.1002/2017JD026933.

### **Internally refereed:**

- Wendisch, M and J-L Brenguier (eds) 2013: *Airborne Measurements for Environmental Research: Methods and Instruments*, (Chapter co-author), Wiley-VCH, 641 pp.
- Kofer, W. R. III, B. E. Anderson, V. S. Connors, C. C. Wey, T. Sanders, C. Twohy, C. A. Brock, E. L. Winstead, D. Pui, D. Chen, D. E. Hagan, and P. Whitefield, 2001: NASA's Atmospheric Effects of Aviation Program: Results of the August 1999 aerosol measurement intercomparison workshop, laboratory phase, NASA Technical Memorandum/TM-2001-21089, June 2001.

- Twohy, C.H., 1991: Airborne Condensation Nucleus Counter User's Guide. *Technical Note TN-356+EDD*, National Center for Atmospheric Research, 21 pp.
- Twohy, C.H., and D. Rogers, 1991: Flow speed and particle trajectories around aircraft: theory and measurements. In *Technical Note TN-362+IA*, National Center for Atmospheric Research, 15 pp.

**Non-refereed:**

- Twohy, C.H., A.D. Clarke, S.G. Warren, L.F. Radke and R.J. Charlson, 1989: Measurements of the light-absorbing material inside cloud droplets and its effect on cloud albedo. *Symposium on the role of clouds in atmospheric chemistry and global climate*, Anaheim, American Meteorological Society, 215-220.
- Twohy, C.H., B.J. Huebert, P.A. Durkee and R.J. Charlson, 1990: Droplet chemistry in stratocumulus clouds. *Conference on Cloud Physics*, San Francisco, American Meteorological Society, 527-531.
- Baumgardner, D., and C. Twohy, 1991: Conditional sampling of aerosol and cloud droplets in continental and marine air masses, *XX Gen. Assembly of the IUGG*, Vienna, Austria, 32.
- Twohy, C.H., and D. Rogers, 1991: Airflow effects on the distribution of water droplets around an aircraft. *Seventh Symposium on Meteorological Observations and Instrumentation*, New Orleans, American Meteorological Society, 256-260.
- Twohy, C.H., P.A. Durkee, K. Nielsen and R.J. Charlson, 1991: Relationships between aerosol particles, droplets, and satellite-measured reflectance in coastal stratiform clouds. *XX General Assembly of the IUGG*, Vienna, Austria, 50.
- Dye, J.E., D. Baumgardner, S. Borrmann, C. Twohy, K. Drdla, and P. Newman, 1992: Stratospheric sulfate droplets and transition to polar stratospheric cloud particles. *AGU Fall Meeting*, San Francisco, American Geophysical Union.
- Twohy, C.H., and T.L. Anderson, 1992: Sampling artifacts produced in aircraft aerosol inlets by the presence of large cloud droplets. *Eleventh Annual Meeting*, San Francisco, American Association for Aerosol Research, 300.
- Twohy, C.H., P.A. Durkee and R.J. Charlson, 1992: Effects of aerosol particles on droplet size distributions and satellite-measured reflectance in coastal stratiform clouds, *Abstracts, Eleventh Annual Meeting*, San Francisco, American Association for Aerosol Research, 307.
- Anderson, T.L., and C.H. Twohy, 1993: Collection and exclusion of large cloud elements with a counterflow virtual impactor. *Twelfth Annual Conference*, Oak Brook, Illinois, American Association for Aerosol Research, 36.
- Radke, L.R., and C.H. Twohy, 1993: Aerosol particle production near the atmosphere's clouds interface: sorting fact from artifact. *AGU Fall Meeting*, San Francisco, California (5-10 Dec 1993), American Geophysical Union, 174.
- Radke, L.R., B.W. Gandrud, J.E. Ragni, C.H. Twohy and D. Baumgardner, 1994: Aircraft research platforms with stratospheric capability. *Proc. First Intl. Airborne Remote Sensing Conference and Exhibition*, Strasbourg, France (11-15 Sept 1994), Environmental Research Institute of Michigan, I281-I293.
- Twohy, C.H., 1994: Measurement of condensed water content in clouds using an airborne counterflow virtual impactor. *Proc. Conference on Aerosols and Atmospheric Optics*, Snowbird, Utah (26-30 Sept 1994), American Geophysical Union., 534.
- Twohy, C.H., A.J. Schanot, M.L. Laucks, T.L. Anderson, and R.J. Charlson, 1994: Measurement of ice cloud properties using an airborne counterflow virtual impactor. *Fourth International Aerosol Conference*, Los Angeles, California (29 Aug-2 Sept 1994), American Association for Aerosol Research, 1045.

- Twohy, C.H., 1995: Precipitation. In *Gale Encyclopedia of Science*, Gale Research, Detroit.
- Laucks, M.L., and C. H. Twohy, 1996: Size-dependent sampling efficiency of an airborne counterflow virtual impactor. *Fifteenth Annual Conference*, Orlando (14-18 Oct 1996), American Association for Aerosol Research, 233.
- Litchy, M.L., S.G. Howell, A.D. Clarke, B.J. Huebert, D. Baumgardner, D. Rogers, and C. H. Twohy, 1996: Measurements of the passing efficiency of the community aerosol inlet and associated tubing on NCAR's C-130 aircraft. *Fifteenth Annual Conference*, Orlando (14-18 Oct 1996), American Association for Aerosol Research, 20.
- Twohy, C.H., 1996: Model calculations and wind tunnel testing of a shroud for an airborne counterflow virtual impactor. *Fifteenth Annual Conference*, Orlando (14-18 Oct 1996), American Association for Aerosol Research, 232.
- Faloona, I., D. Tan, W. Brune, C. Twohy, and B. Gandrud, 1997: Measurements of OH/HO<sub>2</sub> in and around cirrus clouds. *AGU Spring Meeting*, Baltimore, Maryland (27-30 May 1997), American Geophysical Union, S86 (*EOS* supplement).
- DeMott, P.J., D.C. Rogers, S.M. Kreidenweis, Y. Chen, D.E. Hagen, and C.H. Twohy, 1997: Upper tropospheric aerosol and ice nuclei: Case studies from the NASA SUCCESS program. *Sixteenth Annual Conference*, Denver (13-17 Oct 1997), American Association for Aerosol Research, 55.
- Huebert, B.J., S. Howell, L. Zhuang, C. Twohy, A. Schanot, and D. Baumgardner, 1997: CAINE-2: Passing efficiency measurements on NCAR's community aerosol inlet. *Sixteenth Annual Conference*, Denver (13-17 Oct 1997), American Association for Aerosol Research, 79.
- Jensen, E.J., O.B. Toon, A. Tabazadeh, G.W. Sachse, B.E. Anderson, K.R. Chan, C. Twohy, and B. Gandrud, 1997: Ice nucleation processes in upper tropospheric wave-clouds observed during SUCCESS. *AGU Spring Meeting*, Baltimore, Maryland (27-30 May 1997), American Geophysical Union, S94 (*EOS* supplement).
- Twohy, C. H., B.W. Gandrud, A.J. Heymsfield, D. Baumgardner, C. Buettner, H. Gerber, P. DeMott, and K R. Chan, 1997: Measurements of contrail nuclei and cirrus cloud microphysics. Invited paper. *AGU Spring Meeting*, Baltimore, Maryland (27-30 May 1997), American Geophysical Union, S97 (*EOS* Supplement).
- Twohy, C.H., B. Gandrud, P. DeMott, Y. Chen., D. Rogers and S. Kreidenweis, 1997: Aerosol particles in the upper troposphere over the central and western United States. *Sixteenth Annual Conference*, Denver (13-17 Oct 1997), American Association for Aerosol Research, 79.
- Twohy, C.H, A.J. Schanot, W.A. Cooper and H. Gerber, 1997: Measurement of condensed water content in liquid and ice clouds using an airborne counterflow virtual impactor, *WMO Workshop on the Measurement of Cloud Properties for the Forecasts of Weather and Climate* (June 23-27, 1997), WMO Report 30, Mexico City, Mexico, 212-220.
- Twohy, C. H., B. Gandrud, and A. Weinheimer, 1998: Particle production near cirrus anvil outflow in the upper troposphere. *Seventeenth Annual Conference*, Cincinnati (22-26 Jun 1998), American Association for Aerosol Research.
- Twohy, C. H., C. F. Clement, I. J. Ford, B. Gandrud, A. Weinheimer, W. Brune, G. Sachse, H. Gerber, D. Baumgardner, and R. Chan, 1999: Mid-latitude storms as a potential source of new particles in the upper troposphere. *Eighteenth Annual Conference*, Tacoma (11-15 Oct 1999), American Association for Aerosol Research, 211.
- Twohy, C. H., J. Anderson, and J. Hudson, 1999: Characteristics of cloud-nucleating aerosols in the Indian Ocean Experiment, *AGU Fall Meeting*, San Francisco (13-17 Dec 1999), American Geophysical Union.
- Beard, K. V., J. S. Naul, H. T. Ochs III, and C. H. Twohy, 2000: Analysis of aircraft measurement of drop and aerosol charges in wintertime continental clouds, *Proceedings on 13th Intl. Conference on Clouds and Precipitation*, Reno, Nevada (14-18 Aug 2000), 1028-1029.
- Twohy, C. H., J. W. Strapp and J. R. Oldenberg, 2000: Performance of a counterflow virtual impactor in the NASA icing research tunnel, *Proceedings on 13th Intl. Conference on Clouds and Precipitation*,

- Reno, Nevada (14-18 Aug 2000), 206-209.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2000: Aerosol formation and mixing in the upper troposphere, *Nineteenth Annual Conference*, St. Louis (6-10 Nov 2000), American Association for Aerosol Research, 390.
- Twohy, C. H., J. G. Hudson, J. R. Anderson, S. K. Durlak, S. S. Yum, and D. Baumgardner, 2000: Characteristics of cloud nucleating aerosols in the Indian Ocean region, *Nineteenth Annual Conference*, St. Louis (6-10 Nov 2000), American Association for Aerosol Research, 212.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2000: Aerosol nucleation and mixing in the upper troposphere, *Abstracts of the 2000 European Aerosol Conference*, Dublin (4-8 Sept 2000), *J. Aerosol Science*, S570-S571.
- Twohy, C. H., J. G. Hudson, J. R. Anderson, S. K. Durlak, S. S. Yum, and D. Baumgardner, 2000: Characteristics of cloud nucleating aerosols in the Indian Ocean experiment, *Abstracts of the 2000 European Aerosol Conference*, Dublin (4-8 Sept 2000), *J. Aerosol Science*, S7-S8.
- Twohy, C. H., J. R. Anderson, J. G. Hudson, 2001: Interdependencies between size, composition, and critical supersaturation of cloud-nucleating aerosols, *Twentieth Annual Conference*, Portland, Oregon (15-19 Oct 2001), American Association for Aerosol Research, 307.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2001: The origins of fluctuations in aerosol and gas concentrations following mixing in the upper troposphere, *Twentieth Annual Conference*, Portland, Oregon (15-19 Oct 2001), American Association for Aerosol Research, 296.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2001: Production of a sulphuric acid aerosol in the upper troposphere, *Twentieth Annual Conference*, Portland, Oregon (15-19 Oct 2001), American Association for Aerosol Research, 532.
- Twohy, C. H., J. R. Anderson, J. Vanegas, P. DeMott, D. Rogers, P. Crozier, 2002: Characteristics of cloud condensation nuclei and ice nuclei as measured by electron microscopy, *Twenty-first Annual Conference*, Charlotte, NC (7-11 Oct 2002), American Association for Aerosol Research, 261.
- Clement, C. F., C. H. Twohy, L. Pirjola, and I. J. Ford, 2002: Analytic and numerical calculations of formation of a sulphuric acid aerosol in the upper troposphere, *Twenty-first Annual Conference*, Charlotte, NC (7-11 Oct 2002), American Association for Aerosol Research, 242.
- Clement, C. F., Pirjola, L., Twohy, C. H., Ford, I. J., and Kulmala, M., 2002b: Analytic and numerical calculations of formation of a sulphuric acid aerosol in the upper troposphere. *Proc. Sixth International Aerosol Conference*, Taipei, Taiwan. Ed. C.-S. Wang. Vol 1 p.271-272.
- Fridlind, A., A. Ackerman, E. Jensen, D. Stevens, D. Wang, A. Heymsfield, L. Miloshevich, C. Twohy, M. Poellot, T. VanReken, T. Rissman, V. Varutbangkul, R. Flagan, J. Seinfeld, and H. Jonsson, 2003: Aerosol-cloud interactions during tropical deep convection: Evidence for the importance of free tropospheric aerosols, *Twenty-second Annual Conference*, Anaheim, California (20-24 Oct 2003), American Association for Aerosol Research, 292.
- Twohy, C. H., J. R. Anderson, and P. Crozier, 2003: Measurements of organic cloud condensation nuclei, *Twenty-second Annual Conference*, Anaheim, California (20-24 Oct 2003), American Association for Aerosol Research, 176.
- Garrett, T., Gerber, H., D. Baumgardner, C. Twohy, and E. Weinstock, 2003: Small, highly reflective ice crystals in CRYSTAL-FACE anvil cirrus, *AGU Fall Meeting* (8-12 December 2003), San Francisco, American Geophysical Union.
- Heymsfield, A. J., D. Baumgardner, M. Poellot, C. Twohy, E. Weinstock, J. Smith, D. Sayres, L. Avallone, and G. Hallar, 2003: Tropical anvil cirrus microphysics, *AGU Fall Meeting* (8-12 December 2003), San Francisco, American Geophysical Union.
- Navarro, B.C., T.J. Garrett, D. Baumgardner, P. T. Bui, B. Bush, H. Gerber, R. Herman, J. J. Heymsfield, P. Lawson, P. Minnis, M. Poellot, C. Twohy, F. Valero, and E. M. Weinstock, 2003: The microphysical and radiative evolution of a cirrus anvil during CRYSTAL-FACE, *AGU Fall Meeting* (8-12 December 2003), San Francisco, American Geophysical Union.

- Garrett, T., Gerber, H., D. Baumgardner, C. Twohy, and E. Weinstock, 2004: Microphysical relationships in CRYSTAL-FACE anvil cirrus, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Gerber, H., C. H. Twohy, and M. Poellot, 2004: Nephelometer measurements in Florida thunderstorms, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Heymsfield, A. J., A. Bansemer, C. Schmitt, D. Baumgardner, M. Poellot, C. Twohy, E. Weinstock, J. Smith, L. Avallone, G. Hallar, and R. P. Lawson, 2004: Properties of tropical convectively generated cirrus, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Kok, G., C. H. Twohy, and D. Baumgardner, 2004: The compact Cloud Spectrometer and Impactor: The next generation CVI, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Petters, M., J. Snider and C. Twohy, 2004: About the prediction of cloud condensation nuclei from aerosol physicochemical data, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Poellot, M., P. Kucera, A. J. Heymsfield, C. Twohy, H. Gerber, 2004: A case study of tropical cirrus anvil microphysics from CRYSTAL-FACE, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Beard, K. V., J. S. Naul, H. T. Ochs III, and C. H. Twohy, 2004: Aircraft measurements of high average charges on cloud droplets, *14<sup>th</sup> International Conference on Clouds and Precipitation* (18-23 July 2004), Bologna, Italy.
- Crozier, P., J. R. Anderson and C. H. Twohy, 2004: Determination of elemental composition and structure of individual organic cloud condensation nuclei, Microscopy Society of America, *Microscopy and Microanalysis 2004*, v. 10, supplement 02, 878-879.
- Twohy, C. H., M. D. Petters, J. R. Snider, B. Stevens, W. Tahnk, M. Wetzel, L. Russell and F. Burnet, 2004: Measurements of the aerosol indirect effect in marine stratiform clouds, *Twenty-third Annual Conference*, Atlanta, Georgia (4-8 Oct 2004), American Association for Aerosol Research, 40.
- Mace, G., R. Riveland, S. Benson, S. Platnick, L. Avallone, E. Weinstock, D. Sayres, C. Twohy, T. Garrett, G. Kok, A. Heymsfield, 2004: Comparison of In-Situ Cirrus Cloud Water Path and Optical Depth Measurements with MODIS Retrievals, *4<sup>th</sup> Intl. Symposium on Remote Sensing of the Atmosphere, Environment, and Space*, Honolulu, Hawaii (8-11 November 2004), The International Society for Optical Engineering.
- DeMott, P. J., C. H. Twohy, A. J. Prenni, A. J., S. D. Brooks, S. M. Kreidenweis, D. C. Rogers, and M. Poellot, 2004: Ice nucleation by cloud particle residues: Chemical compositions and inferences regarding ice initiation in clouds, *AGU Fall Meeting* (13-17 December 2004), San Francisco, American Geophysical Union.
- Spackman, J. R., D. S. Sayres, J. V. Pittman, J. B. Smith, E. M. Weinstock, J. G. Anderson, C. H. Twohy and G. L. Kok, 2005: *In Situ* Measurements of Ice Water Content on the NASA WB-57F during MidCiX: Implications for MLS and CloudSat Validation, *AURA Science Meeting*, Pasadena, Mar 2-3, 2005.
- Twohy, C. H., 2005: Properties and effects of cloud condensation nuclei and ice nuclei, Invited Speaker, *U.C. Berkeley 5th Annual Atmospheric Science Symposium* (14 Oct 2005).
- Twohy, C., K. Bearden, S. Lasher-Trapp, J. Jensen, and P. DeMott, 2005: Properties of Cloud Condensation Nuclei and Ice Nuclei in Wintertime Clouds, *Twenty-fourth Annual Conference*, Austin, Texas (17-21 Oct 2005), American Association for Aerosol Research, 304.
- Russell, L. M., C. Twohy and M. Rivera, 2005: Organic and inorganic composition in marine clouds, *Twenty-fourth Annual Conference*, Austin, Texas (17-21 Oct 2005), American Association for Aerosol Research, 302.
- Lasher-Trapp, S., S. Anderson-Bereznicki, and C. Twohy, 2005: Giant Aerosol Particles as a Potential Source of Supercooled Large Drops in Wintertime Stratiform Clouds, *AGU Fall Meeting* (5-9

- December 2005), San Francisco, American Geophysical Union.
- DeMott, P. J., A. J. Prenni, M. S. Richardson, S. M. Kreidenweis, C. Twohy, and D. C. Rogers, 2006: Ice nuclei variability, relation to ambient aerosol properties, and impacts on mixed-phase clouds, *AMS 12th Conference on Cloud Physics*, Madison, WI, 10-14 July, 2006.
- Field, P. R., A. J. Heymsfield, A. Bansemer and C. H. Twohy, 2006: Capacitance of Snowflakes, *AMS 12th Conference on Cloud Physics*, Madison, WI, 10-14 July, 2006.
- Rogers, D.C., J. Hallett, A. Schanot, C. Twohy, J. Jensen and J. Stith, 2006: Comparison of LWC measurements on the NCAR C-130 in AIRS-2, *AMS 12th Conference on Cloud Physics*, Madison, WI, 10-14 July, 2006.
- Zhang, G., G. M. McFarquhar, and C. H. Twohy, 2006: Small Cloud Particle Shape in Mixed-phase Clouds, *AMS 12th Conference on Cloud Physics*, (10-14 July, 2006) Madison, WI.
- Twohy, C.H., J. R. Anderson, P. A. Crozier and J. G. Hudson, 2006: Characteristics of Cloud Condensation Nuclei and Ice Nuclei in Different Cloud Types and Regions, *Twenty-fifth Annual Conference*, St. Paul, MN (10-15 Sept 2006), American Association for Aerosol Research, 1369.
- Twohy, C. H., J. A. Coakley, and W. R. Tahnk, 2006: The Behavior of Aerosols Near Clouds, *AGU Fall Meeting* (11-15 Dec 2006), San Francisco, American Geophysical Union.
- Twohy, C. H., A. J. Heymsfield, A. Bansemer, B. Anderson, 2007: Interaction of Saharan Dust with Liquid and Ice Clouds, *Twenty-sixth Annual Conference*, Reno, NV, (24-28 Sept 2007), American Association for Aerosol Research.
- Scheuer, E., J. Dibb, C. Twohy and D. Rogers, 2007: Nitric acid in the tropical upper troposphere during TC4, *AGU Fall Meeting* (10-14 Dec 2007), San Francisco, American Geophysical Union.
- Subramanian, R., G. Kok, D. Baumgardner, and C. Twohy, 2007: Black carbon in cloud residual nuclei during PACDEX: Combining the single particle soot photometer and the counterflow virtual impactor, *AGU Fall Meeting* (10-14 Dec 2007), San Francisco, American Geophysical Union.
- Coakley, J. A., Jr., C.H. Twohy, W.R. Tahnk, and C.R. Hayes, 2007: Changes in Aerosol and Aerosol Direct Radiative Effects Near Clouds, *AGU Fall Meeting* (10-14 Dec 2007), San Francisco, American Geophysical Union.
- DeMott, P. J., A. Prenni, C. Twohy, J. Anderson, J. Stith, D. Rogers, T. Campos, G. Kok, R. Subramanian, G. Roberts, S.M. Kreidenweis, and V. Ramanathan, 2007: Characteristics and Cloud Interactions of Ice Nucleating Aerosols from Asian Continental Emissions during the Pacific Dust Experiment, *AGU Fall Meeting* (10-14 Dec 2007), San Francisco, American Geophysical Union.
- Twohy, C. H. and J. A. Coakley Jr., 2008: Toward the understanding of indirect aerosol effects and precipitation, *Integrated Land Ecosystem – Atmosphere Processes Study 5<sup>th</sup> Newsletter*, April 2008 (invited paper).
- Pratt, K, C. H. Twohy and K Prather, 2008: Role of Dry Lake Bed Salts in Cloud Formation, *10<sup>th</sup> International Conference on Salt Lake Research and FRIENDS of Great Salt Lake Issues Forum*, University of Utah (USA), May 11-16, 2008.
- Baumgardner, D, R. Subramanian, G. Kok and C. Twohy, 2008: Scavenging of light absorbing carbon by ice crystals, *15<sup>th</sup> International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- DeMott, P.J., A. Prenni, C. Twohy, J. Stith, D. Rogers, A. Heymsfield, M. D. Petters, T. Eidhammer, S. Kreidenweis, T. Campos, R. Subramanian, G. Kok, Z. Wang, J. French, S. Haimov, T. Lersch, 2008: Ice Nuclei Measurements in Clean Through Perturbed Aerosol Conditions: Results from PACDEX and ICE-L, *15<sup>th</sup> International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- Eidhammer, T, P. J. DeMott, D. C. Rogers, A. J. Prenni, M. D. Petters, C. H. Twohy, J. G. Hudson and S. M. Kreidenweis, 2008: Ice initiation by aerosol particles: comparing model parameterizations and observations in a parcel framework, *15<sup>th</sup> International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- Field, P.R., A. J. Heymsfield, D. C. Rogers, J. Stith, P. DeMott, S. Haimov, S. J. Murphy, C. Twohy, K.



- Pratt, K. Prather and J. H. Seinfeld, 2008: Contrasting the ice nucleation in two lee wave clouds observed during the ICE-L campaign, *15<sup>th</sup> International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- Heymsfield, A. J., P. R. Field, D. C. Rogers, J. Stith, Z. Wang, J. French, S. Haimov, P. DeMott, and C. Twohy (2008): Ice Initiation in Mixed-Phase Orographic Wave Clouds, *15th International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- Twohy, C. H., S. Van den Heever, S. Kreidenweis, T. Eidhammer, P. DeMott, A. Heymsfield, A. Bansemer, B. Anderson, G. Chen, and E. Browell, 2008: Interaction of Saharan Dust with Liquid and Ice Clouds, *15<sup>th</sup> International Conference on Clouds and Precipitation* (7-11 July 2008), Cancun, Mexico.
- DeMott, P., M. Petters, A. Prenni, T. Eidhammer, S. Kreidenweis, C. Twohy, O. Moehler, K. Pratt, K. Prather, D. Rogers, A. Heymsfield, D. Cziczo and S. Gallavardin, 2008: Closure-type Experiments Comparing Ice Nucleation by Atmospheric Aerosols and Ice Formation in Clouds, *Twenty-seventh Annual Conference*, Orlando, FL, (24-28 Oct 2008), American Association for Aerosol Research.
- Pratt, K., C. H. Twohy and K. Prather, 2008: Flight-based measurements of the role of aerosol chemistry on cloud formation using on-line single-particle mass spectrometry, *Twenty-seventh Annual Conference*, Orlando, FL, (24-28 Oct 2008), American Association for Aerosol Research.
- Subramanian, R, G. Kok, D. Baumgardner and C. Twohy, 2008: Black Carbon in Cloud Residual Nuclei during ICE-L: Combining the Single Particle Soot Photometer and the Counterflow Virtual Impactor, *Twenty-seventh Annual Conference*, Orlando, FL, (24-28 Oct 2008), American Association for Aerosol Research.
- Twohy, C. H., Kreidenweis, T. Eidhammer, E. V. Browell, A. J. Heymsfield, A.R. Bansemer, B. E. Anderson, G. Chen, S. Ismail, P. J. DeMott and S. Van den Heever, 2008: Capturing Clouds: Saharan dust particles nucleate droplets in eastern Atlantic clouds. *Nature Geoscience Research Highlight*, **2**, 5-5 (31 December 2008), doi:10.1038/ngeo408.
- Twohy, C. H., Kreidenweis, T. Eidhammer, E. V. Browell, A. J. Heymsfield, A.R. Bansemer, B. E. Anderson, G. Chen, S. Ismail, P. J. DeMott and S. Van den Heever, 2009: Dust Devilry: Saharan dust particles nucleate droplets in eastern Atlantic clouds. *Nature Research Highlight*, **457**, 514-515 (29 January 2009) doi:10.1038/457514f.
- Twohy, C., 2009: Interactive Comment on Particle Loss Calculator – a new software tool for the assessment of the performance of aerosol inlet systems, *Atmos. Meas. Tech. Discuss.*, **2**, 1099-1141, www.atmos-meas-tech-discuss.net/2/1099/2009/.
- Subramanian, R, D. Baumgardner, C. Twohy and G. Kok, 2009: Wave Cloud Scavenging of Black Carbon, *MOCA-09: a Joint Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), the International Association for the Physical Sciences of the Oceans (IAPSO), and the International Association for the Cryospheric Sciences (IACS)* (19–29 July 2009), Montreal.
- Pratt, K., P. J. DeMott, C. H. Twohy and K. Prather, 2009: Insights into Ice Nucleation: Measurements of Aerosol Chemistry & Ice Nuclei Concentrations. *MOCA-09: a Joint Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), the International Association for the Physical Sciences of the Oceans (IAPSO), and the International Association for the Cryospheric Sciences (IACS)* (19–29 July 2009), Montreal.
- Pratt, K., Twohy, C., Murphy, S., Moffet, R., Heymsfield, A., Gaston, C., DeMott, P., Field, P., Henn, T., Gilles, M., Seinfeld, J., Prather, K. 2009: Playa salts serve as natural nuclei. *18th International Conference on Nucleation & Atmospheric Aerosols*. Prague, Czech Republic, August 10-14, 2009.
- Pratt, K.A., DeMott, P.J., Twohy, C.H., Prather, K.A., 2009: In-situ mixing state measurements of cloud residues. *Atmospheric Chemistry Colloquium for Emerging Senior Scientists*. Brookhaven National Laboratory, Upton, NY. August 20-23, 2009.

- Pratt, K.A., DeMott, P.J., Twohy, C.H., Prather, K.A., 2009: In-situ mixing state measurements of cloud residual particles. *Gordon Research Conference in Atmospheric Chemistry*. Waterville Valley, NH. August 23-28, 2009.
- Twohy, C. H., A. Adams, J. R. Anderson, D. W. Toohey, L. Shank, S. G. Howell, A. Clarke, R. Wood, D. Leon and P. Zuidema 2009: Aerosol indirect effects on stratocumulus clouds in the southeast Pacific. *Twenty-eighth Annual Conference, Minneapolis, MN* (Oct. 26-30 2009), American Association for Aerosol Research.
- Pratt, K., Murphy, S., Subramanian, R., Twohy, C., Seinfeld, J., Prather, K. 2009: Flight-based chemical characterization of biomass burning aerosols. *Twenty-eighth Annual Conference, Minneapolis, MN* (Oct. 26-30 2009), American Association for Aerosol Research.
- Twohy, C. H., A. Adams, D. W. Toohey, J. R. Anderson, L. Shank, S. G. Howell, A. Clarke, and R. Wood 2009: Aerosol Indirect Effects on Stratocumulus Clouds in the Southeast Pacific, *AGU Fall Meeting* (14-18 Dec 2009), San Francisco, American Geophysical Union.
- DeMott, P. J., C. H. Twohy, A. J. Prenni, R. Subramanian, K. A. Pratt, A. Sullivan, G. L. Kok, K. A. Prather, and S. Whitesell, 2009: Fire and ice: Atmospheric ice nuclei from prescribed and wild fires. *AGU Fall Meeting* (14-18 Dec 2009), San Francisco, American Geophysical Union.
- Pratt, K. A., S. M. Murphy, C. H. Twohy, R. Subramanian, J. H. Seinfeld, and K. A. Prather, 2009: Chemical characterization of biomass burning aerosols and an examination of their impact on clouds. *AGU Fall Meeting* (14-18 Dec 2009), San Francisco, American Geophysical Union.
- Pratt, K. A., C. H. Twohy, S. M. Murphy, Heymsfield, Moffet, DeMott, Gaston, Field, Henn, Rogers, Gilles, Seinfeld, Prather, 2010: Observation of playa salts as nuclei in orographic wave clouds, *13th Conference on Cloud Physics* (28 June – 2 July 2010), Portland, Oregon, American Meteorological Society.
- Stith, J., C. H. Twohy and others, 2010: Scavenging of East-Asian Black Carbon by a Western Pacific Extratropical Storm. *13th Conference on Cloud Physics* (28 June – 2 July 2010), Portland, Oregon, American Meteorological Society.
- Anderson, J., C. H. Twohy and X. Hua, 2010: Aerosol-cloud Interactions in Stratocumulus Clouds of the Southeast Pacific During Vocals-Rex: Individual Aerosol Particle Results of Transects With Strong Gradients Between Clean and Polluted Air Masses, *Eos Trans. AGU, 91(26)*, Meet. Am. Suppl., Abstract A24B-06. (AGU Meeting of the Americas, Brazil).
- Twohy, C. H., J. Anderson, D. W. Toohey, and Mirosław Andrejczuk, 2010: Sources of Cloud Condensation Nuclei in Stratocumulus Clouds: Results from the VOCALS Experiment. *Twenty-ninth Annual Conference* (October 25 – 29 2010), Portland, OR, American Association for Aerosol Research.
- Twohy, C. H., J. Anderson, D. W. Toohey, M. Lytle, P. Zuidema, D. Leon, and M. Andrejczuk, 2011: Sources and Impacts of Particles on Stratocumulus Clouds in the Southeast Pacific. *91st Annual Meeting* (23–27 January 2011), Seattle, WA, American Meteorological Society.
- Kulkarni, G and C. Twohy, 2011: Computational fluid dynamics studies to understand ice crystal and liquid droplet breakup within an airborne counterflow virtual impactor, *Thirtieth Annual Conference* (October 3-7 2011), Orlando, FL, American Association for Aerosol Research.
- Lasher-Trapp, S, P J DeMott, A. Heymsfield, J. G Hudson, J B Jensen, A V Johnson, D Leon, G McMeeking, D C Rogers, D W Toohey, and C H Twohy 2011: A Prolific Warm Rain Process and its Possible Influence on Ice Nucleation as Observed During ICE-T. *AGU Fall Meeting* (5-9 Dec 2011), San Francisco, American Geophysical Union.
- McMeeking, G, A Danielczok, H Bingemer, H Klein, T C Hill, G D Franc, M D Martinez, I Venero, O Mayol, K Ardon-Dryer, Z Levin, J Anderson, C Twohy and P J DeMott 2011: Measurements of ice nuclei concentrations and compositions in the maritime tropics. *AGU Fall Meeting* (5-9 Dec 2011), San Francisco, American Geophysical Union.
- Noone, D., A. Bailey, D. Toohey, C. Twohy, C. Rella, A. van Pelt, and A. Heymsfield 2011: Aircraft profile measurements of  $^{18}\text{O}/^{16}\text{O}$  and D/H isotope ratios of cloud condensate and vapor offer constraints

- on precipitation efficiency and entrainment rates of tropical clouds. *AGU Fall Meeting* (5-9 Dec 2011), San Francisco, American Geophysical Union.
- Saleeby, S. van den Heever, S. and C. Twohy, 2011: Impacts of Saharan Dust on the Microphysical Processes in Tropical Convection. *Thirtieth Annual Conference* (October 3-7 2011), Orlando, FL, American Association for Aerosol Research.
- Saleeby, S. van den Heever, S. and C. Twohy, 2011: Impacts of Saharan Dust on the Microphysical Processes in Tropical Convection. *Open Science Conference* (24-28 October 2011), Denver, CO, *World Climate Research Programme*.
- Saleeby, S.M., C.H. Twohy, S.C. van den Heever, and P.J. DeMott, 4-9 December 2011: Impacts of Saharan Dust on the Microphysical Processes in Tropical Convection. *AGU Fall Meeting* (5-9 Dec 2011), San Francisco, American Geophysical Union.
- Twohy, C. H., J. Anderson, D. W. Toohey, M. Andrejczuk, A. Adams, M. Lytle, P. Zuidema, D. Leon, R. George and R. Wood, 2011: VOCALS/Southeast Pacific Science: Impacts of Particles on Properties of Stratocumulus Clouds. *Open Science Conference* (24-28 October 2011), Denver, CO, *World Climate Research Programme*.
- Twohy, C. H., D. W. Toohey, M. Andrejczuk, J. R. Anderson, A. Adams, M. Lytle, R. George, R. Wood, P. Zuidema, and D. Leon 2011: Aerosol Impacts on Microphysical and Radiative Properties of Stratocumulus Clouds in the Southeast Pacific (Invited presentation). *AGU Fall Meeting* (5-9 Dec 2011), San Francisco, American Geophysical Union.
- Twohy, C. H., S. Saleeby, S. van den Heever, and P. DeMott, 2012: Impacts of Saharan Dust on Microphysical Processes in Tropical Convection (invited presentation), *16<sup>th</sup> International Conference on Clouds and Precipitation* (30 July-3 Aug 2012), Leipzig Germany.
- Twohy, C. H., S. Saleeby, S. van den Heever, S. Herbener and P. DeMott, 2012: Interactions between Saharan Dust and Tropical Convection. *AGU Fall Meeting* (3-7 Dec 2012), San Francisco, American Geophysical Union.
- McMeeking, G., G. Kok, M. D. Petters, J. Hader, T. Wright, I. B. McCubbin, A. G. Hallar, C. H. Twohy, D. W. Toohey, P. J. DeMott, C. McCluskey, and D. Baumgardner, 2013: Real-time measurements of biological particles at several sites using the WIBS-4A. *AGU Fall Meeting* (8-13 Dec 2013), San Francisco, American Geophysical Union.
- Twohy, C., G. McMeeking, P. DeMott, D. Toohey, G. Kok, C. McCluskey, T. Hill, J. Stith and J. Anderson, 2013: Real-time measurements of biological aerosol particles in the clear and cloudy atmosphere. *AGU Fall Meeting* (8-13 Dec 2013), San Francisco, American Geophysical Union.
- McMeeking, G., M. Freer, G. Kok, M. D. Petters, J. Hader, T. Wright, I. B. McCubbin, A. G. Hallar, C. H. Twohy, D. W. Toohey, P. J. DeMott, C. McCluskey, and D. Baumgardner, 2013: Recent fluorescence-based measurements of biological particles with the WIBS-4A. *94<sup>th</sup> AMS Annual Meeting*, Atlanta, GA, 2-6 Feb, 2014.
- Toohey, D., L. Kalnajs, B. Rainwater, C. Twohy, D. Noone, and L. Avallone, 2014: An Intercomparison of In Situ Observations of Cloud Water Content from the NSF Gulfstream V Aircraft During IDEAS 2013. *AGU Fall Meeting* (15-19 Dec 2014), San Francisco, American Geophysical Union.
- Twohy, C., G. McMeeking, P. DeMott, D. Toohey, C. McCluskey, T. Hill, J. Anderson, G. Kulkarni, D. Kafle, and J. Stith, 2015: Real-time measurements of fluorescent biological aerosol particles in the atmosphere and in clouds. *95<sup>th</sup> AMS Annual Meeting*, Phoenix, AZ, 4-8 Jan, 2015.

- Herbener, S., S. van den Heever, C. Twohy, S. Saleeby, T. L'ecuyer, 2016: Saharan Dust Processing and Transport by Atlantic Tropical Cyclones. *96<sup>th</sup> AMS Annual Meeting*, New Orleans, LA, 10-14 Jan, 2016.
- Sauter, K., T. L'ecuyer, C. Twohy, 2016: Impact of Convection in the Tropical Atlantic Ocean on the Processing, Transport and Redistribution of Dust Aerosols. *96<sup>th</sup> AMS Annual Meeting*, New Orleans, LA, 10-14 Jan, 2016.
- Twohy, C., K. Sauter, K. T. L'Ecuyer, S. Herbener, S. van den Heever, B. Anderson, and R. Ferrare, 2016: The Influence of Tropical Convection on the Evolution and Transport of the Saharan Air Layer. *96<sup>th</sup> AMS Annual Meeting*, New Orleans, LA, 10-14 Jan, 2016.
- Twohy, C., G. McMeeking, C. McCluskey, P. DeMott and T. Hill, 2016: Conditions Influencing Transport of Fluorescent Biological Aerosol Particles in the Atmosphere and Implications for Ice Nucleation. *17<sup>th</sup> International Conference on Clouds and Precipitation (25-29 July-2016)*, Manchester England.
- van den Heever, S., L. Grant, S. Herbener, A. Sheffield, S. Saleeby, C. Twohy, K. Sauter and T. L'Ecuyer, 2016: The Transport of Dust from the Boundary Layer to Upper Troposphere by Storms. *17<sup>th</sup> International Conference on Clouds and Precipitation (25-29 July-2016)*, Manchester England.
- van den Heever, S., S. Herbener, S. Saleeby, C. H. Twohy, K. Sauter, T. L'Ecuyer, and A. Eckman, 2016: The Transport of Dust by Tropical Cyclones. *AGU Fall Meeting (12-16 Dec 2016)*, San Francisco, American Geophysical Union.
- Twohy, C., Ferrare, R. A., B. E. Anderson, S. van den Heever, S. Herbener, K. Sauter and T. L'ecuyer, 2017: Redistribution of Saharan Dust in the Vicinity of Tropical Convection. *97<sup>th</sup> AMS Annual Meeting, Seattle, WA, 23-27 Jan, 2017*.
- van den Heever, S., S. Herbener, K. Sauter, C. Twohy, S. Saleeby, T. L'Ecuyer, and A. Eckman, 2017: The Transport and Processing of Dust by Tropical Cyclones. *EGU General Assembly (23-28 April 2017)*, Vienna, Austria.
- van den Heever, S., S. Herbener, S. Saleeby, C. Twohy, K. Sauter, T. L'Ecuyer, and A. Eckman, 2017: The Microphysical Transport and Processing of Dust by Tropical Cyclones. *IAPSO/IAMAS/IAGA Joint Assembly (27 Aug-1 Sept 2017)*, Capetown, South Africa.