

CYNTHIA H. TWOHY

Refereed Publications (93 peer-reviewed journal or book publications):

- 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. Aulenbach, 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, CH₄, N₂O, and H₂O 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_y on wave-cloud ice particles. *Geophys. Res. Lett.*, **25**, 1725-1728.
- Clement, C. F., I. J. Ford, and C. H. Twohy, 2000: Aerosol nucleation and mixing in the upper troposphere, *J. Aerosol Science*, S570-S571, doi: 10.1016/S0021-8502(00)90581-0.
- 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. Bansemmer, 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. Faloon, 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 CO₂ 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. Bansemer 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. Bansemer, 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. Bansemmer, 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. Bansemmer 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.*, **93**, 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 for Environmental Research: 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*, **340**, 1320-1324, 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., D. Baumgardner, A. Bansemer, J. Crosier, J. French, P. Rosenberg, A. Korolev, A. Schwarzenboeck, D. Leroy, J. Um, W. Wu, A. Heymsfield, C. Twohy, A. Detwiler, P. Field, A. Neumann, D. Axisa, R. Cotton, J. Dong, 2017: Processing of in-situ data collected by bulk water, scattering and imaging probes: Fundamentals, uncertainties and efforts towards consistency, *AMS Meteorological Monographs*, **58**, 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, convective lofting, aerosol

- enhancement zones, and potential impacts on ice nucleation in the upper troposphere. *J. Geophys. Res.*, **122**, doi: 10.1002/2017JD026933.
- Sauter, K. E., T. S. L'ecuyer, S. C. van den Heever, C. Twohy, A. Heidinger, S. Wanzong, and N. Wood, 2019: The observed influence of tropical convection on the Saharan dust layer, *J. Geophys. Res.*, doi: 10.1029/2019JD031365.
- Yang, J., Z. Wang, A. J. Heymsfield, P. J. DeMott, C. H. Twohy, K. J. Suski, and D. W. Toohey, 2019: High ice concentration observed in tropical maritime stratiform mixed-phase clouds with top temperatures warmer than -8°C . *Atmos. Res.*, doi: 10.1016/j.atmosres.2019.104719.
- Gettelman, A., C. Bardeen, C. McCluskey, E. Jarvinen, J. Stith, C. Bretherton, G. McFarquhar, C. Twohy, J. D'Alessandro and W. Wu, 2020: Simulating observations of Southern Ocean clouds and implications for climate. *J. Geophys. Res.*, **125**, doi:10.1029/2020JD032619.
- Saliba, G., K. J. Sanchez, L. M. Russell, C. H. Twohy, G. C. Roberts, S. Lewis, J. Dedrick, C. S. McCluskey, K. Moore, P. J. DeMott, and D. W. Toohey, 2020: Organic composition of three different size ranges of aerosol particles over the Southern Ocean. *Aer. Sci. Technol.*, doi: 10.1080/02786826.2020.1845296.
- McFarquhar, G. M. McFarquhar, C. Bretherton, R. Marchand, A. Protat, P. J. DeMott, S. P. Alexander, G. C. Roberts, C. H. Twohy et al. 2020: Observations of clouds, aerosols, precipitation, and surface radiation over the Southern Ocean: An overview of CAPRICORN, MARCUS, MICRE and SOCRATES. *Bull. Amer. Meteor. Soc.*, doi: 10.1175/BAMS-D-20-0132.1.
- Janssen, R. H. H., C. L. Heald, A. L. Steiner, A. E. Perring, J. A. Huffman, E. S. Robinson, C. H. Twohy, and L. D. Ziemba, 2020: Drivers of the fungal spore bioaerosol budget: observational analysis and global modelling. *Atmos. Chem. Phys.*, doi: 10.5194/acp-21-4381-2021.
- Barry, K., T. C. J. Hill, E. T. Levin, C. H. Twohy, K. A. Moore, et al. 2021: Observations of Ice Nucleating Particles in the Free Troposphere from Western US Wildfires, *J. Geophys. Res.*, doi: 10.1029/2020JD033752.
- Twohy, C. H., P. J. DeMott, L. M. Russell, D. W. Toohey, B. Rainwater, R. Geiss, K. J. Sanchez, S. Lewis, G. Roberts, R. S. Humphries, C. S. McCluskey, K. Moore, P. W. Selleck, M. D. Keywood, J. P. Ward, and I. M. McRobert, 2021: Cloud-Nucleating Particles over the Southern Ocean in a Changing Climate. *Earth's Future*, doi: 10.1029/2020EF001673.
- Sanchez, K. J., G. C. Roberts, G. Saliba, L. M. Russell, C. Twohy, M. Reeves, R. S. Humphries, M. D. Keywood, J. P. Ward and I. M. McRobert, 2021: Cloud Processes and the Transport of Biological Emissions Regulate Southern Ocean Particle and Cloud Condensation Nuclei Concentrations, *Atmos. Chem. Phys.*, doi: 10.5194/acp-21-3427-2021.
- McCoy, I. L., C. S. Bretherton, R. Wood, C. H. Twohy, A. Gettelman, C. G. Bardeen and D. W. Toohey, 2021: Recent particle formation and aerosol variability near Southern Ocean low clouds. *J. Geophys. Res.*, doi: 10.1029/2020JD033529.
- Twohy, C. H., D. W. Toohey, E. J. T. Levin, P. J. DeMott, B. Rainwater, L. A. Garofalo, M. A. Pothier, D. K. Farmer, S. M. Kreidenweis, R. P. Pokhrel, S. M. Murphy, J. M. Reeves, K. A. Moore and E. V. Fischer, 2021: Biomass Burning Smoke and its Influence on Clouds over the Western U. S., *Geophys. Res. Lett.*, doi: 10.1029/2021GL094224. Published with AGU Press release leading to articles in National Geographic, Associated Press and Science

News: <https://www.nationalgeographic.com/environment/article/wildfire-smoke-is-transforming-clouds-making-rainfall-less-likely>

<https://apnews.com/article/fires-environment-and-nature-montana-wildfires-bears-8e3c87d945fef06ab4836bed0e4bb7a5>

<https://www.sciencenews.org/article/clouds-wildfire-smoke-rain-climate>

Twohy, C. H., 2022: Importance of Microanalysis in Climate Studies of Atmospheric Aerosol Particles, Book chapter in *Microanalysis of Atmospheric Particles: Techniques and Applications to Climate Change and Air Quality*, American Geophysical Union, accepted.

McCluskey, C. S, A. Gettelman, C. G. Bardeen, P. J. DeMott, K. A. Moore, S. M. Kreidenweis, T. C. J. Hill, K. R. Berry, C. H. Twohy, D. W. Toohey, B. Rainwater, J. B. Jensen, J. M. Reeves and G. M. McFarquhar, 2022: Southern Ocean Aerosol and Ice Nucleating Particles in the Community Earth System Model Version 2. *J. Geophys. Res.*, under review.