

Curriculum Vitae
DeMott, Paul J., Ph.D.
Senior Research Scientist/Scholar

A. Vital Statistics

Born: November 23, 1957; US Citizen.

Current Position: Senior Research Scientist/Scholar
Department of Atmospheric Science
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B. Education

- B.S. Atmospheric Science, State University of New York at Albany (1979)
- M.S. Atmospheric Science, Colorado State University (1982)
- Ph.D. Atmospheric Science, Colorado State University (1990)

C. Professional Experience

2002-present: Senior Research Scientist/Scholar, Department of Atmospheric Science, Colorado State University

Research focus is on ice formation by atmospheric aerosols in tropospheric clouds. Approaches include laboratory, observational and numerical modeling studies.

Activities: Conceive and direct laboratory and field research studies, analyze experimental data, perform numerical cloud model simulations, software development, write research proposals and technical papers, make presentations at scientific conferences, supervise research of graduate students and postdoctoral fellows as co-advisor, supervise technical and work-study personnel, participate on national and international scientific working groups and panels, peer review.

Research Grants Worked on as Principal or Co-Principal Investigator:

- Aerosol Influences on Ice Formation in Arctic Cold Air Outbreak Clouds During CAESAR (PI, NSF, 2023-2026)
- Aerosol Influences on Ice Formation in Arctic Clouds during the Summer Melt Season in ARCSIX (PI, NASA, 2022-2028)
- Seasonal vertical aerosol profiling for aerosol-cloud-precipitation interactions to advance mountainous hydrological process science (Co-PI; A. Aiken PI, LANL, FICUS ARM EMSL user facility award, 2022-2024)

- Single Particle Characterization for Interpreting Ice Nucleating Particle Measurements in the SAIL Field Study (PI, EMSL Large Scale Research user facility award, 2022-2024)
- Collaborative Research: Interactions and Feedbacks between Storms and Bioaerosols (Co-PI; R. Perkins, PI, NSF, 2021-2024)
- Collaborative Research: A comprehensive evaluation of the interactions between pollution and hazardous ice fog in Interior Alaska (Co-PI; J. Creamean, PI, NSF, 2021-2024)
- Collaborative Research: Experiment of Sea Breeze Convection, Aerosols, Precipitation and Environment (ESCAPE) (Co-PI; S. van den Heever, PI; NSF – 2020-2023)
- Understanding the natural sources of aerosols and their impacts on cloud formation and climate across hemispheres (PI, DOE-ASR – 2020-2023)
- Thawing permafrost, its microbes, and their possible role in Arctic climate feedbacks (Co-PI; J. Creamean, PI; NSF – 2020-2023)
- Collaborative Research: Secondary Ice Production in Cumulus Experiment (SPICULE) (PI; NSF – 2019-2023)
- Small field campaign: Aerosol-Ice Formation Closure Pilot Study (Co-PI, DOE ASR – 2019-2020 sub to Stonybrook University)
- An airborne continuous flow diffusion chamber for measuring ice nucleating particles (Co-I, NASA SBIR Phase II sub from Handix Scientific – 2019-2020)
- A miniature, lower cost static diffusion chamber for cloud condensation nuclei measurements (Co-I, DOE SBIR Phase I sub from Handix Scientific – 2019-2020)
- A microfluidic ice nucleating particle counter for continuous measurements from small aerial platforms (DOE SBIR Phase I sub from Handix Scientific – 2019-2020)
- Analyses of the ice nucleating particle content of cloud water samples from CAMP2eX (PI, NASA – 2019-2020)
- Evaluation of ice nucleating particles and their sources in the central Arctic during MOSAiC (Co-PI, Jessie Creamean, PI, DOE ASR – 2019-2022)
- Arctic Ice Nucleation Sampling during MOSAiC, (co-PI, Jessie Creamean, PI, DOE ARM – 2019)
- COMBLE ARM Mobile Facility (AMF) Measurements of Ice Nucleating Particles (PI, DOE ARM – 2019-2020)
- CCI Phase IIb, Center for Aerosol Impacts on Chemistry of the Environment (Co-I, NSF Chemistry – 2018-2023)

- An airborne continuous flow diffusion chamber for measuring ice nucleating particles (Co-I, NASA SBIR Phase I sub from Handix Scientific – 2018)
- Ice Nucleating Particles, Aerosols and Clouds over the Higher Latitude Southern Ocean (PI, DOE – 2018-2020)
- CACTI AAF measurements of ice nucleating particles (PI, DOE ARM – 2018-2020)
- CACTI AMF site measurements of ice nucleating particles (PI, DOE ARM – 2018-2020)
- Temperature, humidity, and composition-dependence of secondary organic aerosol viscosity (Co-PI, DOE – 2017-2020)
- Ice Nucleating Particle Influence on Southern Ocean Clouds: Measurements and Analyses for Southern Ocean Clouds, Radiation, Aerosol, Transport Experimental Study (SOCRATES) (PI, NSF – 2017-2020)
- Collaborative Research: Western wildfire Experiment for Cloud chemistry, Aerosol absorption and Nitrogen (WE-CAN) (Co-PI, NSF – 2017-2020)
- Travel Grants to the Twentieth (20th) International Conference on Nucleation and Atmospheric Aerosols (ICNAA); Helsinki, Finland; June 25-30, 2017 (PI, NSF AGS – 2017)
- Measurements of Aerosols, Radiation, and Clouds over the Southern Ocean (MARCUS): Ice Nucleating Particle Measurements (PI, DOE ARM – 2017-2019)
- Macquarie Island Cloud and Radiation Experiment (MICRE): Ice Nucleating Particle Measurements (DOE ARM – 2017-2019)
- Measurements and Analysis of Ice Nuclei Relevant to West Coast U.S. Precipitation (PI, DOE ASR – 2015-2018)
- Ice Nucleation Measurements on the DOE G-1 Aircraft for CalWater2015 (PI, DOE – 2015-2016)
- ACAPEX – Ship-Based Ice Nuclei Collections (PI, DOEARM – 2015-2016)
- Laboratory and surface-based studies to quantify globally-relevant ice nucleating particle concentrations and compositions (PI, NSF AGS – 2014-2018)
- Southern Great Plains Ice Nuclei Characterization Experiment (PI, DOE ARM – 2014)
- Marine Ice Nuclei Collections – MAGIC (MAGIC-IN) (PI, DOE ARM – 2013)
- CCI Phase IIa, Center for Aerosol Impacts on Climate and the Environment (Co-I, NSF Chemistry – 2013-2018)
- Travel Grants to the Nineteenth (19th) International Conference on Nucleation and Atmospheric Aerosols (ICNAA); Fort Collins, CO, June 24-28, 2013 (PI, NSF AGS – 2013)

- Measurements to constrain black carbon and biomass burning aerosol contributions to ice cloud formation (PI, NASA: 2012-2016)
- Ice Nuclei and Ice Formation Processes in Tropical Cumulus Clouds (PI, NSF:2010-2013)
- Quantifying the Source of Atmospheric Ice Nuclei from Biomass Burning Aerosols (PI, NOAA: 2010-2014)
- Anthropogenic Versus Natural Aerosol Contributions to Ice Nuclei Populations in CALWATER (PI, California Energy Commission via UCSD: 2010-2011)
- ARRA: Collaborative Research: Laboratory and Ground-Based Studies Addressing Key Issues in Atmospheric Ice Nucleation (PI, NSF: 2009-2013)
- ETBC: Collaborative Research: Exploring forest ecosystem response to water availability and the impact on biogeochemical and water cycles (Co-PI, NSF: 2009-2012)
- Travel Grants to the 18th International Conference on Nucleation and Atmospheric Aerosols (ICNAA); Prague, Czech Republic; August 10-14, 2009 (PI, NSF AGS – 2009)
- Ice Nuclei relation to aerosol properties in mixed-phase clouds: Data analysis and model parameterization (Co-PI, DOE: 2009-2011)
- Travel Support for the 17th International Conference on Nucleation and Atmospheric Aerosols (ICNAA); Galway, Ireland; August 13-17, 2007 (PI, NSF AGS – 2007)
- Ice nuclei and Ice initiation in Mid-latitude Clouds in Springtime: Background and Dust-affected (PI, NSF: 2006-2009)
- Investigation of Hygroscopicity and Cloud- and Ice-nucleating Activities of Carbonaceous and Combustion-derived Aerosol Particles (PI, NASA-2006-2009)
- Modeling studies of aerosol-cold cloud interactions (Co-PI, NASA: 2005-2008)
- Acquisition of Instrumentation for Enhancing Studies of Aerosol-Cloud Interactions (Co-PI, NSF-MRI: 2005-2006)
- Investigation of hygroscopicity and cloud- and ice-nucleating activities of combustion aerosols (PI, DOE-NIGEC: 2005-2007)
- Ice Nuclei and ice formation in Arctic clouds: Observations, parameterization and implications from the M-PACE (PI, DOE-ARM: 2005)
- Aerosol Effects on Warm and Cold Clouds (PI, NSF: 2005-2007)
- Collaborative Research: Physical and Chemical Impacts on the Ice Nucleating Properties of Atmospheric Particles in Springtime (Co-PI, NSF: 2003-2005)
- The Role of Ice Nuclei in the Evolution of Supercooled and Mixed-phase Clouds (PI, NSF: 2003-2005)

1995-2002: Research Scientist, Department of Atmospheric Science, Colorado State University

Research Grants Worked on as Co-Principal Investigator:

- Upper Troposphere Ice Nuclei Measurements in the Cirrus Regional Study of Tropical Anvils and Cirrus Layers – Florida Area Cirrus Experiment (PI, NASA: 2002-2003)
- Single Particle Mass Spectroscopy of Ice Nucleating Particles (Co-PI, NSF: 2001-2003)
- Homogeneous and Heterogeneous Ice Formation in Upper Tropospheric Conditions (PI, NSF: 2000-2004)
- Ice Formation Processes in Upper Tropospheric Cloud Conditions (PI, NSF: 1997-2000)
- Freezing Characteristics of Soot/Sulfate Aerosols (PI, NASA: 1998-2002)
- Relations between Ice Nuclei and Ice Formation in Clouds (Co-PI, NSF: 1998-2001)
- Ice Nuclei Measurements in the Subsonic Aircraft Contrail and Cloud Effects Special Study (Co-PI, NASA:1995-1998)
- Atmospheric Ice Nucleating Aerosols (Co-PI, NSF: 1994-1997)

1985-1995: Research Associate, Department of Atmospheric Science, Colorado State University

Research Grants Worked on as Co-Principal Investigator:

- Atmospheric Ice Nucleating Aerosols (NSF: 1994-1997)
- Laboratory and Numerical Model Studies on Ice Formation in Clouds (NSF: 1986-1994)
- Condensation and Ice Nucleation Kinetics at Low Temperatures and Pressures (US Air Force: 1985-1986)
- Measurements of Ice Nuclei in Winter Storms (NCAR/NSF: 1993-1995)
- North Dakota Tracer Experiment (NOAA/CIRA: 1993)

Director, Cloud Simulation and Aerosol Laboratory: Oversaw laboratory business account activities involving testing of cloud seeding generators and cloud microphysical instrumentation for private entities.

1979-1985: Graduate Research Assistant, Department of Atmospheric Science, Colorado State University

Projects worked on:

- Colorado Orographic Seeding Experiments (NSF: 1979-1985)

- Condensation and Ice Nucleation Kinetics at Low Temperatures and Pressures (US Air Force: 1983-1985)

D. Honors and Awards

Fellow, American Geophysical Union, 2021

Walter Scott College of Engineering Outstanding Researcher, 2021

Fellow, American Meteorological Society, 2020

Clarivate Analytics (Publons) Highly Cited Researcher in Geosciences, 2019, 2020

Honorary Member, IAMAS Committee on Nucleation and Atmospheric Aerosols, 2013

Colorado State University Distinguished Alumnus Award in Atmospheric Science, 2009

Featured Author Commentary in Thomson Reuter's Science Watch Emerging Research Fronts in Geosciences, February 2009

Intergovernmental Panel on Climate Change (IPCC) contributing author and reviewer – IPCC awarded 2007 Nobel Peace Prize

Colorado State University Distinguished Service Award, 2003

American Geophysical Union: Geophysical Research Letters Editor's Award for Excellence in Peer Review, 2003; Reviews of Geophysics Editor's Award for Excellence in Peer Review, 2012

NASA Group Achievement Award, Cirrus Regional Study of Tropical Anvils and Cirrus Layers – Florida Area Cirrus Experiment (CRYSTAL-FACE) Science Team, 2003

Best Student Paper, 57th Annual Meeting of the Southwestern and Rocky Mountain Division, AAAS, 22-25 April, 1981, Greeley, CO.

E. Professional Societies and Synergistic Activities

- International Association of Meteorology and Atmospheric Sciences
 - Committee on Nucleation and Atmospheric Aerosols, Co-Chair (2004-2013), Member (2000-honorary for life), International Conference Chair (2013, 2017, 2023), Student travel grants (NSF) PI (2007, 2009, 2013, 2017, 2023).
 - International Commission on Clouds and Precipitation (2004-present), Awards Committee (2012)
 - Session Convenor for IAMAS Assembly (2009, 2017), Session Convenor for IUGG Assembly (2011, 2015)
- American Meteorological Society, member; Associate editor, Journal of the Atmospheric Sciences (2008-2010); Subject Matter Editor, Bulletin of the American Meteorological Society (2004-2010); Associate Editor, Journal of Applied Meteorology (1996-2001); Committee on Cloud Physics (1997-2000); Committee on Planned and Inadvertent Weather Modification (1991-1994)

- American Geophysical Union, member; Fall Meeting Session Chair (2002, 2008, 2009, 2015, 2019); Fall Meeting Session Convener (2004, 2015); Secretary of Atmospheric Sciences, Candidate (2005).
- American Association for Aerosol Research; member, Tutorial (2009); Session Chair (2008).
- American Chemical Society, member
- Scientific Advisory Board Member for BACCHUS (Impact of Biogenic versus Anthropogenic emissions on Clouds and Climate: towards a Holistic UnderStanding), proposal to the 7th EU Framework Programme Theme 6 (2013-2018)
- AIDA (KIT) Scientific Advisory Committee member (2015-present)
- NSF/NCAR Observing Facilities Assessment Panel (2010-2014)
- Co-organizer, Fifth International Ice Nucleation Workshop (Germany and USA) (2014-2015)
- CalWater Steering Committee (2014-2018)
- Co-organizer, International Workshop on Comparing Ice Nucleation Measuring Systems (ICIS 2007), 10-28 September 2007, Karlsruhe, Germany
- NCAR Ice Initiative Steering Committee (2003-2012)
- Intergovernmental Panel on Climate Change: Contributing author to Third Assessment Report – Climate Change 2001; reviewer 5th Assessment Report
- DOE Pacific Northwest Laboratory Aerosol Climate Initiative Advisory Committee (2008-2011)
- International Aerosol Conference, session convenor and tutorial presenter (2010)
- GEWEX Cloud Systems Studies Working Group II - Cirrus (1998-)
- NASA-SUCCESS II Planning Committee (1998-1999)
- North Dakota Tracer Experiment Planning Committee (1992-1993)
- Winter Icing in Storms Project Steering Committee (1994 -1997)
- Weather Modification Association, member, Editorial Board (1988-1991)
- Peer reviewer: (Nature, Science, Nature Geosciences, Scientific Reports, Environment International, Journal of Geophysical Research, Geophysical Research Letters, Proceedings of the National Academy of Sciences, Journal of the Atmospheric Sciences, Journal of Applied Meteorology, Journal of Atmospheric and Oceanic Technology, Bulletin of the American Meteorological Society, AMS Monographs, Journal of Physical Chemistry, ACS Earth and Space Sciences, Chemical Reviews, Atmospheric Chemistry and Physics, Biogeosciences, ISME Journal, Physical Chemistry Chemical Physics, Atmospheric Environment, Atmospheric Measurement Techniques, Journal of the Meteorological Society of Japan, mSphere, Atmospheric Research, Journal of Weather Modification, Journal of Photochemistry and Phytobiology, Atmosphere, NSF, NOAA, NASA (individual and panels), DOE (individual and panels), WMO, National Research

Council, National Center for Atmospheric Research, DFG, ETHZ-Switzerland, SNSF, ERC, Canadian Foundation on Climate and the Atmospheric Sciences, National (U.K.) Environmental Research Council, ANR-France, Helmholtz Society, American Chemical Society, German-Israeli Foundation, City University of New York, Research Corporation).

F. Publications

Author of more than 225 papers published in refereed scientific journals, 3 book chapters, more than 350 conference papers, 40 formal reports to private and public institutions, and numerous annual and final reports on research grants. H-index: 73 (Publons/Web of Science); 87 (Google Scholar). ORCID: 0000-0002-3719-1889. ResearcherID: C-4389-2011.

Horn, R. D., W. G. Finnegan and P. J. DeMott, 1982: Experimental studies of nucleation by dry ice. *J. Appl. Meteor.*, **21**, 1567-1570.

DeMott, P.J., W.G. Finnegan and L.O. Grant, 1983: An application of chemical kinetic theory and methodology to characterize the ice nucleating properties of aerosols used in weather modification. *J. Clim. Appl. Meteor.*, **22**, 1190-1203.

Hindman, E. E., R. D. Borys and P. J. DeMott, 1983: Hydrometeorological significance of rime ice deposits in the Colorado Rockies. *Water Res. Bull.*, **19**, 619-624.

Borys, R.D., E.E. Hindman, and P.J. DeMott, 1988: The chemical fractionation of atmospheric aerosol as a result of snow crystal formation and growth. *J. Atmos. Chem.*, **7**, 213-239.

DeMott, P. J., 1988: Comparisons of the behavior of AgI-type ice nucleating aerosols in laboratory-simulated clouds. *J. Wea. Mod.*, **20**, 44-50.

Ward, P. J. and P. J. DeMott, 1989: Preliminary experimental evaluation of Snomax™, *Pseudomonas syringae*, as an artificial ice nucleus for weather modification. *J. Wea. Mod.*, **21**, 9-13.

DeMott, P.J., 1990: An exploratory study of ice nucleation by soot aerosols. *J. Appl. Meteor.*, **29**, 1072-1079.

DeMott, P.J. and D.C. Rogers, 1990: Freezing nucleation rates of dilute solution droplets measured between -30 and -40C in laboratory simulations of natural clouds. *J. Atmos. Sci.*, **47**, 1056-1064.

DeMott, P. J., 1991: Comments on 'The persistence of seeding effects in an orographic cloud seeded with silver iodide burned in acetone'. *J. Appl. Meteor.*, **30**, 1376-1380.

Rogers, D.C., and P.J. DeMott, 1991: Advances in laboratory cloud physics 1987 - 1990. *Rev. of Geophys.*, **29**, Supplement Vol. 1, 80-87.

Meyers, M.P., P.J. DeMott, and W.R. Cotton, 1992: New primary ice nucleation parameterizations in an explicit cloud model. *J. Appl. Meteor.*, **31**, 708-721.

- DeMott, P.J., M.P. Meyers, and W.R. Cotton, 1994: Parameterization and impact of ice initiation processes relevant to numerical model simulations of cirrus clouds. *J. Atmos. Sci.*, **51**, 77-90.
- Rogers, D.C., P.J. DeMott and L.O. Grant, 1994: Concerning primary ice nuclei concentrations and water supersaturation in the atmosphere. *Atmospheric Research*, **33**, 151-168.
- Stith, J.L., D.A. Burrows, and P.J. DeMott, 1994: Initiation of ice: comparison of numerical model results with observations of ice development in a cumulus cloud. *Atmospheric Research*, **32**, 13-30.
- DeMott, P.J., 1995: Quantitative descriptions of ice formation mechanisms of silver iodide-type aerosols. *Atmospheric Research*, **38**, 63-99.
- DeMott, P. J., A. B. Super, G. Langer, D. C. Rogers, and J. T. McPartland, 1995: Comparative characterizations of the ice nucleus ability of AgI aerosols by three methods. *J. Wea. Mod.*, **27**, 1-16.
- Meyers, M. P., P. J. DeMott, and W. R. Cotton, 1995: Comparison of seeded versus non-seeded orographic cloud simulations with an explicit cloud model. *J. Appl. Meteor.*, **34**, 834-846.
- DeMott, P.J., S.M. Kreidenweis, and D.C. Rogers, 1997: The susceptibility of ice formation in upper tropospheric clouds to insoluble aerosol components. *J. Geophys. Res.*, **102**, 19575-19584.
- Chen, Y., S.M. Kreidenweis, L.M. McInnes, D.C. Rogers and P.J. DeMott, 1998: Single particle analyses of ice nucleating particles in the upper troposphere and lower stratosphere, *Geophys. Res. Lett.*, **25**, 1391-1394, <https://doi.org/10.1029/97GL03261>.
- 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.
- Franc, G. D. and P.J. DeMott, 1998: Cloud activation characteristics of airborne *Erwinia carotovora* cells. *J. Appl. Meteor.*, **37**, 1293-1300.
- Gerber, H., C. H. Twohy, B. Gandrud, A. J. Heymsfield, P. J. DeMott, and D. C. Rogers, 1998: Measurement of wave-cloud microphysics with two new aircraft probes, *Geophys. Res. Lett.*, **25**, 1117-1120.
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- Rogers, D.C., P.J. DeMott, S.M. Kreidenweis, and Y. Chen, 1998: Measurements of ice nucleating aerosols during SUCCESS, *Geophys. Res. Lett.*, **25**, 1383-1386.
- Boe, B. A. and P. J. DeMott, 1999: Comparisons of Lohse Wing-tip nuclei generators and burn-in-place pyrotechnics in the North Dakota Cloud Modification Project. *Journal of Weather Modification*, **31**, 109-118.

- DeMott, P.J., Y. Chen, S.M. Kreidenweis, D.C. Rogers and D. Eli Sherman, 1999: Ice formation by black carbon particles, *Geophys. Res. Lett.*, **26**, 2429-2432.
- Chen, Y., P.J. DeMott, S.M. Kreidenweis, D.C. Rogers and D. Eli Sherman, 2000: Ice formation by sulfate and sulfuric acid aerosol particles under upper tropospheric conditions, *J. Atmos. Sci.*, **57**, 3752-3766.
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- Rogers, D.C., P.J. DeMott, S.M. Kreidenweis and Y. Chen, 2001: A continuous flow diffusion chamber for airborne measurements of ice nuclei, *J. Atmos. Oceanic Technol.*, **18**, 725-741.
- Rogers, D.C., P.J. DeMott, and S.M. Kreidenweis, 2001: Airborne measurements of tropospheric ice nucleating aerosol particles in the Arctic Spring, *J. Geophys. Res.*, **106**, 15,053-15,063.
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- DeMott, P.J., D.J. Cziczo, A.J. Prezzi, D.M. Murphy, S.M. Kreidenweis, D.S. Thomson, R. Borys and D.C. Rogers, 2003: Measurements of the concentration and composition of nuclei for cirrus formation. *Proceedings of the National Academy of Sciences*, **100**, No. 25, 14655-14660, <https://doi.org/10.1073/pnas.2532677100>.
- DeMott, P.J., K. Sassen, M. Poellot, D. Baumgardner, D.C. Rogers, S. Brooks, A.J. Prezzi, and S.M. Kreidenweis, 2003: African dust aerosols as atmospheric ice nuclei. *Geophys. Res. Lett.*, **30**, No. 14, 1732, doi:10.1029/2003GL017410.
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- Brooks, S.D., P.J. DeMott and S.M. Kreidenweis, 2004: Water Uptake by Particles Containing Humic Materials and Mixtures of Humic Materials with Ammonium Sulfate. *Atmos. Environ.*, **38**, 1859-1868.
- Archuleta, C.A., P.J. DeMott, and S.M. Kreidenweis, 2005: Ice nucleation by surrogates for atmospheric mineral dusts and mineral dust/sulfate particles at cirrus temperatures. *Atmos. Chem. Phys.*, **5**, 2617–2634.
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- Lin, R-F., D. O’C. Starr, J. Reichardt, and P. J. DeMott, 2005: Nucleation in Synoptically Forced Cirrostratus, *J. Geophys. Res.*, **100**, D8, D08208, 10.1029/2004JD005362, 30 April 2005.
- Phillips, V. T. J., S. C. Sherwood, C. Andronache, A. Bansemer, W. C. Conant, P. J. DeMott, R. C. Flagan, A. Heysmfield, H. Jonsson, M. Poellot, J. H. Seinfeld, T. Vanreken, V. Varutbangkul and J. C. Wilson, 2005: Anvil Glaciation in a Deep Cumulus Updraft over Florida Simulated with an Explicit Microphysics Model. Part I - The Impact of Various Nucleation Processes. *Q.J. Royal Met. Soc.*, **131**, 2019–2046.
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- Kreidenweis, S. M., M. D. Petters, and P. J. DeMott, 2006: Deliquescence-controlled activation of organic aerosols. *Geophys. Res. Lett.*, **33**, L06801, doi:10.1029/2005GL024863.
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- Petters, M.D., A.J. Prenni, S.M. Kreidenweis, P.J. DeMott, A. Matsunaga, Y.B. Lim, and P.J. Ziemann, 2006: Chemical aging and the hydrophobic-to-hydrophilic conversion of carbonaceous aerosol. *Geophys. Res. Lett.*, **33**, L24806, doi:10.1029/2006GL027249.

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G. Invited Presentations

Presentations made at scientific conferences and meetings. Selected ones that were specially invited, listed here:

Invited colloquium, “Investigations into ubiquitous biological and organic ice nucleating particles”, *Virtual Ice Nucleation Colloquium*, (international virtual), Feb. 9, 2023.

Invited seminar, “Perspectives on Research Needs for Understanding and Validating the Action of Cloud Seeding Aerosols,” *ETH-Zurich Institute for Atmospheric and Climate Science – Colloquium*, November 21, 2022 (virtual).

Invited presentation, “Investigating atmospheric organic and biological ice nucleating particles,” *A Molecular Level Understanding of Atmospheric Aerosols (MUOAA 2022)*, Lake Arrowhead, CA, May 17, 2022.

Invited AGU Fellow talk, “Lessons and circumstances in studies of atmospheric ice nucleation,” *American Geophysical Union Fall Meeting*, December 15, 2021, New Orleans, LA.

Invited presentation, “Colorado State University Laboratory Facilities and Measurements Focused on Ice Nucleation”, *Workshop on laboratory facilities for cloud research*, Beijing, China (virtual), September 24, 2021.

Invited seminar, “Identifying and predicting global ice nucleating particle sources,” *Department of Atmospheric Sciences, Texas A&M University*, April 15, 2020.

Invited seminar, “Underappreciated organic ice nucleating particles (INPs),” *Invited seminar, Climate and Atmospheric Sciences, Karlsruhe Institute of Technology*, Feb. 4, 2020.

Invited AMS Fellow talk, “How well do we understand and predict ice nucleating particle sources and concentrations around the world?”, *100th AMS Annual Meeting, 12th Symposium on Aerosol Cloud Interactions*, January 15, 2020, Boston, MA.

Invited AMS Fellow talk, “Some Past Research on Cloud Seeding Aerosols and a Future Outlook,” *100th AMS Annual Meeting, 22nd Symposium on Weather Modification*, January 14, 2020, Boston, MA.

Invited presentation, “Assessing the Roles of Primary and Secondary Ice Formation in Clouds Through Measurements and Modeling”, Invited, Abstract A52G-01, *American Geophysical Union Fall Meeting*, December 9-13, 2019, San Francisco, CA.

Invited seminar, “Underappreciated organic ice nucleating particles (INPs): Recent studies of marine and biomass burning INPs”, Pacific Northwest National Laboratory, Atmospheric Science seminar, October 9, 2019.

Invited Research Highlight talk, “Spatial and Temporal Variability of Ice Nucleating Particles over the Southern Ocean,” *Department of Energy 2019 ARM/ASR User Facility and Principal Investigator Meeting*, June 10-13, Rockville, MD, USA.

Invited presentation, “Ice nucleating particles over marine regions (and their potential impact on clouds),” *Telluride Science Research Center Workshop: Aerosols and Clouds: Connections from the Laboratory to the Field to the Globe*, Telluride, CO, July 30 – August 3, 2018.

Invited presentation, “Ice Nucleation by Marine Aerosols: From the Laboratory to the Ocean and Across Hemispheres,” *INUIT Final Meeting and 2nd Atmospheric Ice Nucleation Conference*, Feb. 27, 2018, Grasellenbach, Germany.

Invited seminar, “What seeds ice formation in clouds and why does it matter?” *University of Northern Colorado, Department of Earth & Atmospheric Sciences*, Nov. 9, 2017, Greeley, CO, USA

Invited seminar, “Ice Nucleating Particle Measurements for Constraining Primary Ice Nucleation in Mixed-Phase Clouds,” *NASA/LaRC Science Directorate*, October 26, 2017; Hampton, VA.

Invited presentation, “Land versus ocean production of ice nucleating particles: Expectation for cold cloud influences,” *IAPSO-IAMAS-IAGA Joint Assembly 2017*, September, 2017, Cape Town, South Africa.

Invited presentation, “Land versus ocean production of ice nucleating particles: Expectation for cold cloud influences,” *Fourth Santa Fe Conference on Global & Regional Climate Change*, Feb. 6-10, 2017, Santa Fe, NM, USA.

Invited presentation, “Ice Nucleating Particle Emissions from Natural and Agricultural Soils,” *97th American Meteorological Society Annual Meeting*, Jan. 25, 2017, Seattle, WA, USA.

Invited presentation, “Soil and Plant Dust Emissions from Natural and Agricultural Landscapes as Atmospheric Ice Nucleating Particle Sources”, *American Geophysical Union Fall Meeting*, Dec. 13, 2016, San Francisco, CA.

Invited presentation, “Probing the compositions of atmospheric ice nucleating aerosols,” *Telluride Science Research Center Workshop: Aerosols and Clouds: Connections from the Laboratory to the Field to the Globe*, Telluride, CO, June 27 – July 1, 2016.

Invited presentation, “Ice nucleating particle measurements of relevance to cloud properties in Polar Regions,” *Sixth Symposium on Polar Science*, National Institute of Polar Research, Tachikawa, Japan, Nov. 12, 2015.

Invited colloquium, “Concerning the varied sources of ice nucleating particles to the atmosphere,” *University of Tokyo colloquium*, Tokyo, Japan, Nov. 14, 2015.

Invited presentation, “Recent measurements of ice nucleating particles produced from sea spray”, for the *Institute of Climate and Atmospheric Science Annual Science Meeting*, Univ. of Leeds, Leeds, UK, Nov. 5, 2015.

Invited presentation, “Field and Laboratory Studies on Ice Nucleating Particles,” National Academy of Sciences *Sackler Colloquium on Improving Our Fundamental Understanding of the Role of Aerosol-Cloud Interactions in the Climate System*, Irvine, CA, 23-24 June 2015.

Invited presentation, “Studies of the abundance and compositions of organic ice nucleating particles in the atmosphere,” for Physical Chemistry Division’s symposium on “Transformations of Matter in the Troposphere,” *American Chemical Society Meeting*, March 22, 2015, Denver, CO.

Invited presentation, “Integrating measurement methods to characterize ice nucleating particles from oceanic and other sources,” Invited presentation for the Telluride Science Center Workshop, *Aerosols and Clouds: Connections from the Laboratory to the Field to the Globe*, Telluride, CO, August 4, 2014.

Invited presentation, “Marine Ice Nucleating Particles and the Need for Southern Ocean Measurements,” Invited presentation for the *Workshop on Clouds, Aerosols and the Air-Sea Interface of the Southern Oceans*, March 18, 2014, Seattle, WA

Invited presentation, “Investigations of Marine Ice Nucleating Particles,” at *Sixth Symposium on Aerosol-Cloud-Climate Interactions, 94th Annual Meeting of the Amer. Meteor. Soc.*, February 3-7, 2014, Atlanta, GA.

Invited lecturer for the DFG (German Science Foundation) INUIT (Ice Nucleation Research Unit) summer school on "Atmospheric Ice Nucleation and its Implications," Braunfels a. d. Lahn, Germany, September 15-21, 2013.

Invited speaker for *International Wilhelm and Else Heraeus Seminar*, “Water vapor and ice in the atmosphere,” Bad Honnef/Bonn, Germany, 10 to 14 June 2013.

Invited seminar, “Exploring the Diversity and Influence of Atmospheric Aerosols as Ice Nuclei,” for the *MIT Atmospheric Science Seminar Series* in the Program in Atmospheres, Oceans and Climate, Boston, MA, February 25, 2013.

Invited talk, “Measurements of African dust aerosol properties as ice nuclei in the laboratory and atmosphere,” for the 2012 AGU Fall Meeting, San Francisco, CA December, 4, 2012.

Invited talk, “Studies of sources of inorganic and organic ice nuclei”, for *Telluride Science Center’s Workshop - Aerosols and Clouds: Connections from the Laboratory to the Field to the Globe*, Telluride, CO, 7-10 August, 2012.

Invited talk, “Ice Nuclei Sources, Concentrations, and Relation to Aerosol Properties,” for *16th International Conference on Clouds and Precipitation* Leipzig, Germany, 30 July – 3 August, 2012.

Invited talk, “Quantifying sources of inorganic and organic atmospheric ice nuclei,” *95th Canadian Chemistry Conference and Exhibition*, Calgary, Alberta, Canada, May 29, 2012.

Invited seminar, “Investigations of ice nuclei concentration dependence on temperature, aerosol concentration, and aerosol composition,” Physics Department, Leibniz Institute for Tropospheric Research, Leipzig, Germany, March 20, 2012.

Invited talks, “Dependence of ice formation in Sierra winter orographic clouds on the mixing state of aerosols serving as ice nuclei,” and “Recent field measurements of ice nuclei concentration relation to aerosol properties,” *2011 AGU Fall Meeting*, San Francisco, CA December 6, 2011.

Invited talk, “Insights into the roles of different aerosol types as ice nuclei,” *Gordon Research Conference on Atmospheric Chemistry*, Mt. Snow, VT July 27, 2011.

Invited presentations, “Recent insights into ice nuclei abundance, composition, and relation ice formation in clouds,” and “Summary of ICIS-2007,” at the *International*

Workshop on Ice Nucleation in Tropospheric Clouds (IN2clouds), Ettlingen, Germany
May 23-25, 2011.

Invited talk, “Investigating and parameterizing physical, chemical, and thermodynamic dependencies of ice nuclei concentrations,” at the *2010 AGU Fall Meeting*, San Francisco, December 2010.

Invited talk, “Ice nuclei measurements,” for *EUFRAR-ICARE session “Emerging Technologies for Airborne Measurements”*, October 2010, Toulouse

Invited tutorial, “Ice nucleation by atmospheric aerosols,” International Aerosol Conference 2010, Helsinki, FI, 28 August 2010.

Invited talk, “Quantifying ice nucleation by atmospheric aerosols: Some findings and challenges” for the *Telluride Science Center’s Aerosol Cloud Chemistry Workshop*, Telluride, CO, August 2010.

Invited seminar, “Measuring ice nucleating aerosols and predicting their impacts on clouds and climate,” *Institute of Meteorology and Climate Science, Karlsruhe Institute of Technology*, Karlsruhe, Germany, January 19, 2010.

Invited tutorial, “Ice formation by atmospheric aerosols,” *Amer. Assn. for Aerosol Research Annual Conf.*, Minneapolis, MN, October 2009.

Invited colloquium, “Predicting atmospheric ice nuclei distributions and their impacts on climate,” at *ETH-Zurich*, Zurich, Switzerland, October, 2009.

Invited seminar, “Recent measurements of ice nuclei and their relation to ice formation in clouds,” Department of Earth and Atmospheric Sciences, Georgia Tech., October, 2008.

Invited talk, “Mineral dust impacts on ice formation: Insights from laboratory and field studies,” *3rd International Workshop on Mineral Dust*, Leipzig, Germany, September 2008.

Invited talk, “Collection and Interpretation of Atmospheric Ice Nuclei Measurements,” for the *Front Range Aerosol Program* meeting, NCAR, May 22, 2008.

Invited plenary, “Measurements of ice phase transitions involving atmospheric aerosols,” *American Chemical Society Spring Meeting*, New Orleans, LA, April 2008.

Invited talk, “Characteristics and Cloud Interactions of Ice Nucleating Aerosols from Asian Continental Emissions During the Pacific Dust Experiment” at the *AGU Fall Meeting*, San Francisco, December 2007.

Invited Plenary Speaker, “Progress and Issues in Quantifying Ice Nucleation Involving Atmospheric Aerosols,” *17th International Conference on Nucleation and Atmospheric Aerosols*, Galway, Ireland, August 2007.

Invited presentations, “Atmospheric ice nuclei concentrations and characteristics: constraining the role of biological ice nuclei,” and “Ice formation by different aerosol types and implications for aerosol effects on mixed-phase clouds” at *IUGG/IAMAS Assembly and Symposia*, Perugia, Italy, July 2007.

Invited seminars, “Ice Nuclei Variability, Relation to Ambient Aerosol Properties, and Impacts on Mixed-Phase Clouds” and “Laboratory Studies of Ice Formation by Mineral

Dust and Soot-Containing Aerosol Particles”, *Meteorological Research Institute*, Japan, January 2007.

Invited talk, “A look at clouds: what is a cloud, what is its origin and what can we predict and model about its destiny?” *European Science Foundation Exploratory Workshop: Microbiological Meteorology*, Avignon, France, March 1, 2006

Invited seminar, “Atmospheric Ice Formation by Mineral Dust Particles: Recent Laboratory and Field Studies”. *Forschungszentrum Karlsruhe Institute for Meteorology and Climate Research*, Karlsruhe, Germany, March 7, 2006

Invited lecture, “Aerosol chemistry and ice clouds”. *IGAC Specialty Conference on Aerosol Indirect Effects*, Manchester, England, January 2005.

Invited seminar, “Aerosol Impacts on Upper Tropospheric Ice Formation”. *Colloquium of the Dept. of Atmos. Sci., University of Wyoming*, Laramie, Wyoming, 3 October, 2003.

Invited talk, “Aerosol-ice cloud interactions”, Session on Aerosol Cloud Interactions at *European Geophysical Society/American Geophysical Union/European Union of Geophysics Joint Meeting*, Nice, France, April, 2003.

Invited talk, “The Physics and Chemistry of Aerosol Indirect Effects on Ice-phase Clouds” for the *Colorado State University Department of Atmospheric Science 40th Anniversary*, July 2002.

Invited seminar, “Atmospheric Particulate Matter and Cirrus Clouds”. Colorado State University chapter of *Sigma Xi National Research Honor Society*, November 2001.

Invited seminar, “Measurements and modeling of ice formation by aerosols in upper tropospheric conditions”, Atmospheric Chemistry Group, *Harvard University*, December 2000.

Invited participant, Workshop on "Addressing the Current State of Weather Modification Science as a Basis for Future Environmental Sustainability and Policy Development," *National Research Council*, November 2000.

Invited seminar, “Measurements and modeling of ice phase transitions by aerosol particles in upper tropospheric conditions”, Dept. of Geophysical Sciences, *University of Chicago*, November 1999.

Invited lecture, “Laboratory studies of cirrus cloud processes”, *Topical Cirrus Conference, Optical Society of America Annual Meeting*, Baltimore, MD, October 1998.

Invited lecture, “The role of atmospheric aerosols in cloud and precipitation formation”. *Conference on Hail Damage Mitigation and Hail Science*, Bismarck, ND, March 1996.

Invited seminar, “Measurements on ice formation in upper tropospheric cloud conditions”, *NCAR M³ Division*, Boulder, CO, August 1995.

Invited lecture, "Research activities at the Colorado State University Cloud Simulation and Aerosol Laboratory", *Chinese Academy of Meteorological Sciences*, May 1989.

Invited seminar, "Ice nucleation: ‘Time’ for a different perspective." *National Center for Atmospheric Research - Convective Storms Division*. 3 May, 1983, Boulder, CO.

H. Advisory and Supervisory Experience

<u>Person</u>	<u>Title</u>	<u>Supervisory role</u>	<u>Period</u>
Brian Jesse	Electronics Technician	Immediate supervisor	1986-2005
Mark Branson	Work study/M.S. student	Supervisor/advising	1988-1993
David Torgerson	Work study in Physics	Immediate supervisor	1991-1993
Tara Jensen	M.S. student	Informal advising	1992-1993
Ian Baker	M.S. student	Supervisor/advising	1993-1994
John Robb	Graduate Student hourly	Supervisor	1994-1995
Randy Vetter	Undergraduate hourly	Assistant supervisor	1995
Suzanne Hyde	Undergraduate hourly	Assistant supervisor	1995
Craig Huey	Undergraduate hourly	Assistant supervisor	1996
Yalei Chen	Ph.D. student	Informal advising	1996-1999
Tony Prenni	NOAA Postdoctoral Fellow	Co-advisor	2000-2002
Cassie Archuleta	M.S. student	Advising, Committee	2000-2003
Sarah Brooks	Postdoctoral Fellow	Co-advisor	2002-2004
Kristen Koehler	M.S./Ph.D. student	Committee member	2002-2007
Matt Richardson	Ph.D. student	Committee member	2003-2008
Markus Petters	Postdoctoral Fellow	Co-advisor	2004-2006
Matthew Parsons	Postdoctoral Fellow	Co-advisor	2007-2008
Trude Eidhammer	Postdoctoral Fellow	Co-advisor	2007-2008
Ryan Sullivan	Postdoctoral Fellow	Co-advisor	2009-2011
Gavin McMeeking	Postdoctoral Fellow	Co-advisor	2011
Felix Lüoüind	PhD (ETH-Zurich)	Outside referee	2010
Yutaka Tobo	Postdoctoral Fellow	Advisor	2010-2012
James Carpenter	M.S. student	Co-advisor	2010-2012
Christina McCluskey	M.S/Ph.D student	Co-advisor	2011-2017
Ezra Levin	Postdoctoral fellow	Co-advisor	2013-2016
Kaitlyn Suski	Postdoctoral fellow	Co-advisor	2014-2017
Gregory Schill	NSF Postdoctoral Fellow	Co-Advisor	2014-2017
Yvonne Boose	ETHZ Exchange Visitor	Advisor	2015
Katherine Rocci	Undergraduate intern	Co-advisor	2015
Thea Schiebel	KIT Exchange Visitor	Advisor	2015, 2016
Anna Miller	Undergraduate intern	Co-advisor	2016
Anne Marie Rauker	Undergraduate hourly	Advisor	2016-2017
Kevin Barry	M.S., PhD student	Co-Advisor	2017-
Katherine Moore	M.S., PhD student	Co-Advisor	2017-
Jun Uetake	Postdoctoral Fellow	Advisor	2017-2020
Russell Perkins	Postdoctoral Fellow	Advisor	2017-2020
Ruby Nelson	Undergraduate intern	Co-advisor	2018
Samantha Gillette	Undergraduate intern	Co-advisor	2018
Charlotte Beall	PhD (UCSD)	Committee member	2016-2021
Yang Shi	M.S. (Wyoming)	Committee member	2019
Xianda Gong	PhD (TROPOS)	Outside referee	2020
Nicholas Kedzuf	M.S. (CSU)	Committee member	2020
Ryan Patnaude	PhD student	Co-Advisor	2020-

Paul J. DeMott

Ben Swanson	Postdoctoral Fellow	Advisor	2021-2022
Claudia Mignani	Postdoctoral Fellow	Co-Advisor	2022-
Noelle Bryan	Postdoctoral Fellow	Co-Advisor	2022-