Curriculum Vitae

Wiebke Frey

Personal data

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Publons: publons.com/a/920333/

Positions

since 05/2019 — Marie Skłodowska-Curie Fellow, Leibniz Institute for Tropospheric Research, Leipzig, Germany

- Operation of turbulent wind tunnel LACIS-T and its instrumentation to observe effects of entrainment on cloud particle properties.
- CFD simulations of the observations in LACIS-T with the OpenFOAM model.
- Case studies of entrainment in stratocumulus clouds simulated with the atmospheric model ICON-LEM.
- Maternity leave (08/2020 - 06/2021)

03/2018 - 02/2019 — Research Associate, Leibniz Institute for Tropospheric Research, Leipzig, Germany

- Operation and maintenance of ice nucleus counter Spectrometer for Ice Nuclei (SPIN)

05/2015 - 01/2018 — Research Associate, School of Earth and Environmental Sciences, University of Manchester, UK

- Operation of the Manchester Ice Cloud Chamber (MICC) and its instrumentation, including cloud and aerosol particle measurements
- Measurements of the role of organic compounds in (warm and cold) cloud formation
- Maternity leave (11/2016 - 05/2017)

04/2013 - 03/2015 — Postdoctoral research fellow, School of Earth Sciences, University of Melbourne, Australia

- Numerical simulation of tropical deep overshooting convection (with WRF-ARW)
- Study of impact of clouds in the TTL on stratospheric water vapour using microphysical box model run along back trajectories derived from ECMWF
- Mass fluxes analysis from combined wind profiler and CPOL radar data set from Darwin, Australia, and from model simulations

07/2011 - 03/2013 — Postdoctoral research fellow, Max Planck Institute for Chemistry, Particle Chemistry Department, Mainz, Germany

- In situ measurements of cloud particles in polar stratospheric clouds

13 - 27/11/2012	Visiting scientist at The International Meteorological Institute , Stockholm, Sweden
05/2007 - 06/2011	PhD candidate, Max Planck Institute for Chemistry, Particle Chemistry Department, Mainz / Institute for Atmospheric Physics, Johannes Gutenberg University Mainz, Germany • In situ measurements of cloud particles in high altitude clouds in the tropical tropopause layer (deep overshooting convection, MCS outflow, subvisible cirrus) • Operation of cloud particle instrumentation and data analysis
08 - 09/2001	Trainee at Forschungszentrum Jülich, Institute of Chemistry and Dynamics of the Geosphere (ICG-1: Stratosphere, now: IEK-7), Germany • Calibration of FISH water vapour instrument • Overview about cirrus clouds

Awards and Grants

since 05/2019	Marie Skłodowska-Curie Individual Fellowship (EU, H2020-MSCA-IF-2018, approximately 175,000€ in total) computing time granted: 1000 node hours on Mistral and 700 node hours on Levante at DKRZ, Hamburg, Germany, and 470,000 hours CPU-time and 1200 GPU hours on taurus at ZIH Dresden, Germany
07/2020 - 03/2022	Mentee in Leibniz Mentoring Programme (cohort 2020/21)
07/2015	Water Budget in the TTL (WBTTL) workshop travel grant (600€)
01/2014	SPARC travel grant (US$ 1300) for attending the SPARC General Assembly 2014 in Queenstown, New Zealand
04/2013 - 03/2015	German Research Foundation (DFG) Postdoctoral fellowship (monthly stipend, approximately 70,000€ in total)
12/2011	International Max Planck Research School (IMPRS) for Atmospheric Chemistry and Physics Certificate *Overall Grading:* superior

Outreach

20-26/01/2020	Curator of @RealSci_DE (Real Scientist Germany) twitter account
since 05/2019	Twitter account for Marie Skłodowska-Curie Individual Fellowship project "Solving The Entrainment Puzzle" (@STEP_msca)
23/07/2016	Speaker at Soapbox Science, Piccadilly Gardens, Manchester, UK
23/07/2015	Facilitator for 'other developed countries' in mock UN climate negotiations of the World Climate Exercise, Manchester, UK
17/08/2014	Open Day 2014, Melbourne University, SES display, Melbourne, Australia
04-05/06/2011	Wolkenmemorie, 10th Mainzer Wissenschaftsmarkt, Mainz, Germany

Service/Professional Involvement

10/2019-07/2020	Member of TROPOS research data infrastructure working group
02/2019	Session chair "Technical advances for simulating, computing and observing clouds and precipitation", Understanding Clouds and Precipitation (UCP) 2019, Berlin, Germany

10/2018	Reviewer for grant proposal in National Science Centre Poland (NCN) PRELUDIUM scheme
12/2017	Judge for oral presentations at the SEES Post Graduate Research Conference (PGRC), Manchester, UK
since 08/2017	Associate editor for Atmospheric Measurement Techniques (AMT)
04/2016 - 04/2018	Member of European Geosciences Union (EGU) Early Career Researcher (ECR) representatives team
02/2016	Interview panel for Doctoral Training Programme (Understanding the Earth, Atmosphere and Ocean), Centre for Atmospheric Science, University of Manchester, UK
05/2015 - 01/2018	Administrator of CCN-Vol project data storage
06/2014	Selection committee for 'Climate Change Model Diagnostics Research Fellow', School of Earth Sciences, University of Melbourne, Australia
05/2004-05/2005	Student representative in board meetings at the Institute of Meteorology and Climatology, Leibniz University Hannover, Germany
Reviewer for	Atmospheric Chemistry and Physics, Journal of Geophysical Research - Atmospheres, Geophysical Research Letters, Scientific Reports, Atmospheric Research, Journal of Climate, Atmospheric Measurement Techniques, Journal of Atmospheric and Solar-Terrestrial Physics, and Pure and Applied Geophysics (verified at publons)

Organisation and Memberships

08/2017 - 01/2018	Organiser of "Shut up and Write" group at CAS, University of Manchester, UK
05/2015 - 10/2016	Organisation of CCN-Vol project meetings
07/2014 - 03/2015	Organisation of group meetings of the Mesoscale dynamics and cloud processes group, University of Melbourne, Australia
since 01/2015	Young Earth System Scientists community (YESS) member
since 11/2014	Earth Science Women Network (ESWN) member
since 02/2012	Association of Polar Early Career Scientists (APECS) member
since 02/2012	German Meteorological Society (DMG) member
2006	Member of organisation committee for the STUMETA (Studentische Meteorologen Tagung, i.e. students' meteorology conference) 2006, Hannover, Germany

Teaching and Supervision experiences

12/05/2022	Delivering and designing lecture Aerosol physics, University of Leipzig/TROPOS, Germany
12/2018 - 06/2020	Mentor in the CyberMentor Plus Programme (www.cybermentor.de)
18/11/2015	Delivering lecture EART30351: Meteorology and Atmospheric Physics, University of Manchester, UK
12/2013 - 01/2014	Supervision of an undergraduate student in the ARC Centre of Excellence for Climate System Science summer scholarship program
07/2009 - 03/2013	Assistance and training of fellow PhD students
10/2009 - 12/2012	Supervision of undergraduate seminar talks (on subvisible cirrus, the Tropical Tropopause Layer, and Aircraft Meteorological Data Relay data), Johannes Gutenberg University Mainz, Germany

05 - 11/2009	Supervision of advanced meteorological practical course, Johannes Gutenberg University Mainz, Germany
10/2008 - 02/2009	Demonstrator of exercise course in the physical chemistry of the Upper Troposphere/Lower Stratosphere (UTLS), Johannes Gutenberg University Mainz, Germany
04/2008 - 08/2008	Demonstrator of exercise course in cloud physics, Johannes Gutenberg University Mainz, Germany
04/2006 - 08/2006	Supervision of meteorological practical course, Leibniz University Hannover, Germany
04/2004 - 08/2004	Mentor in the "Mentoring für Schülerinnen" (mentoring for pupils (f)) programme

Training

04/2022	NVIDIA/LRZ AI for Science Bootcamp #2, online
02/2020	HLRS Parallel Programming Workshop MPI, OpenMP and Tools, ZIH TU-Dresden, Germany
10/2019	"Science meets Diplomacy: a new European perspective" Science Diplomacy workshop, S4D4C and TWAS, Trieste, Italy
10/2018	"Research Data Management" workshop, 15. Universitätsseminar Junge Wissenschaft und Praxis, Research Academy Leipzig, Machern, Germany
10/2015	Course certificate (with distinction) Journalism Skills for Engaged Citizens, Coursera MOOC, The University of Melbourne (link to Coursera certificate)
02/2015	Research Bazaar Conference - Data Analysis and Visualisation using Python stream, University of Melbourne, Melbourne, Australia
11/2013	Software Carpentry bootcamp, University of Melbourne, Melbourne, Australia
07/2013	WRF Basic and WRF-Chem Tutorial, NCAR, Boulder, USA
06/2013	2nd CoECSS Climate Science Winter School (Modelling the Climate System), Climate Change Research Centre (CCRC), Sydney, Australia
04/2012	"Writing Success Promising Proposals" advanced training course, International DAAD-Academy (iDA), Bonn, Germany
12/2011	Minerva School on Alternative, Sustainable Energy Options, Minerva, Nazareth, Israel
04/2008	2nd EUFAR Summer School, Airborne Cloud and Aerosol Science (ACAS), Koninklijk Netherlands Meteorological Institute (KNMI), Utrecht, Netherlands
11/2005	"Project Management" advanced training course, pep.per.mind - Unternehmensberatung, Hannover, Germany

Education

10/2011 Johannes Gutenberg University Mainz, Institute for Atmospheric Physics / Max Planck Institute for Chemistry, Particle Chemistry Department, Mainz, Germany
Dr. rer. nat. (PhD) in meteorology

PhD Thesis: "Airborne in situ measurements of ice particles in the tropical tropopause layer" (formally submitted 1 June 2011)

Final Grade: very good (magna cum laude)

Grade of thesis: with distinction (summa cum laude)
Grade of colloquium: very good

02/2007	Leibniz University Hannover, Institute of Meteorology and Climatology, Germany Diplom (Masters Degree equivalent) in meteorology
	Diplom Thesis: "Investigation of type-specific errors in AMDAR weather reports of commercial aircraft"
	Minor Subjects: Photovoltaics and Biophysics
08/2004 - 07/2005	ERASMUS exchange student at Uppsala University, Sweden
06/2000	Hölty-Gymnasium, Celle, Germany Abitur (school-leaving exam), main subjects Mathematics, Physics

Language Skills

German:	native tongue
English:	fluent in spoken and written
Swedish:	advanced knowledge spoken and written

Programming Languages and Software Skills

IDL, IGOR Pro, Fortran, R stats, Python, Matlab, LaTeX, Gimp, Photoshop, HTML, MS-Office-package, OpenOffice-package, Unix, Windows, shell script

Field Campaign Participation

Responsibility for operation of scientific instruments (and for data analysis):

03, 05 - 06/2020	STEP-WP1 (Solving The Entrainment Puzle - work package 1), Leipzig, Germany
09/2019	CLOUD14 (Cosmics Leaving OUtdoor Droplets), CERN, Geneva, Switzerland
09/2018	CLOUD13 (Cosmics Leaving OUtdoor Droplets), CERN, Geneva, Switzerland
09/2016	CCN-Vol warm experiments II, Manchester Ice Cloud Chamber, Manchester, UK
05 - 06/2016	CCN-Vol cold experiments, Manchester Ice Cloud Chamber, Manchester, UK
03 - 04/2016	CCN-Vol warm experiments, Manchester Ice Cloud Chamber, Manchester, UK
02/2016	CCN-Vol chamber characterisation, Manchester Ice Cloud Chamber and Manchester Aerosol Chamber, Manchester, UK
12/2015	CCN-Vol test campaign, Manchester Ice Cloud Chamber, Manchester, UK
09/2012	ACRIDICON-Zugspitze (Aerosol, Cloud, Precipitation, and Radiation Interactions and Dynamics of Convective Cloud Systems), Schneefernerhaus, Zugspitze, Germany
09/2011	CONCERT2011 (CONtrail, volcano, and Cirrus ExpeRimenT), Oberpfaffenhofen, Germany
01 - 03/2010	RECONCILE (Reconciliation of essential process parameters for an enhanced predictability of arctic stratospheric ozone loss and its climate interactions), Kiruna, Sweden
10 - 11/2008	CONCERT (CONtrail and Cirrus ExpeRimenT), Oberpfaffenhofen, Germany
09/2007	AIRTOSS (AIRcraft Towed Sensor Shuttle), Hohn, Germany
07/2007	EUFAR-OMAC (Observation Methodologies of the First Indirect Aerosol Effect in Water Clouds), Baden-Baden, Germany

Publications

Nowak, J.L., Grosz, R., **Frey, W.**, Niedermeier, D., Mijas, J., Malinowski, S.P., Ort, L., Schmalfuß, S., Stratmann, F., Voigtländer, J., and Stacewicz, T.: Contactless optical hygrometry in LACIS-T, Atmos. Meas. Tech. Discuss., 2022, 1–23. doi:10.5194/amt-2022-79, 2022, (under review for AMT, published as preprint).

Frey, W., Hu, D., Dorsey, J., Alfarra, M.R., Pajunoja, A., Virtanen, A., Connolly, P., and McFiggans, G.: The efficiency of secondary organic aerosol particles acting as ice-nucleating particles under mixed-phase cloud conditions, Atmos. Chem. Phys., 18, 9393–9409. doi:10.5194/acp-18-9393-2018, 2018, (*2 citations*).

Shcherbakov, V., Jourdan, O., Voigt, C., Gayet, J.F., Chauvigne, A., Schwarzenboeck, A., Minikin, A., Klingebiel, M., Weigel, R., Borrmann, S., Jurkat, T., Kaufmann, S., Schlage, R., Gourbeyre, C., Febvre, G., Lapyonok, T., **Frey, W.**, Molleker, S., and Weinzierl, B.: Porous aerosol in degassing plumes of Mt. Etna and Mt. Stromboli, Atmos. Chem. Phys., 16, 11883–11897. doi:10.5194/acp-16-11883-2016, 2016, (*7 citations*).

Frey, W., Schofield, R., Hoor, P., Kunkel, D., Ravegnani, F., Ulanovsky, A., Viciani, S., D'Amato, F., and Lane, T.P.: The impact of overshooting deep convection on local transport and mixing in the tropical upper troposphere/lower stratosphere (UTLS), Atmos. Chem. Phys., 15, 6467–6486. doi: 10.5194/acp-15-6467-2015, 2015, (*29 citations*).

Frey, W., Borrmann, S., Fierli, F., Weigel, R., Mitev, V., Matthey, R., Ravegnani, F., Sitnikov, N.M., Ulanovsky, A., and Cairo, F.: Tropical deep convective life cycle: Cb-anvil cloud microphysics from high-altitude aircraft observations, Atmos. Chem. Phys., 14, 13223–13240. doi:10.5194/acp-14-13223-2014, 2014, (*13 citations*).

Grooß, J.U., Engel, I., Borrmann, S., **Frey, W.**, Günther, G., Hoyle, C.R., Kivi, R., Luo, B.P., Molleker, S., Peter, T., Pitts, M.C., Schlager, H., Stiller, G., Vömel, H., Walker, K.A., and Müller, R.: Nitric acid trihydrate nucleation and denitrification in the Arctic stratosphere, Atmos. Chem. Phys., 14, 1055–1073. doi:10.5194/acp-14-1055-2014, 2014, (*42 citations*).

Molleker, S., Borrmann, S., Schlager, H., Luo, B., **Frey, W.**, Klingebiel, M., Weigel, R., Ebert, M., Mitev, V., Matthey, R., Woiwode, W., Oelhaf, H., Dörnbrack, A., Stratmann, G., Grooß, J.U., Günther, G., Vogel, B., Müller, R., Krämer, M., Meyer, J., and Cairo, F.: Microphysical properties of synoptic-scale polar stratospheric clouds: in situ measurements of unexpectedly large HNO_3-containing particles in the Arctic vortex, Atmos. Chem. Phys., 14, 10785–10801. doi:10.5194/acp-14-10785-2014, 2014, (*34 citations*).

Woiwode, W., Grooß, J.U., Oelhaf, H., Molleker, S., Borrmann, S., Ebersoldt, A., **Frey, W.**, Gulde, T., Khaykin, S., Maucher, G., Piesch, C., and Orphal, J.: Denitrification by large NAT particles: the impact of reduced settling velocities and hints on particle characteristics, Atmos. Chem. Phys., 14, 11525–11544. doi:10.5194/acp-14-11525-2014, 2014, (*10 citations*).

von Hobe, M., Bekki, S., Borrmann, S., Cairo, F., D'Amato, F., Di Donfrancesco, G., Dörnbrack, A., Ebersoldt, A., Ebert, M., Emde, C., Engel, I., Ern, M., **Frey, W.**, Genco, S., Griessbach, S., Grooß, J.U., Gulde, T., Günther, G., Hösen, E., Hoffmann, L., Homonnai, V., Hoyle, C.R., Isaksen, I.S.A., Jackson, D.R., Jánosi, I.M., Jones, R.L., Kandler, K., Kalicinsky, C., Keil, A., Khaykin, S.M., Khosrawi, F., Kivi, R., Kuttippurath, J., Laube, J.C., Lefèvre, F., Lehmann, R., Ludmann, S., Luo, B.P., Marchand, M., Meyer, J., Mitev, V., Molleker, S., Müller, R., Oelhaf, H., Olschewski, F., Orsolini, Y., Peter, T., Pfeilsticker, K., Piesch, C., Pitts, M.C., Poole, L.R., Pope, F.D., Ravegnani, F., Rex, M., Riese, M., Röckmann, T., Rognerud, B., Roiger, A., Rolf, C., Santee, M.L., Scheibe, M., Schiller, C., Schlager, H., Siciliani de Cumis, M., Sitnikov, N., Søvde, O.A., Spang, R., Spelten, N., Stordal, F., Sumińska-Ebersoldt, O., Ulanovski, A., Ungermann, J., Viciani, S., Volk, C.M., vom Scheidt, M., von der Gathen, P., Walker, K., Wegner, T., Weigel, R., Weinbruch, S., Wetzel, G., Wienhold, F.G., Wohltmann, I., Woiwode, W., Young, I.A.K., Yushkov, V., Zobrist, B., and Stroh, F.: Reconciliation of essential process parameters for an enhanced predictability of Arctic stratospheric ozone loss and its climate interactions (RECONCILE): activities and results, Atmos. Chem. Phys., 13, 9233–9268. doi:10.5194/acp-13-9233-2013, 2013, (*58 citations*).

Sumińska-Ebersoldt, O., Lehmann, R., Wegner, T., Grooß, J.U., Hösen, E., Weigel, R., **Frey, W.**, Griessbach, S., Mitev, V., Emde, C., Volk, C.M., Borrmann, S., Rex, M., Stroh, F., and von Hobe, M.: ClOOCl photolysis at high solar zenith angles: analysis of the RECONCILE self-match flight, Atmos. Chem. Phys., 12, 1353–1365. doi:10.5194/acp-12-1353-2012, 2012, (*19 citations*).

Cairo, F., Di Donfrancesco, G., Snels, M., Fierli, F., Viterbini, M., Borrmann, S., and **Frey, W.**: A comparison of light backscattering and particle size distribution measurements in tropical cirrus clouds, Atmos. Meas. Tech., 4, 557–570. doi:10.5194/amt-4-557-2011, 2011, (*8 citations*).

Frey, W., Borrmann, S., Kunkel, D., Weigel, R., de Reus, M., Schlager, H., Roiger, A., Voigt, C., Hoor, P., Curtius, J., Krämer, M., Schiller, C., Volk, C.M., Homan, C.D., Fierli, F., Di Donfrancesco, G., Ulanovsky, A., Ravegnani, F., Sitnikov, N.M., Viciani, S., D'Amato, F., Shur, G.N., Belyaev, G.V., Law, K.S., and Cairo, F.: In situ measurements of tropical cloud properties in the West African Monsoon: upper tropospheric ice clouds, Mesoscale Convective System outflow, and subvisual cirrus, Atmos. Chem. Phys., 11, 5569–5590. doi:10.5194/acp-11-5569-2011, 2011, (*39 citations*).

von Hobe, M., Grooß, J.U., Günther, G., Konopka, P., Gensch, I., Krämer, M., Spelten, N., Afchine, A., Schiller, C., Ulanovsky, A., Sitnikov, N., Shur, G., Yushkov, V., Ravegnani, F., Cairo, F., Roiger, A., Voigt, C., Schlager, H., Weigel, R., **Frey, W.**, Borrmann, S., Müller, R., and Stroh, F.: Evidence for heterogeneous chlorine activation in the tropical UTLS, Atmos. Chem. Phys., 11, 241–256. doi:10.5194/acp-11-241-2011, 2011, (*23 citations*).

Weigel, R., Borrmann, S., Kazil, J., Minikin, A., Stohl, A., Wilson, J.C., Reeves, J.M., Kunkel, D., de Reus, M., **Frey, W.**, Lovejoy, E.R., Volk, C.M., Viciani, S., D'Amato, F., Schiller, C., Peter, T., Schlager, H., Cairo, F., Law, K.S., Shur, G.N., Belyaev, G.V., and Curtius, J.: In situ observations of new particle formation in the tropical upper troposphere: the role of clouds and the nucleation mechanism, Atmos. Chem. Phys., 11, 9983–10010. doi:10.5194/acp-11-9983-2011, 2011, (*41 citations*).

Davis, S., Hlavka, D., Jensen, E., Rosenlof, K., Yang, Q., Schmidt, S., Borrmann, S., **Frey, W.**, Lawson, P., Voemel, H., and Bui, T.P.: In situ and lidar observations of tropopause subvisible cirrus clouds during TC4, J. Geophys. Res., 115, D00J17. doi:10.1029/2009JD013093, 2010, (*55 citations*).

Voigt, C., Schumann, U., Jurkat, T., Schäuble, D., Schlager, H., Petzold, A., Gayet, J.F., Krämer, M., Schneider, J., Borrmann, S., Schmale, J., Jessberger, P., Hamburger, T., Lichtenstern, M., Scheibe, M., Gourbeyre, C., Meyer, J., Kübbeler, M., **Frey, W.**, Kalesse, H., Butler, T., Lawrence, M.G., Holzäpfel, F., Arnold, F., Wendisch, M., Döpelheuer, A., Gottschaldt, K., Baumann, R., Zöger, M., Sölch, I., Rautenhaus, M., and Dörnbrack, A.: In-situ observations of young contrails – overview and selected results from the CONCERT campaign, Atmos. Chem. Phys., 10, 9039–9056. doi:10.5194/acp-10-9039-2010, 2010, (*61 citations*).

de Reus, M., Borrmann, S., Bansemer, A., Heymsfield, A.J., Weigel, R., Schiller, C., Mitev, V., **Frey, W.**, Kunkel, D., Kürten, A., Curtius, J., Sitnikov, N.M., Ulanovsky, A., and Ravegnani, F.: Evidence for ice particles in the tropical stratosphere from in-situ measurements, Atmos. Chem. Phys., 9, 6775–6792. doi:10.5194/acp-9-6775-2009, 2009, (*67 citations*).

Frey, W., Eichler, H., de Reus, M., Maser, R., Wendisch, M., and Borrmann, S.: A new airborne tandem platform for collocated measurements of microphysical cloud and radiation properties, Atmos. Meas. Tech., 2, 147–158. doi:10.5194/amt-2-147-2009, 2009, (*12 citations*).

Drüe, C., **Frey, W.**, Hoff, A., and Hauf, T.: Aircraft type-specific errors in AMDAR weather reports from commercial aircraft, Q. J. Roy. Meteor. Soc., 134, 229–239. doi:10.1002/qj.205, 2008, (*34 citations*).

(Citations from Web of Science as of 13 May 2022, h-index 13)

Conference contributions

Oral Presentations

Frey, W., Schmalfuß, S., Stratmann, F., Niedermeier, D.: Which parameters govern the strength of entrainment?, *AGU Fall meeting 2021*, hybrid: New Orleans, USA and virtual, 13 - 17 Dec 2021.

Frey, W., Simpson, E., Connolly, P., Dorsey, J., Hu, D., Alfarra, R.,and McFiggans, G.: An integrated modelling and measurement study to investigate co-condensation of organic vapours and water vapour in cloud droplet formation, *Understanding Clouds and Precipitation (UCP) 2019*, Berlin, Germany, 25 Feb - 1 Mar 2019.

Frey, W.: Clouds, water vapour, and transport, *RMetS/NCAS Conference 2016, The Tropical Tropopause Layer: structure, transport and change workshop*, Manchester, UK, 6 - 8 Jul 2016 (*invited*).

Frey, W., Schofield, R., Hoor, P., Kunkel, D., Ravegnani, F., Ulanovsky, A., Viciani, S., D'Amato, F., and Lane, T.: The impact of overshooting deep convection on local transport and mixing in the tropical upper troposphere/lower stratosphere (UTLS), *Water Budget in the TTL (WBTTL) workshop*, Reims, France, 1 - 3 Jul 2015.

Frey, W., Schofield, R., Ravegnani, F., Borrmann, S., and Lane, T.: The Impact of Hector Overshooting Convection on the Water Vapour and Ozone Distribution in the TTL and Lower Stratosphere, *AOGS Annual Meeting*, Sapporo, Japan, 28 Jul - 1 Aug 2014.

Woiwode, W., Grooß, J.-U., Oelhaf, H., Borrmann, S., Ebersoldt, A., **Frey, W.**, Gulde, T., Molleker, S., Piesch, C., Schlager, H., and Orphal, J.: Denitrification in Arctic winter 2009/10: Study on shape and morphology of large dimension HNO3-containing particles, *EGU General Assembly*, Vienna, Austria, 8 - 12 Apr 2013.

Griessbach, S., Kalicinsky, C., Spang, R., Hoffmann, L., Borrmann, S., **Frey, W.**, Genco, S., Hoesen, E., Mitev, V., Molleker, S., Müller, R., Oelhaf, H., Olschewski, F., Pitts, M., Poole, L., Riese, M., Schiller, C., Volk, M., Woiwode, W., and von Hobe, M.: Radiative transfer simulations of PSC signatures measured by CRISTA-NF during the RECONCILE campaign in winter 2009/2010 - Hunting for spectroscopic evidence of NAT, *EGU General Assembly*, Vienna, Austria, 8 - 12 Apr 2013.

Borrmann, S., Weigel, R., Kazil, J., Minikin, A., Stohl, A., Wilson, J. C., Kunkel, D., de Reus, M., **Frey, W.**, Lovejoy, E. R., Volk, C. M., Viciani, S., Cairo, F., Law, K. S., Curtius, J., and Team: The role of clouds and of neutral as well as ion induced pathway for the new particle formation in the tropical upper troposphere: In-situ measurements from continental South America and West Africa, *EGU General Assembly*, Vienna, Austria, 3 - 8 Apr 2011.

Weigel, R., Ebert, M., Molleker, S., **Frey, W.**, Gunter, G., Volk, C. M., Schlager, H., Cairo, F., Di Donfrancesco, G., and Borrmann, S.: The abundance, shape and chemical composition of non-volatile particles in the Arctic winter Stratosphere and their potential activation by Polar Stratospheric Cloud elements, *EGU General Assembly*, Vienna, Austria, 3 - 8 Apr 2011.

Borrmann, S. and **Frey, W.** and the SCOUT-AMMA Science Team: In-situ measurements of tropical cloud properties in the West African Monsoon: Upper tropospheric ice clouds, Mesoscale Convective System outflow, and subvisual cirrus, *EGU General Assembly*, Vienna, Austria, 3 - 8 Apr 2011.

Frey, W., Borrmann, S., Kunkel, D., Weigel, R., Schlager, H., Ulanovsky, A., Schiller, C., Sitnikov, N. M., Ravegnani, F., Volk, C. M., Shur, G. N., Belyaev, G. V., Vicani, S., Voigt, C., Law, K. S., and Cairo, F.: In-situ ice particle measurements in the UT/LS and in mesoscale convective system outflows during the West-African Monsoon, *13th AMS Conference on Cloud Physics*, Portland, Oregon, USA, 28 Jun - 2 Jul 2010.

von Hobe, M. and the **RECONCILE Science Team**: Project Overview RECONCILE and first Results, *EGU General Assembly*, Vienna, Austria, 2 - 7 May 2010.

Frey, W., de Reus, M., Eichler, H., Maser, R., Wendisch, M., and Borrmann, S.: A new airborne tandem measurement platform for cloud-radiation interaction studies: The AIRcraft Towed Sensor Shuttle (AIRTOSS), *EMS Annual Meeting 2009, & European Conference on Applications of Meteorology (ECAM)*, Toulouse, France, 28 Sep - 2 Oct 2009.

Borrmann, S., Kunkel, D., **Frey, W.**, Law, K. S., Cairo, F., Some, L., and the AMMA-SCOUT M55 data team: Aerosols and clouds in the tropical tropopause layer: In-situ measurements of microphysics and chemistry over West Africa, *Third AMMA International Conference*, Ouagadougou, Burkina Faso, 20 - 24 Jul 2009.

Posters

Frey, W., Schmalfuß, S., Stratmann, F., Niedermeier, D.: Which parameters govern the strength of entrainment?, *18th International Conference on Cloud Physics and Precipitation (ICCP)*, virtual, 2 - 6 Aug 2021

Grosz, R., Nowak, J., Niedermeier, D., Mijas, J. **Frey, W.**, Ort, L., Malinowski, S., Schmalfuß, S., Stacewicz, T., and Voigtländer, J.: Contactless and high-frequency optical hygrometry in LACIS-T, *EGU General Assembly*, virtual, 19 - 30 Apr 2021

Frey, W., Connolly, P., Dorsey, J., Hu, D., Alfarra, R., and McFiggans, G.: A chamber study on the impacts of organic components on warm and cold cloud formation, *17th International Conference on Cloud Physics and Precipitation (ICCP)*, Manchester, UK, 25 - 29 Jul 2016.

Frey, W., Connolly, P., Dorsey, J., Hu, D., Alfarra, R., and McFiggans, G.: The impact of organic vapours on warm cloud formation; characterisation of chamber setup and first experimental results, *EGU General Assembly*, Vienna, Austria, 17 - 22 Apr 2016.

Frey, W., Schofield, R., Protat, A., Borrmann, S., and Lane, T.: Potential of dissipating deep convective clouds for subvisible cirrus formation, *AMOS National Conference*, Melbourne, Australia, 8 - 11 Feb 2016.

Frey, W., Borrmann, S., Fierli, F., Weigel, R., Mitev, V., Matthey, R., Ravegnani, F., Sitnikov, N. M., Ulanovsky, A. and Cairo, F.: Tropical deep convective life cycle: Cb-anvil cloud microphysics from high-altitude aircraft observations, *Water Budget in the TTL (WBTTL) workshop*, Reims, France, 1 - 3 Jul 2015.

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Frey, W., Weigel, R., Borrmann, S., Kunkel, D., de Reus, M., Cairo, F., Krämer, M., Schiller, C., Sitnikov, N. M., Volk, C. M., and Belyaev, G. V.: Observations of in-cloud new particle formation events in the tropical upper troposphere, *16th International Conference on Cloud Physics and Precipitation*, Leipzig, Germany, 30 Jul - 8 Aug 2012.

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Poole, L. R., Pitts, M. C., **Frey, W.**, Molleker, S., Weigel, R., and Borrmann, S.: Comparison off PSC Measurements from CALIIPSO and the M–55 Geophysica During the 2010 RECONCIILE Field Campaign, *EGU General Assembly*, Vienna, Austria, 3 - 8 Apr 2011.

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Further Oral Presentations

Frey, W., Hu, D., Alfarra, R., Dorsey, J., Connolly, P., and McFiggans, G.: Chamber measurements of the efficiency of photo-oxygenated SOA particles to act as ice nuclei, *TROPOS Seminar*, TROPOS, Leipzig, Germany, 5 Sep 2017.

Frey, W.: Clouds and transport in the tropical tropopause layer, *CAS seminar series*, School of Earth, Atmospheric and Environmental Sciences (SEAES), University of Manchester, UK, 12 Nov 2015.

Frey, W., Lane, T., Borrmann, S., Schofield, R., and Ravegnani, F.: Modelling of Hector overshooting convection and its implications on water vapour and ozone distribution in the TTL and lower stratosphere, *WRF workshop*, UNSW, Sydney, Australia, 28 Feb 2014.

Frey, W. and the M55 Geophysica data team: Microphysics of clouds in the Tropical Tropopause Layer, *School of Earth Sciences Seminar Series*, School of Earth Sciences, The University of Melbourne, Australia, 1 Aug 2013.

Frey, W. and the M55 Geophysica data team: In situ cloud particle measurements in the tropical tropopause layer, *MISU Seminar*, Department of Meteorology, Stockholm University (MISU), Sweden, 20 Nov 2012.

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Frey, W. and the M55 Geophysica data team: In situ measurements of clouds in the tropical tropopause layer, *Atmosphärisch-Chemisches Kolloquium des IEK-7/-8*, Research Centre Jülich, Germany, 25 Aug 2011.

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