SCIENTIFIC REPORT 2018–2020

APPENDIX

MAX PLANCK INSTITUTE
FOR CHEMISTRY

1. Scientific Publications 2018-2020

ATMOSPHERIC CHEMISTRY DEPARTMENT (J. Lelieveld et al.)

Journal Articles

2020

Abdelwares, M., J. Lelieveld, G. Zittis, M. Haggag & A. Wagdy: A comparison of gridded datasets for precipitation and temperature over the Eastern Nile Basin region. Euro-Mediterr. J. Environ. Integr., 5, 3, doi:10.1007/s41207-019-0140-y, 2020.

Amedro, D., M. Berasategui, A.J.C. Bunkan, A. Pozzer, J. Lelieveld & J.N. Crowley: Kinetics of the OH+NO_2 reaction: effect of water vapour and new parameterization for global modelling. Atmos. Chem. Phys., 20(5), 3091-3105, doi:10.5194/acp-20-3091-2020, 2020.

Beko, G., P. Wargocki, N. Wang, M. Li, C. J. Weschler, G. Morrison, S. Langer, L. Ernle, D. Licina, S. Yang, N. Zannoni & J. Williams: The Indoor Chemical Human Emissions and Reactivity (ICHEAR) project: Overview of experimental methodology and preliminary results. Indoor air: international journal of indoor air quality and climate, doi:10.1111/ina.12687, 2020.

Berasategui, M., D. Amedro, A. Edtbauer, J. Williams, J. Lelieveld & J.N. Crowley: Kinetic and mechanistic study of the reaction between methane sulphonamide ($CH_3S(O)_2NH_2$) and OH. Atmos. Chem. Phys., 20(5), 2695-2707, doi:10.5194/acp-20-2695-2020, 2020.

Bieser, J., H. Angot, F. Slemr, & L. Martin: Atmospheric mercury in the Southern Hemisphere - Part 2: Source apportionment analysis at Cape Point station, South Africa. Atmospheric Chemistry and Physics, 20(17), 10427-10439, doi:10.5194/acp-20-10427-2020, 2020.

Bourtsoukidis, E., A. Pozzer, T. Sattler, V. Matthaios, L. Ernle, A. Edtbauer, H. Fischer, T. Konemann, S. Osipov, J.-D. Paris, E.Y. Pfannerstill, C. Pöhlker, C. Stonner, I. Tadic, D. Walter, N. Wang, J. Lelieveld & J. Williams: The Red Sea deep water is a potent source of atmospheric ethane and propane. Nat. Comm., 11, 447, doi:10.1038/s41467-020-14375-0 2020, 2020.

Caseiro, A., B. Gehrke, G. Rücker, D. Leimbach, D. & J. W. Kaiser: Gas flaring activity and black carbon emissions in 2017 derived from the Sentinel-3A Sea and Land Surface Temperature Radiometer. Earth System Science Data, 12(3), 2137-2155. doi:10.5194/essd-12-2137-2020, 2020.

Celik, S., F. Drewnick, F. Fachinger, J. Brooks, E. Darbyshire, H. Coe, J.-D. Paris, P.G. Eger, J. Schuladen, I. Tadic, N. Friedrich, D. Dienhart, B. Hottmann, H. Fischer, J.N. Crowley, H. Harder & Stephan Borrmann: Influence of vessel characteristics and atmospheric processes on the gas and particle phase of ship emission plumes: in situ measurements in the Mediterranean Sea and around the Arabian Peninsula. Atmos. Chem. Phys., 20(8), 4713–4734, doi:10.5194/acp-20-4713-2020, 2020.

Chamecki, M., L. S. Freire, N. L. Dias, B. Chen, C. Q. Dias-Junior, L. A. Toledo Machado, M. Sörgel, A. Tsokankunku & A. C. De Araujo: Effects of Vegetation and Topography on the Boundary Layer Structure above the Amazon Forest. Journal of the Atmospheric Sciences, 77(8), 2941-2957, doi:10.1175/JAS-D-20-0063.1, 2020.

Chen, Y., Y. Cheng, N. Ma, C. Wei, L. Ran, R. Wolke, J. Groess, Q. Wang, A. Pozzer, H.A.C. Denier van der Gon, G. Spindler, J. Lelieveld, I. Tegen, H. Su & A. Wiedensohler: Natural sea-salt emissions moderate the climate forcing of anthropogenic nitrate. Atmos. Chem. Phys., 20, 771-786, doi:10.5194/acp-20-771-2020, 2020.

Chowdhury, S., A. Pozzer, S. Dey, K. Klingmueller & J. Lelieveld: Changing risk factors that contribute to premature mortality from ambient air pollution between 2000 and 2015. Environ. Res. Lett., 15, 074010, doi:10.10.88/1748-9326/ab8334, 2020.

Clifton, O. E., A. M. Fiore, W. J. Massman, C. B. Baublitz, M. Coyle, L. Emberson, S. Fares, D. K. Farmer, P. Gentine, G. Gerosa, A. B. Guenther, D. Helmig, D. L. Lombardozzi, J. W. Munger, E. G. Patton, S. E. Pusede, D. B. Schwede, S. J. Silva, M. Sörgel, A. L. Steiner & A. P. K. Tai: Dry Deposition of Ozone Over Land: Processes, Measurement, and Modeling. Reviews of Geophysics, 58(1): e2019RG000670, doi:10.1029/2019RG000670, 2020.

Constantinidou, K., P. Hadjinicolaou, G. Zittis & J. Lelieveld: Performance of Land Surface Schemes in the WRF Model for Climate Simulations over the MENA-CORDEX Domain. Earth systems and environment, 4, 647-665, doi:10.1007/s41748-020-00187-1, 2020.

Constantinidou, K., P. Hadjinicolaou, G. Zittis & J. Lelieveld: Sensitivity of simulated climate over the MENA region related to different land surface schemes in the WRF model. Theor. Appl. Climtol., 141, 1431-1449, doi:10.1007/s00704-020-03258-5, 2020.

Cox, R. A., M. Ammann, J. N. Crowley, H. Herrmann, M. E. Jenkin, V. F. McNeill, A. Mellouki, J. Troe & T. J. Wallington: Evaluated kinetic and photochemical data for atmospheric chemistry: Volume VII - Criegee intermediates. Atmospheric Chemistry and Physics, 20(21), 13497-13519. doi:10.5194/acp-20-13497-2020, 2020.

Dewald, P., J. M. Liebmann, N. Friedrich, J. Shenolikar, J. Schuladen, F. Rohrer, D. Reimer, R. Tillmann, A. Novelli, C. Cho, K. Xu, R. Holzinger, F. Bernard, L. Zhou, W. Mellouki, S. S. Brown, H. Fuchs, J. Lelieveld & J. N. Crowley: Evolution of NO3 reactivity during the oxidation of isoprene. Atmospheric Chemistry and Physics, 20(17), 10459-10475, doi:10.5194/acp-20-10459-2020, 2020.

Duprey, N. N., T. X. Wang, T. Kim, J. D. Cybulski, H. B. Vonhof, P. J. Crutzen, G. H. Haug, D. M. Sigman, A. Martinez-Garcia & D. M. Baker: Megacity development and the demise of coastal coral communities: Evidence from coral skeleton δ15N records in the Pearl River estuary. Global Change Biology, 26(3), 1338-1353, doi:10.1111/gcb.14923, 2020.

Edtbauer, A.C. Stönner, E.Y. Pfannerstill, M. Berasategui, D. Walter, J.N. Crowley, J. Lelieveld & J. William: A new marine biogenic emission: methane sulfonamide (MSAM), dimethyl sulfide (DMS), and dimethyl sulfone (DMSO2) measured in air over the Arabian Sea. Atmos. Chem. Phys., 20, 6081–6094, doi:10.5194/acp-20-6081-2020, 2020.

Eger, P.G., J. Schuladen, N. Sobanski, H. Fischer, E. Karu, J. Williams, M. Riva, Q. Zha, M. Ehn, L.L.J. Quéléver, S. Schallhart, J. Lelieveld & J.N. Crowley: Pyruvic acid in the boreal forest: gas-phase mixing ratios and impact on radical chemistry. Atmos. Chem. Phys., 20(6), 3697-3711, doi:10.5194/acp-20-3697-2020, 2020.

Fitzsimmons, K.E., M. Nowatzki, A. K. Dave & H. Harder: Intersections between wind regimes, topography and sediment supply: Perspectives from aeolian landforms in Central Asia. Palaeogeography, Palaeoclimatology, Palaeoecology 540, 109531, doi:10.1016/j.palaeo.2019.109531, 2020.

Fitzsimmons, K. E., M. Nowatzki, A. K. Dave & H. Harder: Corrigendum to “Intersections between wind regimes, topography and sediment supply: Perspectives from aeolian landforms in Central Asia”. Palaeogeography, Palaeoclimatology, Palaeoecology 540 (2020) 109531 2020). Palaeogeography, Palaeoclimatology, Palaeoecology, 552, 109795, doi:10.1016/j.palaeo.2020.109795, 2020.
Forrest, M., H. Tost, J. Lelieveld & T. Hickler: Including vegetation dynamics in an atmospheric chemistry-enabled general circulation model: linking LPJ-GUESS (v4.0) with the EMAC modelling system (v2.53). Geosci. Model Dev., 13, 1285-1309, doi:10.5194/gmd-13-1285-2020, 2020.

Friedrich, N., I. Tadic, J. Schuladen, J. Brooks, E. Darbyshire, F. Drewnick, H. Fischer, J. Lelieveld & J. N. Crowley: Measurement of NO_X and NO_Y with a thermal dissociation cavity ring-down spectrometer (TD-CRDS): instrument characterisation and first deployment. Atmospheric Measurement Techniques, 13(10), 5739-5761. doi:10.5194/amt-13-5739-2020, 2020.

Georgiou, G.K., T. Christoudias, J. Kushta, Y. Proestos and J. Lelieveld: Air quality modelling over the Eastern Mediterranean: Seasonal sensitivity to anthropogenic emissions. Atmos. Environ., 222, 117119, doi:10.1016/j.atmosenv.2019.117119, 2020.

Gori, T., J. Lelieveld & T. Münzel: Cardiovascular disease and the COVID-19 pandemic. Basic Res. Cardiol., 115(3), 32, doi:10.1007/s00395-020-0792-4, 2020.

Hess, J. J., N. Ranadive, C. Boyer, L. Aleksandrowicz, S. C. Anenberg, K. Aunan, K. Belesova, M. L. Bell, S. Bickersteth, K. Bowen, M. Burden, D. Campbell-Lendrum, E. Carlton, G. Cissé, F. Cohen, H. Dai, P. Dasgupta, H. Frumkin, P. Gong, R. J. Gould, A. Haines, S. Hales, I. Hamilton, T. Hasegawa, M. Hashizume, Y. Honda, D. E. Horton, A. Karambelas, H. Kim, S. Estella Kim, P. L. Kinney, I. Kone, K. Knowlton, J. Lelieveld, V. S. Limaye, Q. Liu, L. Madaniyazi, M. E. Martinez, D. L. Mauzerall, J. Milner, T. Neville, M. Nieuwenhuijsen, S. Pachauri, F. Perera, H. Pineo, J. V. Remais, R. K. Saari, J. Sampedro, P. Scheelbeek, J. Schwartz, D. Shindell, P. Shyamsundar, T. J. Taylor, C. Tonne, D. Van Vuuren, C. Wang, N. Watts, J. J. West, P. Wilkinson, S. A. Wood, J. Woodcock, A. Woodward, Y. Xie, Y. Zhang & K. L. Ebi: Guidelines for Modeling and Reporting Health Effects of Climate Change Mitigation Actions. Environmental health perspectives, 128(11): 115001. doi:10.1289/EHP6745, 2020.

Holanda, B.A., M.L. Pöhlker, D. Walter, J. Saturno, M. Sorgel, J. Ditas, F. Ditas, C. Schulz, M.A. Franco, Q. Wang, T. Donth, P. Artaxo, H.M.J. Barbosa, S. Borrmann, R. Braga, J. Brito, Y.Cheng, M. Dollner, J.W. Kaiser, T. Klimach, C. Knote, O. O. Krüger, D. Fütterer, J.V. Lavric, N. Ma, L.A.T. Machado, J. Ming, F.G. Morais, H. Paulsen, D. Sauer, H. Schlager, J. Schneider, H. Su, B. Weinzierl, A. Walser, M. Wendisch, H. Ziereis, M. Zoger, U. Pöschl, M.O. Andreae & C. Pöhlker: Influx of african biomass burning aerosol during the amazonian dry season through layered transatlantic transport of black carbon-rich smoke. Atmos. Chem. Phys., 20, 4757–4785, doi:10.5194/acp-20-4757-2020, 2020.

Hahad, O., J. Lelieveld, F. Birklein, K. Lieb, A. Daiber & T. Münzel: Ambient Air Pollution Increases the Risk of Cerebrovascular and Neuropsychiatric Disorders through Induction of Inflammation and Oxidative Stress. International Journal of Molecular Sciences, 21(12), 4306, doi:10.3390/ijms21124306, 2020.

Kaur, T., S. Sarkar, S. Chowdhury, S. K. Sinha, M. K. Jolly & P. S. Dutta: Anticipating the Novel Coronavirus Disease (COVID-19) Pandemic. Frontiers in public health, 8, 569669, doi:10.3389/fpubh.2020.569669, 2020.

Lazoglou, G., G. Zittis, C. Anagnostopoulou, P. Hadjinicolaou & J. Lelieveld: Bias Correction of RCM Precipitation by TIN-Copula Method: A Case Study for Historical and Future Simulations in Cyprus. Climate: open access journal, 8(7), 85, doi:10.3390/cli8070085, 2020.

Laube, J.C., E.C. Leedham Elvidge, K.E. Adcock, B. Baier, C.A.M. Brenninkmeijer, H. Chen, E.S. Droste, J.-U. Grooß, P. Heikkinen, A.J. Hind, R. Kivi, A. Lojko, S.A. Montzka, D.E. Oram, S. Randall, T. Röckmann, W.T. Sturges, C. Sweeney, M. Thomas, E. Tuffnell & F. Ploeger: Investigating stratospheric changes between 2009 and 2018 with halogenated trace gas data from aircraft, AirCores, and a global model focusing on CFC-11. Atmos. Chem. Phys., 20, 9771–9782, doi:10.5194/acp-20-9771-2020, 2020.

Lelieveld, J.: Schlechte Luft durch Verkehr, Industrie und Landwirtschaft. Klinikarzt, 49 (01/02), 22-25, doi:10.1055/a-1079-9716, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Comparison of mortality from ambient air pollution with other risk factors: a worldwide perspective. Cardiov. Res., doi:10.1093/cvr/cvaa025, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective. Cardiov. Res., 116, 1334, doi:10.1093/cvr/cvaa073, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Inappropriate evaluation of methodology and biases by P. Morfeld and TC Erren. Cardiov. Res., 116, E102-E102. doi:10.1093/cvr/cvaa130, 2020.

Lelieveld, J., F. Helleis, S. Borrmann, Y. Cheng, F. Drewnick, G. Haug, G., T. Klimach, J. Sciare, H. Su & U. Pöschl: Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments. International Journal of Environmental Research and Public Health, 17(21), 8114. doi:10.3390/ijerph17218114, 2020.

Lelieveld, J. & T. Münzel: Air pollution, the underestimated cardiovascular risk factor: The original manuscript published in EHJ from Jos Lelieveld and Thomas Münzel came in position 72 of the top 100 papers of the Altmetric Top 100 score for 2019. The Altmetric worldwide ranking was the result of tracking 62.5 million mentions of 2.7 million research outputs. The result highlights the popularity of the Lelieveld / Münzel article. European Heart Journal, 41(8), 904-905. doi:10.1093/eurheartj/ehaa063, 2020.

Li, M., C.J. Weschler, G. Bekö, P. Wargocki, G. Lucic & J. Williams: Human ammonia emission rates under various indoor environmental conditions. Environ. Sci. Technol., 54(9), 5419-5428 doi:10.1021/acs.est.0c00094, 2020.

Liu, N., J. Ma, W. Xu, Y. Wang, A. Pozzer & J. Lelieveld: A modeling study of the regional representativeness of surface ozone variation at the WMO/GAW background stations in China. Atmospheric Environment, 242, 117672, doi:10.1016/j.atmosenv.2020.117672, 2020.

Marno, D., C. Ernest, K. Hens, U. Javed, T. Klimach, M. Martinez, M. Rudolf, J. Lelieveld & H. Harder: Calibration of an airborne HO_X instrument using the All Pressure Altitude based Calibrator for HO_X Experimentation (APACHE). Atmos. Meas. Tech., 13, 2711–2731, doi:10.5194/amt-13-2711-2020, 2020.

Münzel, T., M. R. Miller, M. Sorensen, J. Lelieveld, A. Daiber & S. Rajagopalan: Reduction of environmental pollutants for prevention of cardiovascular disease: it's time to act. European Heart Journal, 41(41), 3989-3997. doi:10.1093/eurheartj/ehaa745, 2020.

Münzel, T., S. Steven, K. Frenis, J. Lelieveld, O. Hahad & A. Daiber: Environmental Factors Such as Noise and Air Pollution and Vascular Disease. ANTIOXIDANTS & REDOX SIGNALING, doi:10.1089/ars.2020.8090, 2020.

Nicely, J.M., N.D. Duncan, T.F. Hanisco, G.M. Wolfe, R.J. Salawitch, M. Deushi, A.S. Haslerud, P. Jöckel, B. Josse, D.E. Kinnison, A. Klekociuk, M.E. Manyin, V. Marécal, O. Morgenstern, L.T. Murray, G. Myhre, L.D. Oman, G. Pitari, A. Pozzer, I. Quaglia, L.E. Revell, E. Rozanov, A. Stenke, K. Stone, S. Strahan, S. Tilmes, H. Tost, D.M. Westervelt & G. Zeng: A machine learning examination of hydroxyl radical differences among model simulations for CCMI-1. Atmos. Chem. Phys., 20, 1341–1361, doi:10.5194/acp-20-1341-2020, 2020.

Ntoumos, A., P. Hadjinicolaou, G. Zittis, G. & J. Lelieveld: Updated Assessment of Temperature Extremes over the Middle East-North Africa (MENA) Region from Observational and CMIP5 Data. Atmosphere, 11(8), 813, doi:10.3390/atmos11080813, 2020.

Ojha, N., A. Sharma, M. Kumar, I. Girach, T. U. Ansari, S. K. Sharma, N. Singh, A. Pozzer & S. S. Gunthe: On the widespread enhancement in fine particulate matter across the Indo-Gangetic Plain towards winter. Scientific Reports, 10(1), 5862, doi:10.1038/s41598-020-62710-8, 2020.

Oliveira, M. I., O. C. Acevedo, M. Sörgel, E. L. Nascimento, A. O. Manzi, P. E. S. Oliveira, D. V. Brondani, A. Tsokankunku & M. O. Andreae: Planetary boundary layer evolution over the Amazon rainforest in episodes of deep moist convection at the Amazon Tall Tower Observatory. Atmospheric Chemistry and Physics, 20(1), 15-27. doi:10.5194/acp-20-15-2020.

Pozzer, A., F. Dominici, A. Haines, C. Witt, T. Münzel & J. Lelieveld, J.: Regional and global contributions of air pollution to risk of death from COVID-19. Cardiovascular Research, 116: cvaa288. doi:10.1093/cvr/cvaa288, 2020.

Pozzer, A., M. G. Schultz & D. Helmig: Impact of US Oil and Natural Gas Emission Increases on Surface Ozone Is Most Pronounced in the Central United States. Environmental Science & Technology, 54(19), 12423-12433, doi:10.1021/acs.est.9b06983, 2020.

Pugliese, S., M. F. Jespersen, J. B. Pernov, J. Shenolikar, J. Nygaard, O. J. Nielsen & M. S. Johnson: Chemical analysis and origin of the smell of line-dried laundry. Environmental Chemistry, 17(5), 355-363, doi:10.1071/EN19206, 2020.

Schuck, T.J., A.-K. Blank, E. Rittmeier, J. Williams, C.A.M. Brenninkmeijer, A. Engel & A. Zahn: Stability of Halocarbons in Whole Air Samples from the Upper Troposphere and Lowermost Stratosphere. Atmos. Meas. Tech., 13(1), 73-84, doi:10.5194/amt-13-73-2020, 2020.

Sharma, A., N. Ojha, T. U. Ansari, S. K. Sharma, A. Pozzer & S. S. Gunthe: Effects of Dry Deposition on Surface Ozone over South Asia Inferred from a Regional Chemical Transport Model. ACS Earth and Space Chemistry, 4(2), 321-327, doi:10.1021/acsearthspacechem.0c00004, 2020.

Sheu, R., C. Stönner, J.C. Ditto, T. Klüpfel, J. Williams & D.R. Gentner: Human transport of thirdhand tobacco smoke: A prominent source of hazardous air pollutants into non-smoking enviroments. Sci. Adv., 6, doi:10.1126/sciadv.aay4109, 2020.

Slemr, F., L. Martin, C. Labuschagne, T. Mkololo, H. Angot, O. Magand, A. Dommergue, P. Garat, M. Ramonet & J. Bieser: Atmospheric mercury in the Southern Hemisphere – Part 1: Trend and inter-annual variations in atmospheric mercury at Cape Point, South Africa, in 2007–2017, and on Amsterdam Island in 2012–2017. Atmos. Chem. Phys., 20, 7683–7692, doi:10.5194/acp-20-7683-2020, 2020.

Stolzenburg, D., M. Simon, A. Ranjithkumar, A. Kuerten, K. Lehtipalo, H. Gordon, S. Ehrhart, H. Finkenzeller, L. Pichelstorfer, T. Nieminen, X.-C. He, S. Brilke, M. Xiao, A. Amorim, R. Baalbaki, A. Baccarini, L. Beck, S. Brakling, L. C. Murillo, D. Chen, B. Chu, L. Dada, A. Dias, J. Dommen, J. Duplissy, I. El Haddad, L. Fischer, L. G. Carracedo, M. Heinritzi, C. Kim, T. K. Koenig, W. Kong, H. Lamkaddam, C. P. Lee, M. Leiminger, Z. Li, V. Makhmutov, H. E. Manninen, G. Marie, R. Marten, T. Mueller, W. Nie, E. Partoll, T. Petaja, J. Pfeifer, M. Philippov, M. P. Rissanen, B. Rorup, S. Schobesberger, S. Schuchmann, J. Shen, M. Sipila, G. Steiner, Y. Stozhkov, C.Tauber, Y. J. Tham, A. Tome, M. Vazquez-Pufleau, A. C. Wagner, M. Wang, Y. Wang, YS. K. Weber, D. Wimmer, P. J. Wlasits, Y. Wu, Q. Ye, M. Zauner-Wieczorek, U. Baltensperger, K. S. Carslaw, J. Curtius, N. M. Donahue, R. C. Flagan, A. Hansel, M. Kulmala, J. Lelieveld, R. Volkamer, RJ. Kirkby & P. M. Winkler: Enhanced growth rate of atmospheric particles from sulfuric acid. Atmos. Chem. and Phys., 20(12), 7359–7372, doi:10.5194/acp-20-7359-2020, 2020.

Tadic, I., J.N. Crowley, D. Dienhart, P. Eger, H. Harder, B. Hottmann, M. Martinez, U. Parchatka, J.-D. Paris, A. Pozzer, R. Rohloff, J. Schuladen, J. Shenolikar, S. Tauer, J. Lelieveld & H. Fischer: Net ozone production and its relationship nitrogen oxides and volatile organic compounds in the marine boundary layer around the Arabian Peninsula. Atmos. Chem. Phys., 20, 6769–6787, doi:10.5194/acp-20-6769-2020, 2020.

Upadhyay, A., S. Dey, S. Chowdhury, R. Kumar, & P. Goyal, P.: Tradeoffs between air pollution mitigation and meteorological response in India. Scientific Reports, 10(1), 14796, doi:10.1038/s41598-020-71607-5, 2020.

Venter, Z. S., K. Aunan, S. Chowdhury & J. Lelieveld: Air pollution declines during COVID-19 lockdowns mitigate the global health burden. Environmental research, 192: 110403, doi:10.1016/j.envres.2020.110403, 2020.

Venter, Z. S., K. Aunan, S. Chowdhury, & J. Lelieveld: COVID-19 lockdowns cause global air pollution declines. Proceedings of the National Academy of Sciences of the United States of America, 117(32), 18984-18990, doi:10.1073/pnas.2006853117, 2020.

Vereecken, L. & B. Nozière: H migration in peroxy radicals under atmospheric conditions. Atmos. Chem. Phys., 20, 7429–7458, doi:10.5194/acp-20-7429-2020, 2020.

Wang, S., H. Su, C. Chen, W. Tao, D. G. Streets, Z. Lu, B. Zheng, G. R. Carmichael, J. Lelieveld, U. Pöschl & Y. Cheng: Natural gas shortages during the "coal-to-gas" transition in China have caused a large redistribution of air pollution in winter 2017. Proceedings of the National Academy of Sciences of the United States of America, 117: 202007513, doi:10.1073/pnas.2007513117, 2020.

Williams, J. & A. Ringsdorf: Human odour thresholds are tuned to atmospheric chemical lifetimes. Phil. Trans. R. Soc. B 375: 20190274, doi:10.1098/rstb.2019.0274, 2020.

Xu, L., N. Liu, S. Zhou, L. Zhang, B. Yu, H. Fischer & J. Li: Dual-frequency modulation quartz crystal tuning fork-enhanced laser spectroscopy. Optics Express, 28(4), 5648-5657, doi:10.1364/OE.386205, 2020.

Yanez-Serrano, A. M., E. Bourtsoukidis, E. G. Alves, M. Bauwens, T. Stavrakou, J. Llusia, I. Filella, A. Guenther, J. Williams, P. Artaxo, K. Sindelarova, J. Doubalova, J. Kesselmeier & J. Penuelas: Amazonian biogenic volatile organic compounds under global change, Global Change Biology, 26(9), 4722-4751, doi:10.1111/gcb.15185, 2020.

Yanez-Serrano, A. M., I. Filella, J. LLusia, A. Gargallo-Garriga, V. Granda, E. Bourtsoukidis, J. Williams, R. Seco, L. Cappellin, C. Werner, J. de Gouw & J. Penuelas: GLOVOCS - Master compound assignment guide for proton transfer reaction mass spectrometry users. Atmospheric Environment, 244: 117929, doi:10.1016/j.atmosenv.2020.117929, 2020.

Zannoni, N., D. Leppla, P. I. L. S. de Assis, T. Hoffmann, M. Sá, A. Araújo, A. & J. Williams: Surprising chiral composition changes over the Amazon rainforest with height, time and season. Communications Earth & Environment, 1: 4. doi:10.1038/s43247-020-0007-9, 2020.

Zannoni, N., M. Wikelski, A. Gagliardo, A. Raza, S. Kramer, C. Seghetti, N. Wang, A. Edtbauer & J. Williams: Identifying volatile organic compounds used for olfactory navigation by homing pigeons. Scientific Reports, 10(1), 15879, doi:10.1038/s41598-020-72525-2, 2020.

Zimmermann, P.H., C.A.M. Brenninkmeijer, A. Pozzer, P. Jöckel, F. Winterstein, A. Zahn, S. Houweling & J. Lelieveld: Model simulations of atmospheric methane (1997–2016) and their evaluation using NOAA and AGAGE surface and IAGOS-CARIBIC aircraft observations. Atmos. Chem. Phys., 20(9), 5787–5809, doi:10.5194/acp-20-5787-2020, 2020.

2019

Abdelwares, M., J. Lelieveld, P. Hadjinicolaou, G. Zittis, A. Wagdy & M. Haggag: Evaluation of a regional climate model for the Eastern Nile basin: Terrestrial and atmospheric water balance. Atmosphere, 10, 736, doi:10.3390/atmos10120736, 2019.

Akritidis, D., A. Pozzer & P. Zanis: On the impact of future climate change on tropopause folds and tropospheric ozone. Atmos. Chem. Phys., 19, 14387–14401, doi:10.5194/acp-19-14387-2019, 2019.

Amedro, D., A.J.C. Bunkan, M. Berasategui & J.N. Crowley: Kinetics of the OH + NO_2 reaction: rate coefficients (217–333 K, 16–1200 mbar) and fall-off parameters for N_2 and O_2 bath gases Atmos. Chem. Phys., 19, 10643–10657, doi:10.5194/acp-19-10643-2019, 2019.

Arata, C., N. Heine, N. Wang, P.K. Misztal, P. Wargocki, G. Bekö, J. Williams, W.W. Nazaroff, K.R. Wilson & A. H. Goldstein: Heterogeneous Ozonolysis of Squalene: Gas-Phase Products Depend on Water Vapor Concentration. Environ. Sci. Technol., 53, 24, 14441-14448, doi:10.1021/acs.est.9b05957, 2019.

Bourtsoukidis, S., L. Ernle, J.N. Crowley, J. Lelieveld, J.-D. Paris, A. Pozzer, D. Walter & J. Williams: Non-methane hydrocarbon (C_2–C_8) sources and sinks around the Arabian Peninsula. Atmos. Chem. Phys., 19, 7209–7232, doi:10.5194/acp-19-7209-2019, 2019.

Buonocore, J.J., A.H. Villavicencio, J.D. Spengler, J.S. Evans, J. Lelieveld, D.A. Koehler, P. Klop & R. Sanchez: Metrics for the sustainable development goals: Renewable energy and transportation. Palgrave Comm., 5, 136, doi:10.1057/s41599-019-0336-4,_2019.

Daiber, A., J. Lelieveld, S. Steven, M. Oelze, S. Kroller-Schon, M. Sorensen & T. Münzel: The “exposome” concept – how environmental risk factors influence cardiovascular health. Acta Biochim. Pol., 66, 269-283, doi:10.18388/abp.2019_2853, 2019.

Eger, P.G., F. Helleis, G. Schuster, G.J. Phillips, J. Lelieveld & J.N. Crowley: Chemical ionisation quadrupole mass spectrometer with an electrical discharge ion source for atmospheric trace gas measurement. Atmos. Meas. Tech., 12, 1935-1954, doi:10.5194/amt-12-1935-2019, 2019.

Eger, P.G., N. Friedrich, J. Schuladen, J. Shenolikar, H. Fischer, I. Tadic, H. Harder, M. Martinez, R. Rohloff, S. Tauer, F. Fachinger, F. Drewnick, J. Brooks, E. Darbyshire, J. Sciare, M. Pikridas, J. Lelieveld & J.N. Crowley: Shipborne measurements of $ClNO_2$ in the Mediterranean Sea and around the Arabian Peninsula during summer. Atmos. Chem. Phys., 19, 12121-12140, doi:10.5194/acp-19-12121-2019, 2019.

Erguler, K., I. Pontiki, G. Zittis, Y. Proestos, V. Christodoulou, N. Tsirigotakis, M. Antoniou, O. E. Kasap, B. Alten & J. Lelieveld: A climate-driven and field data-assimilated population dynamics model of sand flies. Scientific Reports, 9, 2469, doi:10.1038/s41598-019-38994-w, 2019.

Evoy, E., A.M. Maclean, G. Rovelli, Y. Li, A.P. Tsimpidi, V.A. Karydis, S. Kamal, J. Lelieveld, M. Shiraiwa, J.P. Reid & A.K. Bertram: Predictions of diffusion rates of large organic molecules in secondary organic aerosols using the Stokes–Einstein and fractional Stokes–Einstein relations. Atmos. Chem. Phys., 19, 10073–10085, doi:10.5194/acp-19-10073-2019, 2019.

Fischer, H., R. Axinte, H. Bozem, J. Crowley, C. Ernest, S. Gilge, S. Hafermann, H. Harder, K. Hens, R. Konigstedt, D. Kubistin, C. Mallik, M. Martinez, A. Novelli, U. Parchatka, C. Plass-Dulmer, A. Pozzer, E. Regelin, A. Reiffs, T. Schmidt, J. Schuladen & J. Lelieveld: Diurnal variability, photochemical production and loss processes of hydrogen peroxide in the boundary layer over Europe. Atmos. Chem. Phys., 19, 11953-11968, doi:10.5194/acp-19-11953-2019, 2019.

Forkel, M., N.P. Andela, S. Harrison, G. Lasslop, M. Van Marle, E. Chuvieco, W. Dorigo, M. Forrest, S. Hantson, A. Heil, F. Li, J. Melton, S. Sitch, C. Yue & A. Arneth: Emergent relationships with respect to burned area in global satellite observations and fire-enabled vegetation models. Biogeosciences, 16, 57-76, doi:10.5194/bg-16-57-2019, 2019.

Franco, B., L. Clarisse, T. Stavrakou, J.F. Müller, A. Pozzer, J. Hadji-Lazaro, D. Hurtmans, C. Clerbaux & P.F. Coheur: Acetone Atmospheric Distribution Retrieved from Space. Geophys. Res. Lett., 46, 2884-2893, doi:10.1029/2019GL082052, 2019.

Giannakis, E., J. Kushta, G.K. Georgiou, A. Bruggeman & J. Lelieveld: Costs and benefits of agricultural ammonia emission abatement options for compliance with European air quality regulations. Environ. Sci. Eur., 31, 93, doi:10.1186/s12302-019-0275-0, 2019.

Giannakis, E., J. Kushta, D. Giannadaki, G.K. Georgiou, A. Bruggeman & J. Lelieveld: Exploring the economy-wide effects of agriculture on air quality and health: Evidence from Europe. Sci. Total Environ., 663, 889-900, doi:10.1016/j.scitotenv.2019.01.410, 2019.

Ham, D.A., J.C. Hargreaves, A. Kerkweg, D.M. Roche & R. Sander: Editorial: The publication of geoscientific model developments v1.2. Geosci. Model Dev., 12, 2215-2225, doi:5194/gmd-12-2215-2019, 2019.

Harari, O., I. C.I. Garfinkel, S. Ziskin Ziv, O. Morgenstern, G. Zeng, S. Tilmes, D. Kinnison, M. Deushi, P. Jöckel, A. Pozzer, F. M. O'Connor & S. Davis: Influence of Arctic stratospheric ozone on surface climate in CCMI models. Atmos. Chem. Phys., 19, 9253–9268, doi:10.5194/acp-19-9253-2019, 2019.

Huijnen, V., A. Pozzer, J. Arteta, G. Brasseur, I. Bouarar, S. Chabrillat, Y. Christophe, T. Doumbia, J. Flemming, J. Guth, B. Josse, V.A. Karydis, V. Marécal & S. Pelletier, S.: Quantifying uncertainties due to chemistry modelling - evaluation of tropospheric composition simulations in the CAMS model (cycle 43R1). Geosci. Model Dev., 12, 1725-1752, doi:10.5194/gmd-12-1725-2019, 2019.

Javed, U., D. Kubistin, M. Martinez, J. Pollmann, M. Rudolf, U. Parchatka, A. Reiffs, J. Thieser, G. Schuster, M. Horbanski, D. Pöhler, J.N. Crowley, H. Fischer, J. Lelieveld & H. Harder: Laser-induced fluorescence-based detection of atmospheric nitrogen dioxide and comparison of different techniques during the PARADE 2011 field campaign. Atmos. Meas. Tech., 12, 1461–1481, doi:10.5194/amt-12-1461-2019, 2019.

Kaiser, J.W. & G.R. van der Werf: Biomass burning [in "State of the Climate in 2018"]. Bull. Amer. Meteor. Soc., 100(9), 64-65, doi:10.1175/2019BAMSStateoftheClimate.1, 2019.

Kaur, I., I. Hüser, T. Zhang, B. Gehrke & J.W. Kaiser: Correcting Swath-Dependent Bias of MODIS FRP Observations with Quantile Mapping. Remote Sensing, 11(10), doi:10.3390/rs11101205, 2019.

Kippenberger, M., G. Schuster, J. Lelieveld & J.N. Crowley: Trapping of HCl and oxidized, organic trace-gases in growing ice at temperatures relevant for cirrus clouds. Atmos. Chem. Phys., 19, 11939–11951 doi:10.5194/acp-19-11939-2019, 2019.

Klingmüller, K., J. Lelieveld, V.A. Karydis & G.L. Stenchikov: Direct radiative effect of dust-pollution interactions. Atmos. Chem. Phys., 19, 7397-7408, doi:10.5194/acp-19-7397-2019, 2019.

Kushta, J., G.K. Georgiou, G.K., Y. Proestos, T. Christoudias, P. Thunis, C. Savvides, C. Papadopoulos & J. Lelieveld: Evaluation of EU air quality standards through modeling and the FAIRMODE benchmarking methodology. Air Quality, Atmosphere & Health, 12, 73-86, doi:10.1007/s11869-018-0631-z, 2019.

Lelieveld, J. & T. Münzel: Air pollution, chronic smoking, and mortality. Eur. Heart J., 40(38), 3204, doi:10.1093/eurheartj/ehz439, 2019.

Lelieveld, J., K. Klingmüller, A. Pozzer, R.T. Burnett, A. Haines & V. Ramanathan: Effects of fossil fuel and total anthrogpogenic emission removal on public health and climate. Proc. Natl. Acad. Sci USA, 116, 7192-7197, doi:10.1073/pnas.1819989116, 2019.

Lelieveld, J., K. Klingmüller, A. Pozzer, U. Pöschl, M. Fnais, A. Daiber & T. Münzel: Cardiovascular disease burden from ambient air pollution in Europe reassessed using novel hazard ratio functions. Eur. Heart. J., 40, 1590-1596, doi:10.1093/eurheartj/ehz135, 2019.

Liebmann, J., N. Sobanski, J. Schuladen, E. Karu, H. Hellén, H. Hakola, Q. Zha, M. Ehn, M. Riva, L. Heikkinen, J. Williams, H. Fischer, J. Lelieveld & J.N. Crowley: Alkyl nitrates in the boreal forest: formation via the NO_3-, OH- and O_3-induced oxidation of biogenic volatile organic compounds and ambient lifetimes. Atmos. Chem. Phys., 19, 10391-10403, doi:10.5194/acp-19-10391-2019, 2019.

Li, G., Y. Cheng, U. Kuhn, R. Xu, Y. Yang, H. Meusel, Z. Wang, N. Ma, Y. Wu, M. Li, J. Williams, T. Hoffmann, M. Ammann, U. Pöschl, M. Shao & H. Su: Physicochemical uptake and release of volatile organic compounds by soil in coated-wall flow tube experiments with ambient air. Atmos. Chem. Phys., 19, 2209-2232, doi:10.5194/acp-19-2209-2019, 2019.

Ma, J., C. Brühl, Q. He, B. Steil, V.A. Karydis, K. Klingmüller, H. Tost, B. Chen, Y. Jin, N. Liu, X. Xu, P. Yan, X. Zhou, K. Abdelrahman, A. Pozzer & J. Lelieveld: Modeling the aerosol chemical composition of the tropopause over the Tibetan Plateau during the Asian summer monsoon. Atmos. Chem. Phys., 19, 11587-11612, doi:10.5194/acp-19-11587-2019, 2019.

Münzel, T., Hahad, O., Daiber, A. & Lelieveld, J.: Air pollution and cardiovascular system. Der Kardiologe, 13(6), 352–359, doi:10.1007/s12181-019-00351-6, 2019.

Münzel, T., J. Lelieveld, S. Rajagopalan & A. Daiber: Contribution of airborne desert dust to air quality and cardiopulmonary disease. Eur. Heart J., 40, 2377-2378, doi:10.1093/eurheartj/ehz216, 2019.

Pfannerstill, E.Y, N. Wang, A. Edtbauer, E. Bourtsoukidis, J.N. Crowley, D. Dienhart, P.G. Eger, L. Ernle, H. Fischer, B. Hottmann, J.-D. Paris, C. Stonner, I. Tadic, D. Walter, J. Lelieveld & J. Williams: Shipborne measurements of total OH reactivity around the Arabian Peninsula and its role in ozone chemistry. Atmos. Chem. Phys., 19, 11501-11523, doi:10.5194/acp-19-11501-2019, 2019.

Pozzer, A. S. Bacer, S. De Zolt Sappadina, F. Predicatori & A. Caleffi: Long-term concentrations of fine particulate matter and impact on human health in Verona, Italy. Atmospheric Pollution Research, 10, 731-738, doi:10.1016/j.apr.2018.11012, 2019.

Sander, R., A. Baumgaertner, D. Cabrera-Perez, F. Frank, S. Gromov, J.-U. Grooß, H. Harder, V. Huijnen, P. Jöckel, V.A. Karydis, K.E. Niemeyer, A. Pozzer, H. Riede, M.G. Schultz, D. Taraborrelli & S. Tauer: The community atmospheric chemistry box model CAABA/MECCA-4.0. Geosci. Model Dev., 12, 1365-1385, doi:10.5194/gmd-12-1365-2019, 2019.

Sattler, T., M. Sörgel, J. Wittmer, E. Bourtsoukidis, T. Krause, E. Atlas, S. Benk, S. Bleicher, K. Kamilli, J. Ofner, R. Kopetzky, A. Held, W.-U. Palm, J. Williams, C. Zetzsch & H.-F. Schöler: Natural Formation of Chloro- and Bromoacetone in Salt Lakes of Western Australia. Atmosphere 2019, 10, 663; doi: 10.3390/atmos10110663, 2019.

Sharma A., N. Ojha, A. Pozzer, G. Beig & S.S. Gunthe: Revisiting the crop yield loss in India attributable to ozone. Atmos. Environ., X 1, 100008, doi:10.1016/j.aeaoa.2019.100008, 2019.

Staudt, M., J. Byron, K. Piquemal & J. Williams: Compartment specific chiral pinene emissions identified in a Maritime pine forest. Science of The Total Environment, 654, 1158-1166 , doi:10.1016/j.scitotenv.2018.11.146, 2019.

Tomsche, L., A. Pozzer, N. Ojha, U. Parchatka, J. Lelieveld & H. Fischer: Upper tropospheric CH_4 and CO affected by the South Asian summer monsoon during the Oxidation Mechanism Observations mission. Atmos. Chem. Phys., 19, 1915-1939, doi:10.5194/acp-19-1915-2019, 2019.

Yan, Y., D. Cabrera-Perez, J. Lin, A. Pozzer, L. Hu, D.B. Millet, W.C. Porter & J. Lelieveld: Global tropospheric effects of aromatic chemistry with the SAPRC-11 mechanism implemented in GEOS-Chem version 9-02. Geosci. Model Dev., 12, 111-130, 2019, doi:10.5194/gmd-12-111-2019, 2019.

Yan, Y. J. Lin, A. Pozzer, S. Kong & J. Lelieveld: Trend reversal of high and low level ozone concentrations over Europe. Atmos. Environ., 213, 25-36, doi:10.1016/j.atmosenv.2019.05.067, 2019.

Yáñez-Serrano, A.M., L. Mahlau, L. Fasbender, J. Byron, J. Williams, J. Kreuzwieser & C. Werner: Heat stress causes enhanced use of cytosolic pyruvate for isoprene biosynthesis. J. Exp. Bot., 70 (20), 5827–5838, doi:10.1093/jxb/erz353, 2019.

Yoon, J., D.Y. Chang, J. Lelieveld, A. Pozzer, J. Kim & S.S. Yum: Empirical evidence of a positive climate forcing of aerosols at elevated albedo. Atmos. Res., 229(15), 269-279, doi:10.1016/j.atmosres.2019.07.001, 2019.

Zeb, N., M.F. Khokhar, A. Pozzer & S.A. Khan: Exploring the temporal trends and seasonal behaviour of tropospheric trace gases over Pakistan by exploiting satellite observations. Atmos. Environ., 198, 279-290, doi:10.1016/j.atmosenv.2018.10.053, 2019.

Zittis, G., P. Hadjinicolaou, M. Klangidou, Y. Proestos & J. Lelieveld: A multimodel, multi-scenario and multi-domain analysis of regional climate projections for the Mediterranean. Reg. Environ. Change, 19, 2621-2635, doi:10.1007/s10113-019-01565-w, 2019.

2018

Abdelwares, M., M. Haggag, A. Wagdy & J. Lelieveld: Customized framework of the WRF model for regional climate simulation over the Eastern NILE basin. Theor. Appl. Climatol., 134, 1135-1151, doi: 10.1007/s00704-017-2331-2, 2018.

Adcock, K.E., C.E. Reeves, L.J. Gooch, E.C.L. Elvidge, M.J. Ashfold, C.A.M. Brenninkmeijer, C. Chou, P.J. Fraser, R.L. Langenfelds, N.M. Hanif, S. O'Doherty, D.E. Oram, C.-F. Ou-Yang, S.M. Phang, A. Abu Samah, T. Rockmann, W.T. Sturges & J.C. Laube: Continued increase of CFC-113a (CCl_3CF_3) mixing ratios in the global atmosphere: emissions, occurrence and potential sources. Atmos. Chem. Phys., 18(7), 4737–4751, doi:10.5194/acp-18-4737-2018, 2018.

Bacer, S., S.C. Sullivan, V.A. Karydis, D. Barahona, M. Krämer, A. Nenes, H. Tost, A.P. Tsimpidi, J. Lelieveld & A. Pozzer: Implementation of a comprehensive ice crystal formation parameterization for cirrus and mixed-phase clouds into the EMAC model (based on MESSy 2.53). Geosci. Model Dev. 11(10), 4021-4041, doi:10.5194/gmd-11-4021-2018, 2018.

Bourtsoukidis, E., T. Behrendt, A.M. Yañez-Serrano, H. Hellén, E. Diamantopoulos, E. Catão, A. Pozzer, C.A. Quesada, D.L. Martins, M. Sá, A. Araujo, J. Brito, P. Artaxo, J. Kesselmeier, J. Lelieveld & J. Williams: Strong sesquiterpene emissions from Amazonian soils. Nature Comm., 9, doi:10.1038/s41467-018-04658-y, 2018.

Brühl, C., J. Schallock, K. Klingmüller, C. Robert, C. Bingen, L. Clarisse, A. Heckel, P. North & L. Rieger: Stratospheric aerosol radiative forcing simulated by the chemistry climate model EMAC using Aerosol CCI satellite data. Atmos. Chem. Phys., 18(17), 12845-12857, doi:10.5194/acp-18-12845-2018, 2018.

Bunkan, A.J.C., S. Gonu, D. Amedro, L. Vereecken, T.J. Wallington & J.N. Crowley: Products and mechanism of the OH-initiated photo-oxidation of perfluoro ethyl vinyl ether, $C_2F_5OCF=CF_2$. Phys. Chem. Chem. Phys., 20(16), 11306–11316, doi:10.1039/c8cp01392f, 2018.

Caseiro, A., G. Rücker, J. Tiemann, D. Leimbach, E. Lorenz, O. Frauenberger & J.W. Kaiser: Persistent hot spot detection and characterisation using SLSTR. Remote Sens., 10, 1118, doi:10.3390/rs10071118, 2018.

Chuvieco, E., J. Lizundia-Loiola, M.L. Pettinari, R. Ramo, M. Padilla, K. Tansey, F. Mouillot, P. Laurent, T. Storm, A. Heil & S. Plummer: Generation and analysis of a new global burned area product based on MODIS 250 m reflectance bands and thermal anomalies. Earth Syst. Sci. Data, 10, 2015-2031, doi:10.5194/essd-10-2015-2018, 2018.

Crowley, J., N. Pouvesle, G. Phillips, R. Axinte, H. Fischer, T. Petäjä, A. Nölscher, J. Williams, K. Hens, H. Harder, M. Martinez-Harder, A. Novelli, D. Kubistin, B. Bohn & J. Lelieveld: Insights into HOX and ROX chemistry in the boreal forest via measurement of peroxyacetic acid, peroxyacetic nitric anhydride (PAN) and hydrogen peroxide. Atmos. Chem. Phys. 18, 13457-13479, doi:10.5194/acp-18-13457-2018, 2018.

de Vries, A. J., H.G. Ouwersloot, S. B. Feldstein, M. Riemer, A. M. El Kenawy, M. F. McCabe & J. Lelieveld: Identification of Tropical-Extratropical Interactions and Extreme Precipitation Events in the Middle East Based on Potential Vorticity and Moisture Transport, Journal of Geophysical Research-Atmospheres, 123(2), 861–881, doi:10.1002/2017JD027587, 2018.

Dillon, T. J. & J.N. Crowley: Reactive quenching of electronically excited NO_2* and NO_3* by H_2O as potential sources of atmospheric HO_X radicals. Atmos. Chem. Phys., 18, 14005-14015, doi:10.5194/acp-18-14005-2018, 2018.

Ditas, J., N. Ma, Y. Zhang, D. Assmann, M. Neumaier, H. Riede, E. Karu, J. Williams, D. Scharffe, Q. Wang, J. Saturno, J. P. Schwarz, J. M. Katich, G. McMeeking, A. Zahn, M. Hermann, C.A.M. Brenninkmeijer, M.O. Andreae, U. Pöschl, H. Su & Y. Cheng: Strong impact of wildfires on the abundance and aging of black carbon in the lowermost stratosphere. PNAS, doi:10.1073/pnas.1806868115, 2018.

Dulitz, K., D. Amedro, T.J. Dillon, A. Pozzer & J.N. Crowley: Temperature-(208-318 K) and pressure-(18-696 Torr) dependent rate coefficients for the reaction between OH and HNO_3. Atmos. Chem. Phys., 18(4), 2381–2394, doi:10.5194/acp-18-2381-2018, 2018.

Ehrhart, S., E.M. Dunne, H.E. Manninen, T. Nieminen, J. Lelieveld & A. Pozzer: Two new submodels for the Modular Earth Sub model System (MESSy): New Aerosol Nucleation (NAN) and small ions (IONS) version 1.0. Geosci. Model Dev., 11, 4987-5001, doi:10.5194/gmd-11-4987-2018, 2018.

Elvidge, E.L., H. Boenisch, C.A.M. Brenninkmeijer, A. Engel, P.J. Fraser, E. Gallacher, R. Langenfelds, R., J. Muhle, D.E. Oram, E.A. Ray, A.R. Ridley, T. Rockmann, W.T. Sturges, R.F. Weiss & J.C. Laube: Evaluation of stratospheric age of air from CF_4, C_2F_6, C_3F_8, CHF_3, HFC-125, HFC-227ea and SF_6; implications for the calculations of halocarbon lifetimes, fractional release factors and ozone depletion potential. Atmos. Chem. Phys. 18(5), 3369–3385, doi:10.5194/acp-18-3369-2018, 2018.

Ermel, M., T. Behrendt, R. Oswald, B. Derstroff, D. Wu, S. Hohlmann, C. Stönner, A. Pommerening-Röser, M. Könneke, J. Williams, F. Meixner, M. Andreae, I. Trebs & M. Sörgel: Hydroxylamine released by nitrifying microorganisms is a precursor for HONO emission from drying soils. Nature Scientific Reports, 8, 1877, doi:10.1038/s41598-018-20170-1, 2018.

Fantini, A., F. Raffaele, C. Torma, S. Bacer, E. Coppola, F. Giorgi, B. Ahrens, C. Dubois, E. Sanchez & M. Verdecchia: Assessment of multiple daily precipitation statistics in ERA-Interim driven Med-CORDEX and EURO-CORDEX experiments against high resolution observations. Climate Dynamics, 51(3), 877–900, doi:10.1007/s00382-016-3453-4, 2018

Frank, F., P. Jöckel, S. Gromov & M. Dameris: Investigating the yield of H_2O and H_2 from methane oxidation in the stratosphere. Atmos. Chem. Phys., 18, 9955-9973, https://doi.org/10.5194/acp-18-9955-2018, doi:10.5194/acp-18-9955-2018, 2018.

Georgiou, G.K., T. Christoudias, Y. Proestos, J Kushta, P. Hadjinicolaou & J. Lelieveld: Air quality modelling in the summer over the Eastern Mediterranean using WRF/Chem: Chemistry and aerosol mechanisms intercomparison. Atmos. Chem. Phys., 18, 1555-1571, doi:10.5194/acp-18-1555-2018, 2018.

Georgoulias, A., A. Tsikerdekis, V. Amiridis, E. Marinou, A. Benedetti, P. Zanis, G. Alexandri, K. Kourtidis & J. Lelieveld: A 3-D evaluation of the MACC reanalysis dust product over Europe, Northern Africa and Middle East using CALIOP/CALIPSO dust satellite observations. Atmos. Chem. Phys., 18, 8601-8620, doi:10.5194/acp-18-8601-2018, 2018.

Giannadaki, D., E. Giannakis, A. Pozzer & J. Lelieveld: Estimating health and economic benefits of reductions in air pollution from agriculture. Science of the Total Environment, 622/623, 1304–1316, doi:10.1016/j.scitotenv.2017.12.064, 2018.

Goldammer, J.G., S. Mangeon, M. Keywood, J.W. Kaiser, W.J. de Groot, D. Gunawan, J. Gan, R. Field, M. Sofiev & A. Baklanov: Vegetation Fire and Smoke Pollution Warning and Advisory System (VFSP-WAS): concept note and expert recommendations. World Meteorological Organization, 235**,** 2018.

Gonu, S., A.J.C. Bunkan, D. Amedro & J.N. Crowley: Absolute and relative-rate measurement of the rate coefficient for reaction of perfluoro ethyl vinyl ether ($C_2F_5OCF=CF_2$) with OH. Phys. Chem. Chem. Phys., 20(5), 3761–3767, doi:10.1039/c7cp08056e, 2018.

Gromov, S., C.A.M. Brenninkmeijer & P. Jöckel: A very limited role of tropospheric chlorine as a sink of the greenhouse gas methane. Atmos. Chem. Phys., 18, 9831-9843, doi:10.5194/acp-18-9831-2018, 2018.

Kaiser, J. W. & G.R. van der Werf: Biomass burning [in "State of the Climate in 2017"]. Bull. Amer. Meteor. Soc., 99(8), 67-68, doi:10.1175/2018BAMSStateoftheClimate.1, 2018.

Klingmüller, K., S. Metzger, M. Abdelkader, V.A. Karydis, G.L. Stenchikov, A. Pozzer & J. Lelieveld: Revised mineral dust emissions in the atmospheric chemistry–climate model EMAC (MESSy 2.52 DU_Astitha1 KKDU2017 patch). Geosci. Model Dev., 11, 989-1008, doi:10.5194/gmd-11-989-2018, 2018.

Krol, M., M. de Bruine, L. Killaars, H. Ouwersloot, A. Pozzer, Y. Yin, F. Chevallier, P. Bousquet, P. Patra, D. Belikov, S. Maksyutov, S. Dhomse, W. Feng & M.P. Chipperfield, M. P.: Age of air as a diagnostic for transport timescales in global models. Geosci. Model Dev., 11, 3109-3130, doi:10.5194/gmd-11-3109-2018, 2018.

Kushta, J., A. Pozzer & J. Lelieveld: Uncertainties in estimates of mortality attributable to ambient PM2.5 in Europe. Environ. Res. Lett., 13(6), doi:10.1088/1748-9326/aabf29, 2018.

Kushta, J., G.K. Georgiou, Y. Proestos, T. Christoudias & J. Lelieveld: A modelling study of the atmospheric composition over Cyprus. Atmos. Pollut. Res., 9, 257-269, doi:10.1016/j.apr.2017.09.007, 2018.

Kushta, J., G.K. Georgiou, Y. Proestos, T. Christoudias, P. Thunis & J. Lelieveld: Evaluation of EU air quality standards through modelling and the FAIRMODE benchmarking methodology. Air Qual. Atm. Health, doi:10.1007/s11869-018-0631-z, 2018.

Lelieveld, J., A. Haines & A. Pozzer: Age-dependent health risk from ambient air pollution: a modelling and data analysis of childhood mortality in middle-income and low-income countries. Lancet Planet. Health, 2, 292-300, doi:10.1016/S2542-5196(18)30147-5, 2018.

Lelieveld, J., E. Bourtsoukidis, C. Brühl, H. Fischer, H. Fuchs, H. Harder, A. Hofzumahaus, F. Holland, D. Marno, M. Neumeier, A. Pozzer, H. Schlager, J. Williams, A. Zahn & H. Ziereis: The South Asian monsoon – pollution pump and purifier. Science, 361, 270-273, doi:10.1126/science.aar2501, 2018.

Liebmann, J.M., J.B.A. Muller, D. Kubistin, A. Claude, R. Holla, C. Plass-Dülmer, J. Lelieveld & J.N. Crowley: Direct measurements of NO_3-reactivity in and above the boundary layer of a mountain-top site: Identification of reactive trace gases and comparison with OH-reactivity. Atmos. Chem. Phys., 18, 12045-12059, doi:10.5194/acp-18-12045-2018, 2018.

Liebmann, J., E. Karu, N. Sobanski, J. Schuladen, M. Ehn, S. Schallhart, L. Quéléver, H. Hellen, H. Hakola, T. Hoffmann, J. Williams, H. Fischer, J. Lelieveld & J. Crowley: Direct measurement of NO3 reactivity in a boreal forest. Atmos. Chem. Phys., 18, 3799-3815, doi:10.5194/acp-18-3799-2018, 2018.

Li, M., E. Karu, C. Brenninkmeijer, H. Fischer, J. Lelieveld and J. Williams: Tropospheric OH and stratospheric OH & Cl concentrations determined from CH4, CH3Cl, and SF6 measurements. Nature Clim. Atm. Sci., 1 (29), doi:10.1038/s41612-018-0041-9, 2018.

Liu, N., S. Zhou, L. Zhang, B. Yu, H. Fischer, W. Ren & J. Li: Standoff detection of VOCs using external cavity quantum cascade laser spectroscopy. Laser Phys. Lett., 15(8), doi:10.1088/1612-202X/aac356, 2018.

Mallik, C., L. Tomsche, E. Bourtsoukidis, J.N. Crowley, B. Derstroff, H. Fischer, S. Hafermann, I. Hueser, U. Javed, S. Keßel, J. Lelieveld, M. Martinez, H. Meusel, A. Novelli, G.J. Phillips, A. Pozzer, A. Reiffs, R. Sander, C. Sauvage, J. Schuladen, H. Su, J. Williams & H. Harder: Oxidation processes in the Eastern Mediterranean atmosphere: Evidence from the modelling of HOx measurements over Cyprus. Atmos. Chem. Phys., 18, 10825-10847, doi:10.5194/acp-18-10825-2018, 2018.

Metzger, S., M. Abdelkader, B. Steil & K. Klingmüller: Aerosol water parameterization: long-term evaluation and importance for climate studies Aerosol water parameterization and importance. Atmos. Chem. Phys., 18, 16747-16774, doi:10.5194/acp-18-16747-2018, 2018.

Meusel, H., A. Tamm, U. Kuhn, D. Wu, A. L. Leifke, S. Fiedler, N. Ruckteschler, P. Yordanova, N. Lang-Yona, J. Lelieveld, T. Hoffmann, U. Pöschl, H. Su, B. Weber & Y. Cheng: Emission of nitrous acid from soil and biological soil crusts represents a dominant source of HONO in the remote atmosphere in Cyprus. Atmos. Chem. Phys.,18, 799-813, doi:10.5194/acp-18-799-2018, 2018.

Münzel, T., T. Gori, S. Al-Kindi, J. Deanfield, J. Lelieveld, A. Daiber & S. Rajagopalan: Effects of gaseous and solid constituents of air pollution on endothelial function. Eur. Heart J., 39, 3543-3550b, doi:10.1093/eurheartj/ehy481, 2018.

Nechita-Banda, N., M. Krol, G. R. van der Werf, J. W. Kaiser, S. Pandey, V. Huijnen, C. Clerbaux, P. Coheur, M. N. Deeter & T. Rockmann, T.: Monitoring emissions from the 2015 Indonesian fires using CO satellite data. Philosophical Transactions: Biological Sciences, 373(1760), doi:10.1098/rstb.2017.0307, 2018.

Newland, M.J., A.R. Rickard, T. Sherwen, M.J. Evans, L. Vereecken, A. Munoz, M. Rodenas & W.J. Bloss: The atmospheric impacts of monoterpene ozonolysis on global stabilised Criegee intermediate budgets and SO_2 oxidation: experiment, theory and modelling. Atmos. Chem. Phys., 18(8), 6095–6120, doi:10.5194/acp-18-6095-2018, 2018.

Nikolaou, Z.M., J.Y. Chen, Y. Proestos, J. Lelieveld & R. Sander: Accelerating simulations using Direct Relation Graphs for atmospheric chemistry mechanism reduction. Geosci. Model Dev., 11, 3391-3407, doi:10.5194/gmd-11-3391-2018, 2018.

Pfannerstill, E.Y., A.C. Nölscher, A.M. Yáñez-Serrano, E. Bourtsoukidis, S. Keßel, R.H.H. Janssen, A. Tsokankunku, S. Wolff, M. Sörgel, M.O. Sá, A. Araújo, D. Walter, J.V. Lavrič, C. Quaresma Dias-Júnior, J. Kesselmeier & J. Williams: Total OH reactivity changes over the Amazon rainforest during an El Nino event. Front. For. Glob. Change, 18 December 2018, doi:10.3389/ffgc.2018.00012, 2018.

Sikma, M., H. Ouwersloot, X. Pedruzo-Bagazgoitia, C.C. van Heerwaarden & J.V.-G. de Arellano: Interactions between vegetation, atmospheric turbulence and clouds under a wide range of background wind conditions. Agric. For. Meteorol., 255, 31–43, doi:10.1016/j.agrformet.2017.07.001, 2018.

Slemr, F., A. Weigelt, R. Ebinghaus, J. Bieser, C.A.M. Brenninkmeijer, A.- Rauthe-Schöch, M. Hermann, G.B. Martinsson, P. van Velthoven, H. Bönisch, M. Neumaier, A. Zahn & H. Ziereis: Mercury distribution in the upper troposphere and lowermost stratosphere according to measurements by the IAGOS-CARIBIC observatory: 2014-2016. Atmos. Chem. Phys., 18, 12329-12343, doi:10.5194/acp-18-12329-2018, 2018.

Son, S.-W., B.-R. Han, C.I. Garfinkel, S.-Y. Kim, R. Park, N.L. Abraham, H. Akiyoshi, A.T. Archibald, N. Butchart, M.P. Chipperfield, M. Dameris, M. Deushi, S.S. Dhomse, S.C. Hardiman, P. Joeckel, D. Kinnison, M. Michou, O. Morgenstern, F. MO'Connor, L.D. Oman, D.A. Plummer, A. Pozzer, L.E. Revell, E. Rozanov, A. Stenke, K. Stone, S. Tilmes, Y. Yamashita & G. Zeng: Tropospheric jet response to Antarctic ozone depletion: An update with Chemistry-Climate Model Initiative (CCMI) models. Environ. Res. Lett., 13(5), doi:10.1088/1748-9326/aabf21, 2018.

Srinivasulu, G., A.J.C. Bunkan, D. Amedro & J.N. Crowley: Absolute and relative-rate measurement of the rate coefficient for reaction of perfluoro ethyl vinyl ether ($C_2F_5OCF=CF_2$) with OH. Phys. Chem. Chem. Phys., 20, 3761-3767, doi:10.1039/c7cp08056e, 2018.

Stönner, C., A. Edtbauer, B. Derstroff, E. Bourtsoukidis, T. Klüpfel, J. Wicker & J. Williams: Can the age classification of films be made based on audience breath-chemical emissions?. PLoS ONE 13(10): e0203044, doi:10.1371/journal.pone.0203044, 2018.

Stönner, C., A. Erdtbauer & J. Williams: Real-world volatile organic compound emission rates from seated adults and children for use in indoor air studies. Indoor air: international journal of indoor air quality and climate, 28(1), 164–172, doi:10.1111/ina.12405, 2018.

Tsimpidi, A.P., V.A. Karydis, A. Pozzer, S.N. Pandis & J. Lelieveld: ORACLE 2-D (v2.0): an efficient module to compute the volatility and oxygen content of organic aerosol with a global chemistry–climate model. Geosci. Model Dev., 11(8), 3369-3389, doi:10.5194/gmd-11-3369-2018, 2018.

Tymvios, F., D. Charalambous, S. Michaelides & J. Lelieveld: Intercomparison of boundary layer parameterizations for summer conditions in the eastern Mediterranean island of Cyprus using the WRF - ARW model. Atmos. Res., 208, 45-59, doi:10.1016/j.atmosres.2017.09.011, 2018.

Umezawa, T., C.A.M. Brenninkmeijer, T. Rockmann, C. van der Veen, S.C. Tyler, R., Fujita, S. Morimoto, S. Aoki, T. Sowers, J. Schmitt, M. Bock, J. Beck, H. Fischer, S.E. Michel, B.H. Vaughn, J.B. Miller, J.W.C. White, G. Brailsford, H. Schaefer, P. Sperlich, W.A. Brand, M. Rothe, T. Blunier, D. Lowry, R.E. Fisher, E.G. Nisbet, A.L. Rice, P. Bergamaschi, C. Veidt & I. Levin: Interlaboratory comparison of of $\delta^{13}C$ and δD measurements of atmospheric CH_4 for combined use of data sets from different laboratories. Atmos. Meas. Tech., 11(2), 1207–1231, doi:10.5194/amt-11-1207-2018, 2018.

Yañez-Serrano, A.M., A.C. Nölscher, E. Bourtsoukidis, E. Gomes Alves, L. Ganzeveld, B. Bonn, S. Wolff, M. Sa, M. Yamasoe, J. Williams, M.O. Andreae & J. Kesselmeier: Monoterpene chemical speciation in the Amazon tropical rainforest: variation with season, height, and time of day at the Amazon Tall Tower Observatory (ATTO). Atmos. Chem. Phys., 18, 3403–3418, doi:10.5194/acp-18-3403-2018, 2018.

Yan, Y., A. Pozzer, N. Ojha, J. Lin & J. Lelieveld: Analysis of European ozone trends in the period 1995–2014. Atmos. Chem. Phys., 18, 5589-5605, doi:10.5194/acp-18-5589-2018, 2018.

Zittis, G., A. Bruggeman, P. Hadjinicolaou, C. Camera & J. Lelieveld: Effects of meteorology nudging in regional hydro-climatic simulations of the eastern Mediterranean. Atmosphere, 9, 470, doi:10.3390/atmos9120470, 2018.

Books

Goldammer, J. G., S. Mangeon, M. Keywood, J. W. Kaiser, W. J. De Groot, D. Gunawan, C. Gan & A. Baklanov: Vegetation Fire and Smoke Pollution Warning and Advisory System (VFSP-WAS): Concept Note and Expert Recommendations, World Meteorological Organization, Geneva. [online] Available from: http://hdl.handle.net/21.11116/0000-0003-0C24-8, 2018.

Book Chapters

Daiber, A., J. Lelieveld, S. Steven, M. Oelze, S. Kroller-Schon, M. Sorensen & T. Münzel: Traffic-related environmental risk factors and their impact on oxidative stress and cardiovascular health. In: H. Sies (ed.) Oxidative stress: Eustress and distress, 489-510, Academic Press, doi:10.1016/B978-0-12-818606-0.00025-0, 2020.

Lawrence, M. G. & P. J. Crutzen: The early evolution of climate engineering research, in Geoengineering our Climate? Ethics, Politics, and Governance, herausgegeben von J. Blackstock, 89–94., 2019.

Mallik, C.: Anthropogenic Sources of Air Pollution, in Air Pollution: Sources, Impacts and Controls, herausgegeben von P. Saxena und V. Naik, 6–25. [online] Available from: http://hdl.handle.net/21.11116/0000-0006-118F-6, 2019.

Doctoral Theses

Li, Mengze: Trends of atmospheric radicals, trace gases and their residence time. Universität Mainz, 2020.

Shenolikar, Justin: Nighttime radical NO_X chemistry by CRD. Universität Mainz, 2020.

Tadic, Ivan: Photooxidation studies on low-and high-NO_X-regimes with respect to ozone formation during AQABA and CAFÉ Africa. Universität Mainz, 2020.

Wang, Nijing: Carbonyl compounds and their OH reactivities in outdoor and indoor environments. Universität Mainz, 2020.

Bacer, Sara: Global numerical simulations of atmospheric crystals. Universität Mainz, 2019.

Eger, Philipp: A Chemical Ionisation Mass Spectrometer for Atmospheric Trace Gas Measurement: Characterisation and Deployment in Field Studies. Universität Mainz, 2019.

Hottmann, Bettina: Photochemie und Verteilung von Hydroperoxiden im Bereich der Arabischen Halbinsel. Universität Mainz, 2019.

Karu, Einar: Atmospheric sulfur compounds in the troposphere and stratosphere measured with an atomic emission detector. Universität Mainz, 2019.

Pfannerstill, Eva: Total reactivity in pristine and polluted environments. Universität Mainz, 2019.

Rüdiger, Julian: Halogen Activation in Volcanic Plumes: Development and Application of Ground-Based and Airborne Measurement Techniques for Reactive Halogens and Atmospheric Box Model Investigations. Universität Mainz, 2019.

Sauvage, Carina: Analysis of Non-Methane Hydrocarbons and Organic Nitrogen Compounds in the Atmosphere. Universität Mainz, 2019.

Liebmann, Jonathan: The atmospheric reactivity of the NO_3 radical. Universität Mainz, 2018.

Stönner, Christof: Application of data mining techniques to indoor and outdoor studies. Universität Mainz, 2018.

Tomsche, Laura: Spurengastransport aus dem indischen Sommermonsun. Universität Mainz, 2018.

De Vries, Andries-Jan: Tropical-extratropical interactions and extreme precipitation events in the Middle East. Universität Mainz, 2018.

Master Theses

Crowley, Daniel: Development and Characterisation of an in-situ Laser Absorption Spectrometer for Airborne Trace Gas Measurements. Universität Mainz, 2020.

Hamryszczak, Zaneta: Photochemie und Verteilung von Hydroperoxiden in der Troposphäre. Universität Mainz, 2020.

Kron, Lenard: Charakterisierung eines IR-Absorptionsspektrometers im Hinblick auf flugzeuggetragene Spurengasmessungen. Universität Mainz, 2020.

Bachelor Theses

Christian, Nino: Charakterisierung des Peroxidmonitors HYPHOP im Hinblick auf flugzeugetragene Messungen. Universität Mainz, 2019.

Kron, Lenard: Anwendung von Wavelet-Transformationen auf Spektren und Zeitreihen von Spurengasmessungen durch IR-TDLAS. Universität Mainz, 2018.

CLIMATE GEOCHEMISTRY DEPARTMENT (G. H. Haug et al.)

Journal Articles

2020

Ai, X. E., A. S. Studer, D. M. Sigman, A. Martinez-Garcia, F. Fripiat, L. M. Thöle, E. Michel, J. Gottschalk, L. Arnold, S. Moretti, M. Schmitt, S. Oleynik, S. L. Jaccard & G. H. Haug: Southern Ocean upwelling, Earth's obliquity, and glacial-interglacial atmospheric CO_2 change. Science, 370(6522), 1348-1352. doi:10.1126/science.abd2115, 2020.

Ampuero, A., N. M. Strikis, J. Apaestegui, M. Vuille, V. F. Novello, J. C. Espinoza, F. W. Cruz, H. B. Vonhof, V. C. Mayta, V. T. S. Martins, R. C. Cordeiro, V. Azevedo & A. Sifeddine: The Forest Effects on the Isotopic Composition of Rainfall in the Northwestern Amazon Basin. Journal of Geophysical Research: Atmospheres, 125(4), doi:10.1029/2019JD031445, 2020.

Andreae, M. O., A. Al-Amri, T. W. Andreae, A. Garfinkel, G. H. Haug, K. P. Jochum, B. Stoll & U. Weis: Geochemical studies on rock varnish and petroglyphs in the Owens and Rose Valleys. California, PLoS One, 15(8), doi:10.1371/journal.pone.0235421, 2020.

Andreae, M. O., A. Al-Amri, C. M. Andreae, M. Guagnin, K. P. Jochum. B. Stoll & U. Weis: Archaeometric studies on the petroglyphs and rock varnish at Kilwa and Sakaka, northern Saudi Arabia. Arabian Archaeology and Epigraphy, doi:10.1111/aae.12167, doi:10.1111/aae.12167 2020.

Aristegui, J., M. F. Montero, N. Hernandez-Hernandez, I. J. Alonso-Gonzalez, F. Baltar, M. L. Calleja & C. D, Duarte: Variability in Water-Column Respiration and Its Dependence on Organic Carbon Sources in the Canary Current Upwelling Region. Frontiers in Earth Science, 8: 34, doi:10.3389/feart.2020.00349, 2020.

Auderset, A. M. Schmitt & A. Martinez-Garcia: Simultaneous extraction and chromatographic separation of n-alkanes and alkenones from glycerol dialkyl glycerol tetraethers via selective Accelerated Solvent Extraction. Organic Geochemistry, 143, doi:10.1016/j.orggeochem.2020.103979, 2020.

Borisova, A. Y., K. P. Jochum & S. Gouy: Mineralogical and geochemical features of the Allan Hills tephra, South Victoria Land: Implications for mid-Pleistocene volcanic activity in Antarctica. Polar Science, 23, doi:10.1016/j.polar.2020.100505, 2020.

Borisova, A. Y., N. R. Zagrtdenov, M. J. Toplis, G. Ceuleneer, O. G. Safonov, G. S. Pokrovskil, K. P. Jochum, B. Stoll, U. Weis, S. Shcheka & A. Bychkov: Hydrated Peridotite-Basaltic Melt Interaction Part II: Fast Assimilation of Serpentinized Mantle by Basaltic Magma. Frontiers in Earth Science, 8, doi:10.3389/feart.2020.00084, 2020.

Bourgon, N., K. Jaouen, A.-M. Bacon, K. P. Jochum, E. Dufour, P. Duringer, J.-L. Ponche, R. Joannes-Boyau, Q. Boesch, P.-O. Antoine, M. Hullot, U. Weis, E. Schulz-Kornas, M. Trost, D. Fiorillo, F. Demeter, E. Patole-Edoumba, L. Shackleford, T. E. Dunn, A. Zachwieja, S. Duangthongchit, T. Sayavonkhamdy, P. Sichanthongtip, D. Sihanam, V. Souksavatdy, J.-J. Hublin & T. Tuetken: Zinc isotopes in Late Pleistocene fossil teeth from a Southeast Asian cave setting preserve paleodietary information. Proceedings of the National Academy of Sciences of the United States of America, 117(9), 4675–4681, doi:10.1073/pnas.1911744117, 2020.

Brockmann, D. H. Dreier, L. Feld, K. Fiedler, B. Friedrich, C. Fuest, P. Gumbsch, M. Hasselhorn, G. H. Haug, J. Kocka, O. Köller, T. Krieg, H. Kroemer, T. Lengauer, J. Margraf, C. Markschies, W. Marquardt, K. U. Mayer, R. Merkel, T. Mettenleiter, A. Nassehi, M. Prenzel, J. Renn, F. Rösler, R. Schlögl & C. Wiesemann: Coronavirus-Pandemie – Die Krise nachhaltig überwinden. Halle (Saale): Nationale Akademie der Wissenschaften Leopoldina, 2020.

Burke, J. E., W. Renema, R. Schiebel, P. M. Hull: Three-dimensional analysis of inter-and intraspecific variation in ontogenetic growth trajectories of planktonic foraminifera, Marine Micropaleontology, 155, doi:10.1016/j.marmicro.2019.101794, 2020.

Chawchai, S., G. Liu, R. Bissen, D. Scholz, D. F. C. Riechelmann, H. Vonhof, R. Mertz-Kraus, H.-W. Chiang, L. Tan, X. Wang: Hydroclimate variability of western Thailand during the last 1400 years. Quaternary Science Reviews, 241, doi:10.1016/j.quascirev.2020.106423, 2020.

Cybulski, J. D., S. M. Husa, N. N. Duprey, B. L. Mamo, T. P. N. Tsang, M. Yasuhara, J. Y. Xie, J.-W. Qiu, Y. Yokoyama, D. M. Baker: Coral reef diversity losses in China's Greater Bay Area were driven by regional stressors. Science Advances, 6(40): eabb1046. doi:10.1126/sciadv.abb1046, 2020.

De Graaf, S., V. Lueders, D. A. Banks, M. Sosnicka, J. J. G. Reijmer, H. Kaden, H. B. Vonhof: Fluid evolution and ore deposition in the Harz Mountains revisited: isotope and crush-leach analyses of fluid inclusions. Mineralium Deposita, 55(1), 47–62, doi:10.1007/s00126-019-00880-w, 2020.

De Graaf, S., H. B. Vonhof, T. Weissbach, J. A. Wassenburg, E. J. Levy, T. Kluge & G. H. Haug: A comparison of isotope ratio mass spectrometry and cavity ring-down spectroscopy techniques for isotope analysis of fluid inclusion water. Rapid Communications in Mass Spectrometry, 34(16): e8837. doi:10.1002/rcm.8837, 2020.

Deik, H., L. Reuning, M. Courtillat, B. Petrick & M.-A. Bassetti: The sedimentary record of Quaternary glacial to interglacial sea-level change on a subtropical carbonate ramp: Southwest Shelf of Australia. Sedimentology: the journal of the International Association of Sedimentologists. doi:10.1111/sed.12793, doi:10.1111/sed.12793, 2020.

Deininger, M., F. McDermott, F. W. Cruz, J. P. Bernal, M. Mudelsee, H. Vonhof, C. Millo, C. Spötl, P. C. Treble, R. Pickering & D. Scholz: Inter-hemispheric synchroneity of Holocene precipitation anomalies controlled by Earth’s latitudinal insolation gradients. Nature Communications, 11, 5547, doi:10.1038/s41467-020-19021-3, 2020.

Duprey, N. N., T. X. Wang, T. Kim, J. D. Cybulski, H. B. Vonhof, P. J. Crutzen, G. H. Haug, D. M. Sigman, A. Martinez-Garcia & D. Baker: Megacity development and the demise of coastal coral communities: Evidence from coral skeleton δ15N records in the Pearl River estuary. Global Change Biology, 26(3), 1338-1353. doi:10.1111/gcb.14923, 2020.

Geeraert, N., N. N. Duprey, S. E. McIlroy, P. D. Thompson, B. R. Goldstein, C. LaRoche, K. Kim, L. Raymundo & D. M. Baker: The Anthropogenic Nitrogen Footprint of a Tropical Lagoon: Spatial Variability in Padina sp. δ15 N Values. Pacific science, 74(1), 19-29. doi:10.2984/74.1.2, 2020.

Grossowicz, M., O. M. Bialik, E. Shemesh, D. Tschernov, H. B. Vonhof & G. Sisma-Ventura: Ocean warming is the key filter for successful colonization of the migrant octocoral Melithaea erythraea (Ehrenberg, 1834) the Eastern Mediterranean Sea. PeerJ, 8, doi:10.7717/peerj.9355, 2020.

Hallmann, C., B. J. Nettersheim, J. J. Brocks, A. Schwelm, J. M. Hope, F. Not, M. Lomas, C. Schmidt, R. Schiebel, E. C. M. Nowack, P, De Deckker, J. Pawlowski, S. S. Bowser, I. Bobrovskiy, K. Zonneveld, M. Kucera & M. Stuhr: Reply to: Sources of C-30 steroid biomarkers in Neoproterozoic-Cambrian rocks and oils. Nature Ecology & Evolution, 4(1), 37–39, doi:10.1038/s41559-019-1049-1, 2020.

Hohl, V. S., S.-Y. Jiang, S. Viehmann, W. Wei, Q. Liu, H.-Z. Wei & S. J. G. Galer: Trace Metal and Cd Isotope Systematics of the Basal Datangpo Formation, Yangtze Platform (South China) Indicate Restrained (Bio)Geochemical Metal Cycling in Cryogenian Seawater. Geosciences, 10(1), doi:10.3390/geosciences10010036, 2020.

Hueter, A., S. Huck, U. Heimhofer, S. Bodin, S. Weyer, K. P. Jochum, Y. Roebbert & A. Immenhauser: Evaluating the role of coastal hypoxia on the transient expansion of microencruster intervals during the early Aptian. Lethaia: an international journal of palaeontology and stratigraphy, 12411, doi:10.1111/let.12411, 2020.

Leichliter, J. N., T. Luedecke, N. N. Duprey, D. Winkler, T. Tuetken, M. Clauss & A. Martinez-Garcia: Measuring nitrogen isotopes in tooth enamel: A novel method for characterizing trophic position in fossil ecosystems. American Journal of Physical Anthropology, 171(S.69 Program of the 89th Annual Meeting of the American Association of Physical Anthropologists), 158-158, 2020.

Lelieveld, J., F. Helleis, S. Borrmann, Y. Cheng, F. Drewnick, G. Haug, T. Klimach, J. Sciare, H. Su, U. Pöschl: Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments. International Journal of Environmental Research and Public Health, 17(21): 8114. doi:10.3390/ijerph17218114, 2020.

Leutert, T. J., A. Auderset, A. Martinez-Garcia, S. Modestou & A. N. Meckler: Coupled Southern Ocean cooling and Antarctic ice sheet expansion during the middle Miocene. Nature Geoscience. doi:10.1038/s41561-020-0623-0, 2020.

Li, H., A. Sinha, A. A. Andre, C. Spotl, H. B. Vonhof, A. Meunier, G. Kathayat, P. Duan, N. R. G. Voarintsoa, Y. Ning, J. Biswas, P. Hu, X. Li, L. Sha, J. Zhao, R. L. Edwards & H. Cheng: A multimillennial climatic context for the megafaunal extinctions in Madagascar and Mascarene Islands. Science Advances, 6(42): eabb2459. doi:10.1126/sciadv.abb2459, 2020.

Lochte, A. A., R. Schneider, M. Kienast, J. Repschläger, T. Blanz, D. Garbe-Schoenberg & N. Andersen: Surface and subsurface Labrador Shelf water mass conditions during the last 6000 years. Climate of the past, 16(4), 1127–1143, doi:10.5194/cp-16-1127-2020, 2020.

Luciani, V., R. D'onofrio, G. Filippi & S. Moretti: Which was the habitat of early Eocene planktic foraminifer Chiloguembelina? Stable isotope paleobiology from the Atlantic Ocean and implication for paleoceanographic reconstructions. Global and Planetary Change, 191, doi:10.1016/j.gloplacha.2020.103216, 2020.

Lugli, F., M. Weber, T. Giovanardi, S. Arrihi, E. Bortolini, C. Figus, G. Marciani, G. Oxilia, M. Romandini, S. Silvestrini, K. P. Jochum, S. Benazzi & A. Cipriani: Fast offline data reduction of laser ablation MC-ICP-MS Sr isotope measurements via an interactive Excel-based spreadsheet 'SrDR'. Journal of Analytical Atomic Spectrometry, 35(5), 852–862, doi:10.1039/c9ja00424f, 2020.

McClymont, E. L., H. L. Ford, S. L. Ho, J. C. Tindall, A. M. Haywood, M. Alonso-Garcia, I. Bailey, : A. Berke, K. Littler, M. O. Patterson, B. Petrick, F. Peterse, A. C. Ravelo, B. Risebrobakken, S. De Schepper, G. E. A. Swann, K. Thirumalai, J. E. Tierney, C. van der Weijst, S. White, A. Abe-Ouchi, M. L. J. Baatsen, E. C. Brady, W.-L. Chan, D. Chandan, R. Feng, C. Guo, A. S. von der Heydt, S. Hunter, X. Li, G. Lohmann, K. H. Nisancioglu, B. L. Otto-Bliesner, W. R. Peltier, C. Stepanek & Z. Zhang: Lessons from a high-CO2 world: an ocean view from similar to 3 million years ago. Climate of the past, 16(4), 1599-1615. doi:10.5194/cp-16-1599-2020, 2020.

Meinicke, N., S. L. Ho, B. Hannisdal, D. Nuernberg, A. Tripati, R. Schiebel & A. N. Meckler: A robust calibration of the clumped isotopes to temperature relationship for foraminifers. Geochimica et Cosmochimica Acta, 270, 160–183, doi:10.1016/j.gca.2019.11.022, 2020.

Merceron, G., E. Berlioz, H. Vonhof, D. Green, M. Garel & T. Tütken, T.: Tooth tales told by dental diet proxies: An alpine community of sympatric ruminants as a model to decipher the ecology of fossil fauna. Palaeogeography, Palaeoclimatology, Palaeoecology, 110077, doi:10.1016/j.palaeo.2020.110077, 2020.

Otter, L. M., D. S. Macholdt, K. P. Jochum, B. Stoll, U. Weis, B. Weber, D. Scholz, G. H. Haug, A. M. Al-Amri & M. O. Andreae: Geochemical insights into the relationship of rock varnish and adjacent mineral dust fractions. Chemical Geology, 551, doi:10.1016/j.chemgeo.2020.119775, 2020.

Riechelmann, D. F. C., S. Riechelmann, J. A. Wassenburg, J. Fohlmeister, B. R. Schoene, K. P. Jochum, D. K. Richter & D. Scholz: High-Resolution Proxy Records From Two Simultaneously Grown Stalagmites From Zoolithencave (Southeastern Germany) and their Potential for Palaeoclimate Reconstruction. Geochemistry, Geophysics, Geosystems, 21(6), doi:10.1029/2019GC008755, 2020.

Sanchez, S. C., N. Westphal, G. H. Haug, H. Cheng, R. L. Edwards, T. Schneider, K. M. Cobb & C. D. Charles: A Continuous Record of Central Tropical Pacific Climate Since the Midnineteenth Century Reconstructed From Fanning and Palmyra Island Corals: A Case Study in Coral Data Reanalysis. Paleoceanography and paleoclimatology, 35(8): e2020PA003848, doi:10.1029/2020PA003848, 2020.

Smart, S. M., S. E. Fawcett, H. Ren, R. Schiebel, E. M. Tompkins, A. Martinez-Garcia, L. Stirnimann, A. Roychoudhury, G. H. Haug & D. M. Sigman: The Nitrogen Isotopic Composition of Tissue and Shell-Bound Organic Matter of Planktic Foraminifera in Southern Ocean Surface Waters. Geochemistry, Geophysics, Geosystems, 21(2), doi:10.1029/2019GC008440, 2020.

Thibault, M., N. Duprey, D. P. Gillikin, J. Thebault, P. Douillet, L. Chauvaud, E. Amice, J. M. Munaron & A. Lorrain: Bivalve $\delta^{15}N$ isoscapes provide a baseline for urban nitrogen footprint at the edge of a World Heritage coral reef. Marine Pollution Bulletin, 152: 110870, doi:10.1016/j.marpolbul.2019.110870, 2020.

Vonhof, H. B., S. de Graaf, H. J. Spero, R. Schiebel, S. J. A. Verdegaal, B. Metcalfe & G. H. Haug: High-precision stable isotope analysis of <5 µg $CaCO_3$ samples by continuous-flow mass spectrometry. Rapid Communications in Mass Spectrometry, 34(19): e8878, doi:10.1002/rcm.8878, 2020.

Walliser, E. O., L. Fröhlich, H. Vonhof & B. R. Schoene: An evaluation of inoceramid single-prism sclerochronology. Palaeogeography, Palaeoclimatology, Palaeoecology, 547: 109690, doi:10.1016/j.palaeo.2020.109690, 2020.

Waltgenbach, S., D. Scholz, C. Spoetl, D. F. C. Riechelmann, K. P. Jochum, J. Fohlmeister & A. Schröder-Ritzrau: Climate and structure of the 8.2 ka event reconstructed from three speleothems from Germany. Global and Planetary Change, 193: 103266, doi:10.1016/j.gloplacha.2020.103266, 2020.

Warken, S. F., R. Vieten, A. Winter, C. Spotl, T. E. Miller, K. P. Jochum, K. P., A. Schroeder-Ritzrau, A. Mangini & D. Scholz: Persistent Link Between Caribbean Precipitation and Atlantic Ocean Circulation During the Last Glacial Revealed by a Speleothem Record From Puerto Rico. Paleoceanography and paleoclimatology, 35(11): e2020PA003944, doi:10.1029/2020PA003944, 2020.

Wassenburg, J. A., S. Riechelmann, A. Schröder-Ritzrau, D. F. C. Riechelmann, D. K. Richter, A. Immenhauser, M. Terente, S. Constantin, A. Hachenberg, M. Hansen & D. Scholz: Calcite Mg and Sr partition coefficients in cave environments: Implications for interpreting prior calcite precipitation in speleothems. Geochimica et Cosmochimica Acta, 269, 581–596, doi:10.1016/j.gca.2019.11.011, 2020.

Weber, M., F. Lugli, B. Hattendorf, D. Scholz, R. Mertz-Kraus, D. Guinoiseau & K. P. Jochum: NanoSr - A New Carbonate Microanalytical Reference Material for In Situ Strontium Isotope Analysis. Geostandards and Geoanalytical Research, 44(1), 69–83, doi:10.1111/ggr.12296, 2020.

Weinerová, H., O. Bábek, O., L. Slavik, H. Vonhof, H. & J. H. Hladil: Oxygen and carbon stable isotope records of the Lochkovian-Pragian boundary interval from the Prague Basin (Lower Devonian, Czech Republic). Palaeogeography, Palaeoclimatology, Palaeoecology, 560, 110036, doi:10.1016/j.palaeo.2020.110036, 2020.

Weis, U., J. Arns, V. Kaiser, A. Reichstein, L. Reichstein, B. Stoll& K. P. Jochum: Geostandards and Geoanalytical Research Bibliographic Review 2018. Geostandards and Geoanalytical Research, 44(1), 51–56, doi:10.1111/ggr.12309, 2020.

Yang, Y.-H., M. Yang, K. P. Jochum, S.-T. Wu, H. Zhao, L.-W. Xie, C. Huang, X.-C. Zhan, J.-H. Yang, F.-Y. Wu: High-Precision Sr-Nd-Hf-Pb Isotopic Composition of Chinese Geological Standard Glass Reference Materials CGSG-1, CGSG-2, CGSG-4 and CGSG-5 by MC-ICP-MS and TIMS. Geostandards and Geoanalytical Research, 44(3), 567–579, doi:10.1111/ggr.12322, 2020.

2019

Aardema H. M., M. Rijkeboer, A. Lefebvre, A. Veen & J. C. Kromkamp: High- resolution underway measurements of phytoplankton photosynthesis and abundance as an innovative addition to water quality monitoring programs. Ocean Science 15, 1267-1285, doi:10.5194/os-15-1267-2019, 2019.

Auderset, A., A. Martinez-Garcia, R. Tiedemann, A. P. Hasenfratz, T. I. Eglinton, R. Schiebel, D. M. Sigman & G. H. Haug: Gulf Stream intensification after the early Pliocene shoaling of the Central American Seaway. Earth and Planetary Science Letters, 520, 268–278, doi:10.1016/j.epsl.2019.05.022, 2019.

Breitenbach, S. F. M., B. Plessen, S. Waltgenbach, R. Tjallingii, J. Leonhardt, K. P. Jochum, H. Meyer, B. Goswami, N. Marwan & D. Scholz: Holocene interaction of maritime and continental climate in Central Europe: New speleothem evidence from Central Germany. Global and Planetary Change, 176, 144–161, doi:10.1016/j.gloplacha.2019.03.007, 2019.

Brewin, R. J. W., X. A. G. Moran, D. E. Raitos, J. A. Gittings, M. L. Calleja, M. Viegas, M. Ansari I, N. Al-Otaibi, T. M. Huete-Stauffer & I. Hoteit: Factors Regulating the Relationship Between Total and Size-Fractionated Chlorophyll-a in Coastal Waters of the Red Sea. Frontiers in Microbiology, 10, doi:10.3389/fmicb.2019.01964, 2019.

Budsky, A., D. Scholz, J. A. Wassenburg, R. Mertz-Kraus, C. Spoetl, D. F. C. Riechelmann, L. Gilbert, K. P. Jochum & M. O. Andreae: Speleothem $\delta^{13}C$ record suggests enhanced spring/summer drought in south-eastern Spain between 9.7 and 7.8 ka – A circum-Western Mediterranean anomaly?. The Holocene, 29(7), 1113–1133, doi:10.1177/0959683619838021, 2019.

Budsky, A., J. A. Wassenburg, R. Mertz-Kraus, C. Spoetl, K. P. Jochum, L. Gibert & D. Scholz: Western Mediterranean Climate Response to Dansgaard/Oeschger Events: New Insights From Speleothem Records. Geophysical Research Letters, 46(15), 9042–9053, doi:10.1029/2019GL084009, 2019.

Buitenhuis, E. T., C. Le Quere, N. Bednarsek & R. Schiebel: Large Contribution of Pteropods to Shallow CaCO3 Export. Global Biogeochemical Cycles, 33(3), 458–468, doi:10.1029/2018GB006110, 2019.

de Graaf, S., C. W. Nooitgedacht, J. Le Goff, J. H. J. L. van der Lubbe, H. B. Vonhof & J. J. G. Reijmer: Fluid-flow evolution in the Albanide fold-thrust belt: Insights from hydrogen and oxygen isotope ratios of fluid inclusions. AAPG Bulletin, 103(10), 2421–2445, doi:10.1306/02151918034, 2019.

de Vleeschouwer, D., B. F. Petrick & A. Martinez-Garcia: Stepwise Weakening of the Pliocene Leeuwin Current. Geophysical Research Letters, 46(14), 8310–8319, doi:10.1029/2019GL083670, 2019.

Deplazes, G., A. N. Meckler, L. C. Peterson, Y. Hamann, B. Aeschlimann, D. Gunther, A. Martinez-Garcia & G. H. Haug: Fingerprint of tropical climate variability and sea level in sediments of the Cariaco Basin during the last glacial period. Sedimentology: the journal of the International Association of Sedimentologists, 66(5), 1967–1988, doi:10.1111/sed.12567, 2019.

Farmer, J. R., O. Branson, J. Uchikawa, D. E. Penman, B. Hönisch & R. E. Zeebe: Boric acid and borate incorporation in inorganic calcite inferred from B/Ca, boron isotopes and surface kinetic modeling. Geochimica et Cosmochimica Acta, 244, 229–247, doi:10.1016/j.gca.2018.10.008, 2019.

Fonseca-Batista, D., X. Li, V. Riou, V. Michotey, F. Deman, F. Fripiat, S. Guasco, N. Brion, N. Lemaitre, M. Tonnard, M. Gallinari, H. Planquette, F. Planchon, G. Sarthou, M. Elskens, J. LaRoche, L. Chou & F. Dehairs: Evidence of high N_2 fixation rates in the temperate northeast Atlantic. Biogeosciences, 16(5), 999–1017, doi:10.5194/bg-16-999-2019, 2019.

Fripiat, F., A. Martinez-Garcia, S. E. Fawcett, P.C. Kemeny, A. S. Studer, S. M. Smart, F. Rubach, S. Oleynik, D. M. Sigman & G. H. Haug: The isotope effect of nitrate assimilation in the Antarctic Zone: Improved estimates and paleoceanographic implications. Geochimica et Cosmochimica Acta, 247, 261–279, doi:10.1016/j.gca.2018.12.003, 2019.

Guinoiseau, D., S. J. G. Galer, W. Abouchami, M. Frank, E. P. Achterberg & G. H. Haug: Importance of Cadmium Sulfides for Biogeochemical Cycling of Cd and Its Isotopes in Oxygen Deficient Zones-A Case Study of the Angola Basin. Global Biogeochemical Cycles, 33(12), 1746–1763, doi:10.1029/2019GB006323, 2019.

Hasenfratz, A. P., S. L. Jaccard, A. Martinez-Garcia, D. M. Sigman, D. A. Hodell, D. Vance, S. M. Bernasconi, H. F. Kleiven, F. A. Haumann & G. H. Haug: The residence time of Southern Ocean surface waters and the 100,000-year ice age cycle. Science, 363(6431), 1080–1084, doi:10.1126/science.aat7067, 2019.

Heuser, A., P. Frings-Meuthen, J. Rittweger & S. J. G. Galer: Calcium Isotopes in Human Urine as a Diagnostic Tool for Bone Loss: Additional Evidence for Time Delays in Bone Response to Experimental Bed Rest. Frontiers in Physiology, 10, doi:10.3389/fphys.2019.00012, 2019.

Hohl, V. S., S.-Y. Jiang, Z. Wei, D.-H. Pi, Q. Liu, S. Viehmann, S. J. G. Galer: Cd isotopes trace periodic (bio)geochemical metal cycling at the verge of the Cambrian animal evolution. Geochimica et Cosmochimica Acta, 263, 195–214, doi:10.1016/j.gca.2019.07.036, 2019.

Hueter, A., S. Huck, S. Bodin, U. Heimhofer, S. Weyer, K. P. Jochum & A. Immenhauser: Central Tethyan platform-top hypoxia during Oceanic Anoxic Event 1a. Climate of the past, 15(4), 1327–1344, doi:10.5194/cp-15-1327-2019, 2019.

Janssen, D. J., W. Abouchami, S. J. G. Galer, K. B. Purdon & J. T. Cullen: Particulate cadmium stable isotopes in the subarctic northeast Pacific reveal dynamic Cd cycling and a new isotopically light Cd sink. Earth and Planetary Science Letters, 515, 67–78, doi:10.1016/j.epsl.2019.03.006, 2019.

Jentzen, A., K. P. Jochum, R. Schiebel, B. Stoll, U. Weis, J. Leitner, J. Repschläger, D. Nuernberg & G. H. Haug: High-Resolution Mg/Ca Measurements of Foraminifer Shells Using Femtosecond LA-ICP-MS for Paleoclimate Proxy Development. Geochemistry, Geophysics, Geosystems, 20(4), 2053–2063, doi:10.1029/2018GC008091, 2019.

Jochum, K. P., D. Garbe-Schoenberg, M. Veter, B. Stoll, U. Weis, N. Weber, F. Lugli, A. Jentzen, R. Schiebel, J. A. Wassenburg, D. E. Jacob & G. H. Haug: Nano-Powdered Calcium Carbonate Reference Materials: Significant Progress for Microanalysis?. Geostandards and Geoanalytical Research, doi:10.1111/ggr.12292, 2019.

Joordens, J. C. A., C. S. Feibel, H. B. Vonhof, A. S. Schulp & D. Kroon: Relevance of the eastern African coastal forest for early hominin biogeography. Journal of Human Evolution, 131, 176–202, doi:10.1016/j.jhevol.2019.03.012, 2019.

Kast, E. R., D. A. Stolper, A. Auderset, J. A. Higgins, H. Ren, X. T. Wang, A. Martinez-Garcia, G. H. Haug, D. M. Sigman: Nitrogen isotope evidence for expanded ocean suboxia in the early Cenozoic. Science, 364(6438), 386-, doi:10.1126/science.aau5784, 2019.

Khider, D., J. Emile-Geay, N. P. McKay, Y. Gil, D. Garijo, V. Ratnakar, M. Alonso-Garcia, S. Bertrand, O. Bothe, P. Brewer, A. Bunn, M. Chevalier, L. Comas-Bru, A. Csank, E. Dassie, K. DeLong, T. Felis, P. Francus, A. Frappier, W. Gray, S. Goring, L. Jonkers, M. Kahle, D. Kaufman, N. M. Kehrwald, B. Martrat, H. McGregor, J. Richey, A. Schmittner, N. Scroxton, E. Sutherland, K. Thirumalai, K. Allen, F. Arnaud, Y. Axford, T. Barrows, L. Bazin, S. E. P. Birch, E. Bradley, J. Bregy, E. Capron, O. Cartapanis, H.-W. Chiang, K. M. Cobb, M. Debret, R. Dommain, J. Du, K. Dyez, S. Emerick, M. P. Erb, G. Falster, W. Finsinger, D. Fortier, N. Gauthier, S. George, E. Grimm, J. Hertzberg, F. Hibbert, A. Hillman, W. Hobbs, M. Huber, A. L. C. Hughes, S. Jaccard, J. Ruan, M. Kienast, B. Konecky, G. Le Roux, V. Lyubchich, V. F. Novello, L. Olaka, J. W. Partin, C. Pearce, S. J. Phipps, C. Pignol, N. Piotrowska, M.-S. Poli, A. Prokopenko, F. Schwanck, C. Stepanek, G. E. A. Swann, R. Telford, E. Thomas, Z. Thomas, S. Truebe, L. von Gunten, A. Waite, N. Weitzel, B. Wilhelm, J. Williams, M. Winstrup, N. Zhao & Y. Zhou: PaCTS 1.0: A Crowdsourced Reporting Standard for Paleoclimate Data. Paleoceanography and paleoclimatology, 34(10), 1570–1596, doi:10.1029/2019PA003632, 2019.

Lochte, A. A., J. Repschläger, M. Kienast, D. Garbe-Schoenberg, N. Andersen, C. Hamann & R. Schneider: Labrador Sea freshening at 8.5 ka BP caused by Hudson Bay Ice Saddle collapse. Nature Communications, 10, doi:10.1038/s41467-019-08408-6, 2019.

Lochte, A. A., J. Repschläger, M.-S. Seidenkrantz, M. Kienast, T. Blanz & R. R. Schneider: Holocene water mass changes in the Labrador Current. The Holocene, 29(4), 676–690, doi:10.1177/0959683618824752, (2019).

Macholdt, D. S., J.-D. Förster, M. Müller, B. Weber, M. Kappl, A. L. D. Kilcoyne, M. Weigand, J. Leitner, K. P. Jochum, C. Pöhlker & M. O. Andreae: Artifacts from manganese reduction in rock samples prepared by focused ion beam (FIB) slicing for X-ray microspectroscopy. Geoscientific instrumentation, methods and data systems, 8(1), 97–111, doi:10.5194/gi-8-97-2019, 2019.

Macholdt, D. S., K. P. Jochum, A. Al-Amri, M. O. Andreae: Rock varnish on petroglyphs from the Hima region, southwestern Saudi Arabia: Chemical composition, growth rates, and tentative ages. The Holocene, 29(8), 1377, doi:10.1177/0959683619846979, 2019.

Moll, D., P. Kotterba, K. P. Jochum, L. von Nordheim & P. Polte: Elemental Inventory in Fish Otoliths Reflects Natal Origin of Atlantic Herring (Clupea harengus) From Baltic Sea Juvenile Areas. Frontiers in marine science, 6, doi:10.3389/fmars.2019.00191, 2019.

Nettersheim, B. J., J. J. Brocks, A. Schwelm, J. M. Hope, F. Not, M. Lomas, C. Schmidt, R. Schiebel, E. C. M. Nowack, P. de Deckker, J. Pawlowski, S. S. Bowser, I. Bobrovskiy, K. Zonneveld, M. Kucera, M. Stuhr, C. Hallmann: Putative sponge biomarkers in unicellular Rhizaria question an early rise of animals. Nature Ecology & Evolution, 3(4), 577–581, doi:10.1038/s41559-019-0806-5, 2019.

Obert, J. C., D. Scholz, T. Felis, J. Lippold, K. P. Jochum & M. O. Andreae: Improved constraints on open-system processes in fossil reef corals by combined Th/U, Pa/U and Ra/Th dating: A case study from Aqaba, Jordan. Geochimica et Cosmochimica Acta, 245, 459–478, doi:10.1016/j.gca.2018.11.024, 2019.

Pederson, C., V. Mavromatis, M. Dietzel, C. Rollion-Bard, G. Nehrke, N. Joens, K. P. Jochum & A. Immenhauser: Diagenesis of mollusc aragonite and the role of fluid reservoirs. Earth and Planetary Science Letters, 514, 130–142, doi:10.1016/j.epsl.2019.02.038, 2019.

Petrick, B., A. Martinez-Garcia, G. Auer, L. Reuning, A. Auderset, H. Deik, H. Takayanagi, D. Vleeschouwer, Y. Iryu, G. H. Haug: Glacial Indonesian Throughflow weakening across the Mid-Pleistocene Climatic Transition. Scientific Reports, 9, doi:10.1038/s41598-019-53382-0, 2019.

Petrick, B., L. Reuning, A. Martinez-Garcia: Distribution of Glycerol Dialkyl Glycerol Tetraethers (GDGTs) in Microbial Mats from Holocene and Miocene Sabkha Sediments. Frontiers in Earth Science, 7, doi:10.3389/feart.2019.00310, 2019.

Riechelmann, D. F. C., J. Fohlmeister, T. Kluge, K. P. Jochum, D. K. Richter, M. Deininger, R. Friedrich, N. Frank & D. Scholz: Evaluating the potential of tree-ring methodology for cross-dating of three annually laminated stalagmites from Zoolithencave (SE Germany). Quaternary Geochronology, 52, 37–50, doi:10.1016/j.quageo.2019.04.001, 2019.

Roukaerts, A., D. Nomura, F. Deman, H. Hattori, F. Dehairs & F. Fripiat: The effect of melting treatments on the assessment of biomass and nutrients in sea ice (Saroma-ko lagoon, Hokkaido, Japan). Polar Biology, 42(2), 347–356, doi:10.1007/s00300-018-2426-y, 2019.

Sha, L., Y. A. Brahim, J. A. Wassenburg, J. Yin, M. Peros, F. W. Cruz, Y. Cai, H. Li, W. Du, H. Zhang, R. L. Edwards & H. Cheng: How Far North Did the African Monsoon Fringe Expand During the African Humid Period? Insights from Southwest Moroccan Speleothems. Geophysical Research Letters, 46(23), 14093–14102, doi:10.1029/2019GL084879, 2019.

Sturman, N., L. M. Otter, A. Homkrajae, A. Manustrong, N. Nilpetploy, K. Lawanwong, P. Kessrapong, K. P. Jochum. B. Stoll, H. Götz & D. E. Jacob: A Pearl Identification Challenge. Gems and gemology / Gemological Institute of America, 55, 229–243, 2019.

Thole, L. M., H. E. Amsler, S. Moretti, A. Auderset, J. Gilgannon, J. Lippold, H. Vogel, X. Crosta, A. Mazaud, E. Michel, A. Martinez-Garcia & S. L. Jaccard: Glacial-interglacial dust and export production records from the Southern Indian Ocean. Earth and Planetary Science Letters, 525, doi:10.1016/j.epsl.2019.115716, 2019.

van de Velde, S., F. P. Wesselingh, T. A. Yanina, V. V. Anistratenko, T. A. Neubauer, J. J. ter Poorten, H. B. Vonhof & S. B. Kroonenberg: Mollusc biodiversity in late Holocene nearshore environments of the Caspian Sea: A baseline for the current biodiversity crisis. Palaeogeography, Palaeoclimatology, Palaeoecology, 535, doi:10.1016/j.palaeo.2019.109364, 2019.

Viehmann, S., S. V. Hohl, D. Kraemer, M. Bau, D. H. G. Walde, S. J. G. Galer, S.-Y. Jiang & P. Meister: Metal cycling in Mesoproterozoic microbial habitats: Insights from trace elements and stable Cd isotopes in stromatolites. Gondwana Research, 67, 101–114, doi:10.1016/j.gr.2018.10.014, 2019.

Waelbroeck, C., B. C. Lougheed, N. V. Riveiros, L. Missiaen, J. Pedro, T. Dokken, I. Hajdas, L. Wacker, P. Abbott, J.-P. Dumoulin, F. Thil, F. Eynaud, L. Rossignol, W. Fersi, A. L. Albuquerque, H. Arz, W. E. N. Austin, R. Came, A. E. Carlson, J. A. Collins, B. Dennielou, S. Desprat, A. Dickson, M. Elliot, C. Farmer, J. Giraudeau, J. Gottschalk, J. Hendriks, K. Hughen, S. Jung, P. Knutz, S. Lebreiro, D. C. Lund, J. Lynch-Stieglitz, B. Malaize, T. Marchito, G. Martinez-Mendez, G. Mollenhauer, F. Naughton, S. Nave, D. Nuernberg, D. Oppo, V. Peck, F. J. C. Peeters, A. Penaud, R. da C. Portilho-Ramos, J. Repschläger, J. Roberts, C. Ruehlemann, E. Salgueiro, M. F. S. Goni, J. Schonfeld, P. Scussolini, L. C. Skinner, C. Skonieczny, D. Thornalley, S. Toucanne, D. Van Rooji, L. Vidal, A. H. L. Voelker, M. Wary, S. Weldeab & M. Ziegler: Consistently dated Atlantic sediment cores over the last 40 thousand years. Scientific Data, 6, doi:10.1038/s41597-019-0173-8, 2019.

Warken, S. F., D. Scholz, C. Spoetl, K. P. Jochum, J. M. Pajon, A. Bahr & A. Mangini: Caribbean hydroclimate and vegetation history across the last glacial period. Quaternary Science Reviews, 218, 75–90, doi:10.1016/j.quascirev.2019.06.019, 2019.

Wu S., T., G. Worner, K. P. Jochum, B. Stoll, K. Simon & A. Kronz: The Preparation and Preliminary Characterisation of Three Synthetic Andesite Reference Glass Materials (ARM-1, ARM-2, ARM-3) for In Situ Microanalysis. Geostandards and Geoanalytical Research, 43(4), 567–584, doi:10.1111/ggr.12301, 2019.

Xie, R. C., S. J. G. Galer, W. Abouchami & M. Frank: Limited impact of eolian and riverine sources on the biogeochemical cycling of Cd in the tropical Atlantic. Chemical Geology, 511, 371–379, doi:10.1016/j.chemgeo.2018.10.018, 2019.

Zhang, Q., K. Amor, S. J. G. Galer, I. Thompson & D. Porcelli: Using stable isotope fractionation factors to identify Cr(VI) reduction pathways: Metal-mineral-microbe interactions. Water Research, 151, 98–109, doi:10.1016/j.watres.2018.11.088, 2019.

2018

Allan, M., N. Fagel, H. J. L. van der Lubbe, H. B. Vonhof, H. Cheng, R. L. Edwards & S. Verheyden: High-resolution reconstruction of 8.2-ka BP event documented in Père Noël cave, southern Belgium. Journal of Quaternary Science, 33(7), 840–852, doi:10.1002/jqs.3064, 2018.

Andre, A., F. Quillevere, R. Schiebel, R. Morard, H. Howa, J. Meilland & C. J. Douady: Disconnection between genetic and morphological diversity in the planktonic foraminifer Neogloboquadrina pachyderma from the Indian sector of the Southern Ocean. Marine Micropaleontology, 144, 14–24, doi:10.1016/j.marmicro.2018.10.001, 2018.

Brahim, Y.A., J. A. Wassenburg, F. W. Cruz, A. Sifeddine, D. Scholz, L. Bouchaou, E. P. Dassie, K. P. Jochum, R. L. Edwards & H. Cheng: Multi-decadal to centennial hydro-climate variability and linkage to solar forcing in the Western Mediterranean during the last 1000 years. Scientific Reports, 8, doi:10.1038/s41598-018-35498-x, 2018.

Burke, J. E., W. Renema, M. J. Henehan, L. E. Elder, C. V. Davis, A. E. Maas, G. L. Foster, R. Schiebel & P. M. Hull: Factors influencing test porosity in planktonic foraminifera. Biogeosciences, 15(21), 6607–6619, doi:10.5194/bg-15-6607-2018, (2018).

de Cort, G., D. Verschuren, E. Ryken, C. Wolff, R. W. Renaut, M. Creutz, T. Van der Meeren, G. H. Haug, D. O. Olago & F. Mees: Multi-basin depositional framework for moisture-balance reconstruction during the last 1300 years at Lake Bogoria, central Kenya Rift Valley. Sedimentology: the journal of the International Association of Sedimentologists, 65(5), 1667–1696, doi:10.1111/sed.12442, 2018.

de Waele, J., I. M. D'Angeli, T. Bontognali, P. Tuccimei, D. Scholz, K. P. Jochum, A. Colombu, S. M. Bernasconi, J. J. Fornos, E. R. Grau Gonzalez & N. Tisato: Speleothems in a north Cuban cave register sea-level changes and Pleistocene uplift rates. Earth surface processes and landforms, 43(11), 2313–2326, doi:10.1002/esp.4393, 2018.

Endres, S., F. Maes, F. Hopkins, K. Houghton, E. M. Martensson, J. Oeffner, B. Quack, P. Singh, D. Turner, A New Perspective at the Ship-Air-Sea-Interface: The Environmental Impacts of Exhaust Gas Scrubber Discharge. Frontiers in marine science, 5, doi:10.3389/fmars.2018.00139, 2018.

Guinoiseau, D., J. Bouchez, A. Gelabert, P. Louvat, P. Moreira-Turcq, N. Filizola, M. F. Benedetti: Fate of particulate copper and zinc isotopes at the Solimoes-Negro river confluence, Amazon Basin, Brazil. Chemical Geology, 489, 1–15, doi:10.1016/j.chemgeo.2018.05.004, 2018.

Guinoiseau, D., S. J. G. Galer, W. Abouchami: Effect of cadmium sulphide precipitation on the partitioning of Cd isotopes: Implications for the oceanic Cd cycle. Earth and Planetary Science Letters, 498, 300–308, doi:10.1016/j.epsl.2018.06.039, 2018.

Guinoiseau, D., P. Louvat, G. Paris, J.-B. Chen, B. Chetelat, V. Rocher, S. Guerin, J. Gaillardet: Are boron isotopes a reliable tracer of anthropogenic inputs to rivers over time?. Science of the Total Environment, 626, 1057–1068, doi:10.1016/j.scitotenv.2018.01.159, 2018.

Gurenko, A. A. & A. V. Sobolev: Can Orthopyroxene be Present in the Source of Toro-Ankole, East African Rift, Kamafugites?. Journal of Petrology, 59(8), 1517–1549, doi:10.1093/petrology/egy069, doi:10.1093/petrology/egy069, 2018.

Hain, M. P., D. M. Sigman, J. A. Higgins & G. H. Haug: Response to Comment by Zeebe and Tyrrell on "The Effects of Secular Calcium and Magnesium Concentration Changes on the Thermodynamics of Seawater Acid/Base Chemistry: Implications for the Eocene and Cretaceous Ocean Carbon Chemistry and Buffering". Global Biogeochemical Cycles, 32(5), 898–901, doi:10.1002/2018GB005931, 2018.

Huong, L. T.-T., L. M. Otter, M. W. Forster, C. A. Hauzenberger, K. Krenn, O. Alard, D. Macholdt, U. Weis, B. Stoll & K. P. Jochum: Femtosecond Laser Ablation-ICP-Mass Spectrometry and CHNS Elemental Analyzer Reveal Trace Element Characteristics of Danburite from Mexico, Tanzania, and Vietnam. Minerals, 8(6), doi:10.3390/min8060234, 2018.

Jentzen, A., J. Schoenfeld: R. Schiebel: Assessment of the Effect of Increasing Temperature on the Ecology and Assemblage Structure of Modern Planktic Foraminifers in the Caribbean and Surrounding Seas. Journal of Foraminiferal Research, 48(3), 251–272, doi:10.2113/gsjfr.48.3.251, 2018.

Kemeny, P. C., E. R. Kast, M. P. Hain, S. E. Fawcett, F. Fripiat, A. S. Studer, A. Martinez-Garcia, G. H. Haug & D. M. Sigman: A Seasonal Model of Nitrogen Isotopes in the Ice Age Antarctic Zone: Support for Weakening of the Southern Ocean Upper Overturning Cell. Paleoceanography and Paleoclimatology, 33(12), 1453–1471, doi:10.1029/2018PA003478, 2018.

Kumar, A., W. Abouchami, S. J. G. Galer, S. P. Singh, K. W. Fomba, J. M. Prospero & M. O. Andreae: Seasonal radiogenic isotopic variability of the African dust outflow to the tropical Atlantic Ocean and across to the Caribbean. Earth and Planetary Science Letters, 487, 94–105, doi:10.1016/j.epsl.2018.01.025, 2018)

Lang-Yona, N., S. Maier, D. Macholdt, I. Müller-Germann, P. Yordanova, E. Rodriguez-Caballero, K. P. Jochum, A. Al-Amri, M. O. Andreae, J. Fröhlich-Nowoisky & B. Weber: Insights into microbial involvement in desert varnish formation retrieved from metagenomic analysis. Environmental Microbiology Reports, 10(3), 264–271, doi:10.1111/1758-2229.12634, 2018.

Macholdt, D., A. M. Al-Amri, H. T. Tuffaha, K. P. Jochum & M. O. Andreae: Growth of desert varnish on petroglyphs from Jubbah and Shuwaymis, Ha'il region, Saudi Arabia. Holocene, 28(9), 1495–1511, doi:10.1177/0959683618777075, 2018.

Magill, C. R., B. Ausin, P. Wenk, C. McIntyre, L. Skinner, A. Martinez-Garcia, D. A. Hodell, G. H. Haug, W. Kenney &T. I. Eglinton: Transient hydrodynamic effects influence organic carbon signatures in marine sediments. Nature Communications, 9, doi:10.1038/s41467-018-06973-w, 2018.

Meilland, J., R. Schiebel, C. L. Monaco, S. Sanchez & H. Howa: Abundances and test weights of living planktic foraminifers across the Southwest Indian Ocean: Implications for carbon fluxes. Deep-Sea Research Part I-Oceanographic Research Papers, 131, 27–40, doi:10.1016/j.dsr.2017.11.004, 2018.

Obert, J. C., D. Scholz, J. Lippold, T. Felis, K. P. Jochum & M. O. Andreae: Chemical separation and MC-ICPMS analysis of U, Th, Pa and Ra isotope ratios of carbonates. Journal of Analytical Atomic Spectrometry, 33(8), 1372–1383, doi:10.1039/c7ja00431a, 2018.

Petrick, B., E. L. McClymont, K. Littler, A. Rosell-Mele, M. O. Clarkson, M. Maslin, U. Roehl, A. E. Shevenell & R. D. Pancost: Oceanographic and climatic evolution of the southeastern subtropical Atlantic over the last 3.5 Ma. Earth and Planetary Science Letters, 492, 12–21, doi:10.1016/j.epsl.2018.03.054, 2018.

Schiebel, R., S. M. Smart, A. Jentzen, L. Jonkers, R. Morard, J. Meilland, E. Michel, H. K. Coxall, P. M. Hull, T. de Garidel-Thoron, T. Aze, F. Quillevere, H. Ren, D. M. Sigman, H. B. Vonhof, A. Martinez-Garcia, M. Kucera, J. Bijma, H. J. Spero & G. H. Haug: Advances in planktonic foraminifer research: New perspectives for paleoceanography. Revue de micropaléontologie / Université de Paris 6, Laboratoire de Micropaléontologie, 61(3-4), 113–138, doi:10.1016/j.revmic.2018.10.001, 2018.

Schlitzer, R., R. F. Anderson, E. M. Dodas, M. Lohan, W. Geibere, A. Tagliabue, A. Bowie, C. Jeandel, M. T. Maldonado, W. M. Landing, D. Cockwell, C. Abadie, W. Abouchami, E. P. Achterberg, A. Agather, A. Aguliar-Islas, H. M. van Aken, M. Andersen, C. Archer, M. Auro, H. J. de Baar, O. Baars, A. R. Baker, K. Bakker, C. Basak, M. Baskaran, N. R. Bates, D. Bauch, P. van Beek, M. K. Behrens, E. Black, K. Bluhm, L. Bopp, H. Bouman, K. Bowman, J. Bown, P. Boyd, M. Boye, E. A. Boyle, P. Branellec, L. Bridgestock, G. Brissebrat, T. Browning, K. W. Bruland, H.-J. Brumsack, M. Brzezinski, C. S. Buck, K. N. Buck, K. Buesseler, A. Bull, E. Butler, P. Cai, P. Camara Mor, D. Cardinal, C. Carlson, G. Carrasco, N. Casacuberta, K. L. Casciotti, M. Castrillejo, E. Chamizo, R. Chance, M. A. Charette, J. E. Chaves, H. Cheng, F. Chever, M. Christl, T. M. Church, I. Closset, A. Colman, T. M. Conway, D. Cossa, P. Croot, J. T. Cullen, G. A. Cutter, C. Daniels, F. Dehairs, F. Deng, H. T. Dieu, B. Duggan, G. Dulaquais, C. Dumousseaud, Y. Echegoyen-Sanz, R. L. Edwards, M. Ellwood, E. Fahrbach, J. N. Fitzsimmons, A. R. Flegal, M. Q. Fleisher, T. van de Flierdt, M. Frank, J. Friedrich, F. Fripiat, H. Froellje, S. J. G. Galer, T. Gamo, R. S. Ganeshram, J. Garcia-Orellana, E. Garcia-Solsona, M. Gault-Ringold, E. George, L. J. A. Gerringa, M. Gilbert, J. M. Godoy, S. L. Goldstein, S. R. Gonzalez, K. Grissom, C. Hammerschmidt, A. Hartman, C. S. Hassler, E. C. Hathorne, M. Hatta, N. Hawco, C. T. Hayes, L.-E. Heimburger, J. Helgoe, M. Heller, G. M. Henderson, P. B. Henderson, S. Heuven, P. Ho, T. J. Horner, Y.-T. Hsieh, K.-F. Huang, M. P. Humphreys, K. Isshiki, J. E. Jacquot, D. J. Janssen, W. J. Jenkins, S. John, E. M. Jones, J. L. Jones, D. C. Kadko, R. Kayser, T. C. Kenna, R. Khondoker, T. Kim, L. Kipp, J. K. Klar, M. Klunder, S. Kretschmer, Y. Kumamoto, P. Laan, M. Labatut, F. Lacan, P. J. Lam, M. Lambelet, C. H. Lamborg, F. A. C. Le Moigne, E. Le Roy, O. J. Lechtenfeld, J.-M. Lee, P. Lherminier, S. Little, M. Lopez-Lora, Y. Lu, P. Masque, E. Mawji, C. R. Mcclain, C. Measures, S. Mehic, J.-L. Menzel Barraqueta, P. van der Merwe, R. Middag, S. Mieruch, A. Milne, T. Minami, J. W. Moffett, G. Moncoiffe, W. S. Moore, P. J. Morris, P. L. Morton, Y. Nakaguchi, N. Nakayama, J. Niedermiller, J. Nishioka, A. Nishiuchi, A. Noble, H. Obata, S. Ober, D. C. Ohnemus, J. van Ooijen, J. O'Sullivan, S. Owens, K. Pahnke, M. Paul, F. Pavia, L. D. Pena, B. Petersh, F. Planchon, H. Planquette, C. Pradoux, V. Puigcorbe, P. Quay, F. Queroue, A. Radic, S. Rauschenberg, M. Rehkämper, R. Rember, T. Remenyi, J. A. Resing, J. Rickli, S. Rigaud, M. J. A. Rijkenberg, S. Rintoul, L. F. Robinson, M. Roca-Marti, V. Rodellas, T. Roeske, J. M. Rolison, M. Rosenberg, S. Roshan, M. M. R. van der Loaff, E. Ryabenko, M. A. Saito, L. A. Salt, V. Sanial, G. Sarthou, C. Schallenberg, U. Schauer, H. Scher, C. Schlosser, B. Schnetger, P. Scott, P. N. Sedwick, I. Semiletov, R. Shelley, R. M. Sherrell, A. M. Shiller, D. M. Sigman, S. K. Singh, H. A. Slagter, E. Slater, W. M. Smethie, H. Snaith, Y. Sohrin, B. Sohst, J. E. Sonke, S. Speich, R. Steinfeldt, G. Stewart, T. Stichel, C. H. Stirling, J. Stutsman, G. J. Swarr, J. H. Swift, A. Thomas, K. Thome, C. P. Till, R. Till, A. T. Townsend, E. Townsend, R. Tuerena, B. S. Twining, D. Vance, S. Velazquez, C. Venchiarutti, M. Villa-Alfageme, S. M. Vivancos, A. H. L. Voelker, B. Wake, M. J. Warner, R. Watson, E. van Weerlee, M. A. Weigand, Y. Weinstein, D. Weiss, A. Wisotzki, E. M. S. Woodward, J. Wu, Y. Wu, K. Wuttig, N. Wyatt, Y. Xiang, R. C. Xie, Z. Xue, H. Yoshikawa, J. Zhang, P. Zhang, Y. Zhao, L. Zheng, X.-Y. Zheng, M. Zieringer, L. A. Zimmer, P. Ziveri, P. Zunino & C. Zurbrick: The GEOTRACES Intermediate Data Product 2017. Chemical Geology, 493, 210–223, doi:10.1016/j.chemgeo.2018.05.040, 2018.

Schloßmacher, U., M. Wiens, H. C. Schröder, X. H. Wang, K. P. Jochum & W. E. G. Müller: Silintaphin-1-interaction with silicatein during structure-guiding bio-silica formation. This article corrects the following: Silintaphin-1–interaction with silicatein during structure-guiding bio-silica formation. Volume 278, Issue 7, The FEBS Journal, pages 1145-1155. FEBS Journal, 285(7), 1372-1372, doi:10.1111/febs.14430, 2018.

Smart, S. M., H. Ren, S. E. Fawcett, R. Schiebel, M. Conte, P. A. Rafter, K. K. Ellis, M. A. Weigand, S. Oleynik, G. H. Haug, D. M. Sigman: Ground-truthing the planktic foraminifer-bound nitrogen isotope paleo-proxy in the Sargasso Sea. Geochimica et Cosmochimica Acta, 235, 463–482, doi:10.1016/j.gca.2018.05.023, 2018.

Sorrentino, R., E. Bortoloni, F. Lugli, G. Mancuso, L. Buti, G. Oxilia, A. Vazzana, C. Figus, M. C. Serrangeli, C. Margherita, A. Penzo, G. Gruppioni, A. Gottarelli, K. P. Jochum, M. G. Belcastro, A. Cipriani, R. N. M. Feeney & S. Benazzi: Unravelling biocultural population structure in 4th/3rd century BC Monterenzio Vecchio (Bologna, Italy) through a comparative analysis of strontium isotopes, non-metric dental evidence, and funerary practices. PLoS One, 13(3), doi:10.1371/journal.pone.0193796, 2018.

Studer, A., D. M. Sigman, A. Martinez-Garcia, L. M. Thöle, E. Michel, S. L. Jaccard, J. A. Lippold, A. Mazaud, X. T. Wang, L. F. Robinson, J. F. Adkins & G. H. Haug. Increased nutrient supply to the Southern Ocean during the Holocene and its implications for the pre-industrial atmospheric CO_2 rise. Nature Geoscience, 11(10), 756–760, doi:10.1038/s41561-018-0191-8, 2018.

Wang, X. T., A. L. Cohen, V. Luu, H. Ren, Z. Su, G. H. Haug & D. M. Sigman: Natural forcing of the North Atlantic nitrogen cycle in the Anthropocene. Proceedings of the National Academy of Sciences of the United States of America, 115(42), 10606–10611, doi:10.1073/pnas.1801049115, 2018.

Weber, M., F. Lugli, K. P. Jochum, A. Cipriani & D. Scholz: Calcium Carbonate and Phosphate Reference Materials for Monitoring Bulk and Microanalytical Determination of Sr Isotopes. Geostandards and Geoanalytical Research, 42(1), 77–89, doi:10.1111/ggr.12191, 2018.

Weber, M., D. Scholz, A. Schroeder-Ritzrau, M. Deininger, C. Spoetl, F. Lugli, R. Mertz-Kraus, K. P. Jochum, J. Fohlmeister, C. F. Stumpf & D. F. C. Riechelmann: Evidence of warm and humid interstadials in central Europe during early MIS 3 revealed by a multi-proxy speleothem record. Quaternary Science Reviews, 200, 276–286, doi:10.1016/j.quascirev.2018.09.045, 2018.

Weis, U., V. Kaiser, I. Leisgang, U. Nohl, A. Reichstein, B. Schwager, B. Stoll, F. Zwillich & K. P. Jochum: Geostandards and Geoanalytical Research Bibliographic Review 2017. Geostandards and Geoanalytical Research, 42(4), 425–430, doi:10.1111/ggr.12250, 2018.

Zhang, Q., K. Amor, S. J. G. Galer, I. Thompson & D. Porcelli, D.: Variations of stable isotope fractionation during bacterial chromium reduction processes and their implications. Chemical Geology, 481, 155–164, doi:10.1016/j.chemgeo.2018.02.004, 2018.

Zhao N. & L. D. Keigwin: An atmospheric chronology for the glacial-deglacial Eastern Equatorial Pacific. Nature Communications, 9, doi:10.1038/s41467-018-05574-x, (2018).

Zhao, N., O. Marchal, L. Keigwin, D. Amrhein & G. A: Gebbie: A Synthesis of Deglacial Deep-Sea Radiocarbon Records and Their (In)Consistency with Modern Ocean Ventilation. Paleoceanography and paleoclimatology, 33(2), 128–151, doi:10.1002/2017PA003174, 2018.

Book Chapters

Schiebel, R. & C. Hemleben: Protozoa, Planktic Foraminifera, S. 645–650., 2019.

Sigman, D. M. & F. Fripiat: Nitrogen Isotopes in the Ocean, in Encyclopedia of Ocean Sciences, Vol 1: Marine Biogeochemistry, 3rd Edition, S. 263–278., 2019.

Doctoral Thesis

Budsky, Alexander: Palaeoclimate reconstruction of the last 200 ka in south-eastern Spain, based on proxies of speleothems from Cueva Victoria. Universität Mainz, doi:10.25358/openscience-5113, 2020.

Auderset, Alexandra: Nutrient cycling in the oligotrophic ocean over the past 65 million years. ETH Zürich, doi:10.3929/ethz-b-000449878, 2020.

MULTIPHASE CHEMISTRY DEPARTMENT (U. Pöschl et al.)

Journal Articles

2020

Berkemeier, T., M. Takeuchi, G. Eris & N. L. Ng: Kinetic modeling of formation and evaporation of secondary organic aerosol from NO_3 oxidation of pure and mixed monoterpenes. Atmospheric Chemistry and Physics, 20(24), 15513-15535, doi:10.5194/acp-20-15513-2020, 2020.

Botia, S., C. Gerbig, J. Marshall, J. V. Lavric, D. Walter, C. Pöhlker, B. Holanda, G. Fisch, A. C. de Araujo, M. O. Sa, P. R. Teixeira, A. F. Resende, C. Q. Dias, H. van Asperen, P. S. Oliveira, M. Stefanello & O. C. Acevedo: Understanding nighttime methane signals at the AmazonTall Tower Observatory (ATTO). Atm. Chem. Phys. 20, 6583–6606, doi:10.5194/acp-20-6583-2020, 2020.

Chen, Y., YF. Cheng, N. Ma, C. Wei, L. Ran, R. Wolke, J. Gross, QQ. Wang, A. Pozzer, HACD. van der Gon, G. Spindler, J. Lelieveld, I. Tegen, H. Su & A. Wiedensohler: Natural sea-salt emissions moderate the climate forcing of anthropogenic nitrate. Atmos. Chem. Phys. 20 (2), 771-786, doi:10.5194/acp-20-771-2020, 2020.

Degrendele, C., H. Fiedler, A. Kocan, P. Kukucka, P. Pribylova, R. Prokes, J. Klanova & G. Lammel: Multiyear levels of PCDD/Fs, dl-PCBs and PAHs in background air in central Europe and implications for deposition. Chemosphere 240, doi:10.1016/j.chemosphere.2019.124852, 2020.

Eldridge, D. J., S. Reed, S. K. Travers, M. A. Bowker, F. T. Maestre, J. Ding, C. Havrilla, E. Rodiguez-Caballero, N. Barger, B. Weber, A. Antoninka, J. Belnap, B. Chaudhary, A. Faist, S. Ferrenberg, E. Huber-Sannwald, O. M. Issa & Y. Zhao: The pervasive and multifaceted influence of biocrusts on water in the world's drylands. Global Change Biology, 26(10), 6003-6014, doi:10.1111/gcb.15232, 2020.

Förster, J., C. Gurk, M. Lamneck, H. Tong, F. Ditas, S. S. Steimer, P. A. Alpert, M. Ammann, J. Raabe, M. Weigand, B. Watts, U. Pöschl, M. O. Andreae & C. Pöhlker: MIMiX: a Multipurpose In situ Microreactor system for X-ray microspectroscopy to mimic atmospheric aerosol processing. Atmos. Meas. Tech. 13, 3717–3729, doi:10.5194/amt-13-3717-2020, 2020.

Gao, M., Z. Han, Z. Tao, J. Li, J.-E. Kang, K. Huang, X. Dong, B. Zhuang, S. Li, B. Ge, Q. Wu, H.-J. Lee, C.-H. Kim, J. S. Fu, T. Wang, M. Chin, M. Li, J.-H. Woo, Q. Zhang, Y. Cheng, Z. Wang & G. R. Carmichael: Air quality and climate change, Topic 3 of the Model Inter-Comparison Study for Asia Phase III (MICS-Asia III) - Part 2: aerosol radiative effects and aerosol feedbacks. Atmospheric Chemistry and Physics, 20(2), 1147-1161, doi:10.5194/acp-20-1147-2020, 2020.

Garzon-Porras, A. M., D. L. Bertuzzi, K. Lucas, L. C. E. Da Silva, M. de Oliveira, M. G. & C. Ornelas: Nitric Oxide Releasing Polyamide Dendrimer with Anti-inflammatory Activity. ACS applied polymer materials, 2(5), 2027-2034, doi:10.1021/acsapm.0c00203, 2020.

Holanda, B. A., M.L. Pöhlker, D. Walter, J. Saturno, M. Sörgel, J. Ditas, F. Ditas, C. Schulz, M. A. Franco, Q. Wang, T. Donth, P. Artaxo, H. M. J. Barbosa, S. Borrmann, R. Braga, J. Brito, YF. Cheng, M. Dollner, J. W. Kaiser, T. Klimach, C. Knote, O. O. Krüger, D. Fuetterer, J. V. Lavric, N. Ma, L. A. T. Machado, J. Ming, F. G. Morais, H. Paulsen, D. Sauer, H. Schlager, J. Schneider, H. Su, B. Weinzierl, A. Walser, M. Wendisch, , H. Ziereis, M. Zoeger, U. Pöschl, M. O. Andreae & C. Pöhlker: Influx of African biomass burning aerosol during the Amazonian dry season through layered transatlantic transport of black carbon-rich smoke. Atmospheric Chemistry and Physics 20 (8), 4757-4785, doi:10.5194/acp-20-4757-2020, 2020.

Jin, R., M. H. Zheng, G. Lammel, B. A. M. Bandowe & G. R. Liu: Chlorinated and brominated polycyclic aromatic hydrocarbons: Sources, formation mechanisms, and occurrence in the environment. Progr. En. Comb. Sci. 76, 100803, doi:10.1016/j.pecs.2019.100803, 2020.

Jin, R., D. Bu, G. Liu, M. Zheng, G. Lammel, J. Fu, L. Yang, C. Li, A. Habib, Y. Yang & X. Liu: New classes of organic pollutants in the remote continental environment – Chlorinated and brominated polycyclic aromatic hydrocarbons on the Tibetan Plateau. Environment International 137, doi: 10.1016/j.envint.2020.105574, 2020.

Jug, U., K. Naumoska, V. Metlicar, A. Schink, D. Makuc, I. Vovk, J. Plavec & K. Lucas: Interference of oleamide with analytical and bioassay results. Scientific Reports, 10(1): 2163, doi:10.1038/s41598-020-59093-1, 2020.

Kitanovski, Z., P. Shahpoury, C. Samara, A. Voliotis & G. Lammel: Composition and mass size distribution of nitrated and oxygenated aromatic compounds in ambient particulate matter from southern and central Europe – implications for the origin. Atmos. Chem. Phys. 20, 2471-2487, doi:10.5194/acp-20-2471-2020, 2020.

Kitanovski, Z., J. Hovorka, J. Kuta, C. Leoni, R. Prokeš, O. Sáňka, P. Shahpoury & G. Lammel: Nitrated monoaromatic hydrocarbons (nitrophenols, nitrocatechols, nitrosalicylic acids) in ambient air - levels, mass size distributions and inhalation bioaccessibility. Environ. Sci. Pollut. Res. 27, doi:10.1007/s11356-020-09540-3, 2020.

Kong, L., X. Tang, J. Zhu, Z. Wang, J. S. Fu, X. Wang, S. Itahashi, K. Yamaji, T. Nagashima, H.-J. Lee, C.-H. Lee, C.-Y. Lin, L. Chen, M. Zhang, Z. Tao, J. Li, M. Kajino, H. Liao, Z. Wang, K. Sudo, Y. Wang, Y. Pan, G. Tang, M. Li, Q. Wu, B. Ge & G. R. Carmichael: Evaluation and uncertainty investigation of the NO_2, CO and NH_3 modeling over China under the framework of MICS-Asia III. Atmospheric Chemistry and Physics, 20(1), 181-202, doi:10.5194/acp-20-181-2020, 2020.

Kuang, Y., Y. He, WY. Xu, PS. Zhao, YF. Cheng, G. Zhao, JC. Tao, N. Ma, H. Su, YY. Zhang, JY. Sun, P. Cheng, WD. Yang, SB. Zhang, C. Wu, YL. Sun & CS. Zhao: Distinct diurnal variation in organic aerosol hygroscopicity and its relationship with oxygenated organic aerosol. Atmos. Chem. Phys. 20 (2), 865-880, doi:10.5194/acp-20-865-2020, 2020.

Kuang, Y., Y. He, WY. Xu, B. Yuan, G. Zhang, ZQ. Ma, CH. Wu, CM. Wang, SH. Wang, SY. Zhang, JC. Tao, N. Ma, H. Su, YF. Cheng, M. Shao & YL. Sun: Photochemical Aqueous-Phase Reactions Induce Rapid Daytime Formation of Oxygenated Organic Aerosol on the North China Plain. Environ. Sci. Technol. 54 (7), 3849-3860, doi:10.1021/acs.est.9b06836, 2020.

Lammel, G., Z. Kitanovski, P. Kukučka, J. Novák, A. Arangio, G. P. Codling, A. Filippi, J. Hovorka, J. Kuta, C. Leoni, P. Příbylová, R. Prokeš, O. Sáňka, P. Shahpoury, H. J. Tong & M. Wietzoreck: Oxygenated and Nitrated Polycyclic Aromatic Hydrocarbons in Ambient Air—Levels, Phase Partitioning, Mass Size Distributions, and Inhalation Bioaccessibility. Environ. Sci. Technol. 54, 2615-2625, doi:10.1021/acs.est.9b06820, 2020.

Lei, T., N. Ma, J. Hong, T. Tuch, X. Wang, Z. M. Wang, M. L. Pöhlker, M. Ge, W. Wang, E. Mikhailov, T. Hoffmann, U. Pöschl, H. Su, A. Wiedensohler & Y. Cheng: Nano-hygroscopicity tandem differential mobility analyzer (nano-HTDMA) for investigating hygroscopic properties of sub-10nm aerosol nanoparticles. Atmospheric Measurement Techniques, 13(10), 5551-5567, doi:10.5194/amt-13-5551-2020, 2020.

Lelieveld, J., F. Helleis, S. Borrmann, Y. Cheng, F. Drewnick, G. Haug, T. Klimach, J. Sciare, H. Su & U. Pöschl: Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments. International Journal of Environmental Research and Public Health, 17(21): 8114, doi:10.3390/ijerph17218114, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Corrigendum to: Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective [Cardiovasc Res 2020; doi:10.1093/cvr/cvaa025], Cardiovascular Research, 116(7), 1334-1334, doi:10.1093/cvr/cvaa073, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective, Cardiovascular Research 116 (7), 1334, doi:10.1093/cvr/cvaa073, 2020.

Lelieveld, J., A. Pozzer, U. Pöschl, M. Fnais, A. Haines & T. Münzel: Inappropriate evaluation of methodology and biases by P. Morfeld and TC Erren. Cardiovascular Research, 116(8), E102-E102, doi:10.1093/cvr/cvaa130, 2020.

Leung, D. M., H. Shi, B. Zhao, J. Wang, E. M. Ding, Y. Gu, H. Zheng, G. Chen, K.-N. Liou, S. Wang, J. D. Fast, G. Zheng, J. Jiang, X. Li & J. H. Jiang: Wintertime Particulate Matter Decrease Buffered by Unfavorable Chemical Processes Despite Emissions Reductions in China. Geophysical Research Letters, 47(14): e2020GL087721, doi:10.1029/2020GL087721, 2020.

Li, G., H. Su, N. Ma, G. Zheng, U. Kuhn, M. Li, T. Klimach, U. Pöschl & Y. Cheng: Multifactor colorimetric analysis on pH-indicator papers: an optimized approach for direct determination of ambient aerosol pH. Atmospheric Measurement Techniques, 13(11), 6053-6065, doi:10.5194/amt-13-6053-2020, 2020.

Li, G., H. Su, N. Ma, J. Tao, Y. Kuang, Q. Wang, J. Hong, Y. Zhang, U. Kuhn, S .Zhang, X. Pan, N. Lu, M. Tang, G. Zheng, Z. Wang, Y. Gao, P. Cheng, W. Xu, G. Zhou, C. Zhao, B. Yuan, M. Shao, A. Ding, Q. Zhang, P. Fu, Y. Sun, U. Pöschl & Y. Cheng: Multiphase chemistry experiment in Fogs and Aerosols in the North China Plain (McFAN): integrated analysis and intensive winter campaign 2018. Faraday Discussions, doi: 10.1039/d0fd00099j, 2020.

Li, H., S. Sodoudi, J. Liu & W. Tao: Temporal variation of urban aerosol pollution island and its relationship with urban heat island. Atmospheric Research, 241: UNSP 104957, doi:10.1016/j.atmosres.2020.104957, 2020.

Liu, L., YF. Cheng, S. Wang, C. Wei, M. L. Pöhlker, C. Pöhlker, P. Artaxo, M. Shrivastava, M. O. Andreae, U. Pöschl & H. Su: Impact of biomass burning aerosols on radiation, clouds, and precipitation over the Amazon: relative importance of aerosol–cloud and aerosol–radiation interactions. Atmospheric Chemistry and Physics, 20(21), 13283-13301, doi:10.5194/acp-20-13283-2020, 2020.

Löbs, N., D. Walter, C. G. G. Barbosa, S. Brill, R. P. Alves, G. R. Cerqueira, M. De Oliveira Sá, A. C. de Araujo, L. R. de Oliveira, F. Ditas, D. Moran-Zuloaga, A. P. Pires Florentino, S. Wolff, R. H. M. Godoi, J. Kesselmeier, S. Mota de Oliveira, M. O. Andreae, C. Pöhlker & B. Weber: Microclimatic conditions and water content fluctuations experienced by epiphytic bryophytes in an Amazonian rain forest. Biogeosciences, 17(21), 5399-5416, doi:10.5194/bg-17-5399-2020, 2020.

Löbs, N., C. G. G. Barbosa, S. Brill, D. Walter, F. Ditas, M. de Oliveira Sá, A. C. de Araújo, L. R. de Oliveira, R. H. M. Godoi, S. Wolff, M. Piepenbring, J. Kesselmeier, P. Artaxo, M. O. Andreae, U. Pöschl, C. Pöhlker & B. Weber: Aerosol measurement methods to quantify spore emissions from fungi and cryptogamic covers in the Amazon, Atmos. Meas. Tech. 13, 153–164, doi:10.5194/amt-13-153-2020, 2020.

Lukas, M., R. Schwidetzky, A. T. Kunert, U. Pöschl, J. Fröhlich Nowoisky, M. Bonn & K. Meister: Electrostatic Interactions Control the Functionality of Bacterial Ice Nucleators. Journal of the Armerican Chemical Society 142 (15), 6842-6846, doi:10.1021/jacs.9b13069, 2020.

Luo, QW, J. Hong, H. Xu, S. Han, H. Tan, QQ. Wang, JC. Tao, N. Ma, YF. & H. Su: Hygroscopicity of amino acids and their effect on the water uptake of ammonium sulfate in the mixed aerosol particles. Science of the Total Environment 734, 139318, doi:10.1016/j.scitotenv.2020.139318, 2020.

Mei, F., J. Wang, J. M. Comstock, R. Weigel, M. Krämer, C. Mahnke, J. E. Shilling, J. Schneider, C. Schulz, C. N. Long, M. Wendisch, L. A. T. Machado, B. Schmid, T. Krisna, M. Pekour, J. Hubbe, A. Giez, B. Weinzierl, M. Zoeger, M. L. Pöhlker, H. Schlager, M. A. Cecchini, M. O. Andreae, S. T. Martin, S. S. de Sá, J. Fan, J. Tomlinson, S. Springston, U. Pöschl, P. Artaxo, C. Pöhlker, T. Klimach, A. Minikin, A. Afchine & S. Borrmann: Comparison of aircraft measurements during GoAmazon2014/5 and ACRIDICON-CHUVA. Atmos. Meas. Tech. 13, 661–684, doi:10.5194/amt-13-661-2020, 2020.

Mikhailov, E. F. & S. S. Vlasenko: High-humidity tandem differential mobility analyzer for accurate determination of aerosol hygroscopic growth, microstructure, and activity coefficients over a wide range of relative humidity. Atmospheric Measurement Techniques, 13(4), 2035-2056, doi:10.5194/amt-13-2035-2020, 2020.

Nguyen, T. N. T., H. O. Kwon, G. Lammel, K. S. Jung, D. M. Kim, M. I. Lee & S. D. Choi: Spatially high-resolved monitoring and risk assessment of polycyclic aromatic hydrocarbons in an industrial city. J. Hazard. Mat. 393 (122409), doi:10.1016/j.jhazmat.2020.122409, 2020.

Nováková Z., J. Novák, Z. Kitanovski, P. Kukučka, P. Přibylová, R. Prokeš, M. Smutná, M. Wietzoreck, G. Lammel & K. Hilscherová: Toxic potentials of particulate and gaseous air pollution and the role of PAHs and their derivatives, Environ. Int. 139 (105634), doi:10.1016/j.envint.2020.105634, 2020.

Ose, R., J. Tu, A. Schink, J. Maxeiner, P. Schuster, K. Lucas, J. Saloga & I. Bellinghausen: Cinnamon extract inhibits allergen-specific immune responses in human and murine allergy models. Clinical and Experimental Allergy, 50(1), 41-50, doi:10.1111/cea.13507, 2020.

Otter, L. M., D. S. Macholdt, K. P. Jochum, B. Stoll, U. Weis, B. Weber, D. Scholz, G. H. Haug, A. M. Al-Amri & M. O. Andreae: Geochemical insights into the relationship of rock varnish and adjacent mineral dust fractions. Chemical Geology, 551: 119775, doi:10.1016/j.chemgeo.2020.119775, 2020.

Pehnec, G., I. Jakovljevc, R. Godec, Z. S. Strukil, S. Zero, S., J. Huremovic & K. Džepina: Carcinogenic organic content of particulate matter at urban locations with different pollution sources. Science of the Total Environment, 734: 139414, doi:10.1016/j.scitotenv.2020.139414, 2020.

Polonik, P., C. Knote, T. Zinner, F. Ewald, T. Kölling, B. Mayer, M. O. Andreae, T. Jurkat-Witschas, T. Klimach, C. Mahnke, S. Molleker, C. Pöhlker, M. L. Pöhlker, U. Pöschl, D. Rosenfeld, C. Voigt, R. Weigel & M. Wendisch: The challenge of simulating the sensitivity of the Amazonian cloud microstructure to cloud condensation nuclei number concentrations. Atmos. Chem. Phys. 20, 1591–1605, doi:10.5194/acp-20-1591-2020, 2020.

Santl-Temkiv, T., B. Sikoparija, T. Maki, F. Carotenuto, P. Amato, M. Yao, C. E. Morris, R. Schnell, R. Jaenicke, C. Pöhlker, P. J. DeMott, T. C. J. Hill & J. A. Huffman: Bioaerosol field measurements: Challenges and perspectives in outdoor studies. Aerosol Science and Technology, 54(5), doi:10.1080/02786826.2019.1676395, 2020.

Schwidetzky R., A. T. Kunert, M. Bonn, U. Pöschl, H. Ramløv, A. L. DeVries, J. Fröhlich-Nowoisky & K. Meister: Inhibition of Bacterial Ice Nucleators Is Not an Intrinsic Property of Antifreeze Proteins. J. Phys. Chem. B 124, 4889–4895, doi:10.1021/acs.jpcb.0c03001, 2020.

Shinozuka, Y., P. E. Saide, G. A. Ferrada, S. P. Burton, R. Ferrare, S. J. Doherty, H. Gordon, K. Longo, M. Mallet, Y. Feng, Q. Wang, Y. Cheng, A. Dobracki, S. Freitag, S. G. Howell, S. LeBlanc, C. Flynn, M. Segal-Rosenhaimer, K. Pistone, J. R. Podolske, E. J. Stith, J. R. Bennett, G. R. Carmichael, A. da Silva, R. Govindaraju, R. Leung, Y. Zhang, L. Pfister, J.-M. Ryoo, J. Redemann, R. Wood & P. Zuidema: Modeling the smoky troposphere of the southeast Atlantic: a comparison to ORACLES airborne observations from September. Atmospheric Chemistry and Physics, 20(19), 11491-11526, doi:10.5194/acp-20-11491-2020, 2020.

Su, H., YF. Cheng & U. Pöschl: New Multiphase Chemical Processes Influencing Atmospheric Aerosols, Air Quality, and Climate in the Anthropocene. Accounts of Chemical Research, doi:10.1021/acs.accounts.0c00246, 2020.

Sun, YL., Y. He, Y. Kuang, WY. Xu, SJ. Song, N. Ma, JC. Tao, P. Cheng, C. Wu, H. Su, YF. Cheng, CH. Xie, C. Chen, L. Lei, YM. Qiu, P. Fu, P. Croteau & DR. Worsnop: Chemical Differences Between PM1 and PM2.5 in Highly Polluted Environment and Implications in Air Pollution Studies. Geophysical Research Letters 47 (5), e2019GL086288, doi:10.1029/2019GL086288, 2020.

Tao, W., H. Su, GJ. Zheng, JD. Wang, C. Wei, L. Liu, L., N. Ma, M. Li, Q. Zhang, U. Pöschl & Y. Cheng: Aerosol pH and chemical regimes of sulfate formation in aerosol water during winter haze in the North China Plain. Atmospheric Chemistry and Physics, 20(20), 11729-11746, doi:10.5194/10.5194/acp-20-11729-2020, 2020.

Tan, J. N., J. S. Fu, G. R. Carmichael, S. Itahashi, Z. N. Tao, K. Huang, X. Y. Dong, K. Yamaji, T. Nagashima, X. M. Wang, Y. M. Liu, H. J. Lee, C. Y. Lin, B. Z. Ge, M. Kajino, J. Zhu, M. G. Zhang, H. Liao & Z. F. Wang: Why do models perform differently on particulate matter over East Asia? A multi-model intercomparison study for MICS-Asia III, Atmospheric Chemistry and Physics 20, 7393-7410, doi:10.5194/acp-20-7393-2020, 2020.

Wang, C., B. Yuan, C. Wu, S. Wang, J. Qi, B. Wang, Z. Wang, W. Hu, W. Chen, C. Ye, W. Wang, Y. Sun, C. Wang, S. Huang, W. Song, X. Wang, S. Yang, S. Zhang, W. Xu, N. Ma, Z. Zhang, B. Jiang, H. Su, Y. Cheng, X. Wang & M. Shao: Measurements of higher alkanes using NO^+ chemical ionization in PTR-ToF-MS: important contributions of higher alkanes to secondary organic aerosols in China. Atmospheric Chemistry and Physics, 20(22), 14123-14138, doi:10.5194/acp-20-14123-2020, 2020.

Wang, CM., B. Yuan, CH. Wu, SH. Wang, JP. Qi, BL. Wang, ZL. Wang, WW. Hu, W. Chen, CS. Ye, WJ. Wang, YL. Sun, C. Wang, S. Huang, W. Song, XM. Wang, SX. Yang, SY. Zhang, WY. Xu, N. Ma, ZY. Zhang, B. Jiang, H. Su, Y. Cheng, XM. Wang & M. Shao: Measurements of higher alkanes using NO+ chemical ionization in PTR-ToF-MS: important contributions of higher alkanes to secondary organic aerosols in China. Atmos. Chem. Phys. 20 (22), 14123-14138, doi: 10.5194/acp-20-14123-2020, 2020.

Wang, S., H. Su, C. Chen, W. Tao, D. G. Streets, Z. Lu, Z., B. Zheng, G. R. Carmichael, J. Lelieveld, U. Pöschl & Y. Cheng: Natural gas shortages during the "coal-to-gas" transition in China have caused a large redistribution of air pollution in winter 2017. Proceedings of the National Academy of Sciences of the United States of America, 117: 202007513, doi:10.1073/pnas.2007513117, 2020.

Wang, X., Z. Shen, Z. Tang, G. Li, Y. Lei, Q. Zhang, Y. Zeng, H. Xu, J. Cao & R. Zhang: Characteristics of Surface Ozone in Five Provincial Capital Cities of China during 2014-2015. Atmosphere, 11(1): 107, doi:10.3390/atmos11010107, 2020.

Wang, XX., HZ. Lei, R. Berger, Y. Zhang, H. Su & YF. Cheng: Hygroscopic properties of NaCl nanoparticles on the surface: a scanning force microscopy study. Phys.Chem.Chem.Phys. 22 (18), doi:10.1039/d0cp00155d, 2020.

Wang, Z., B. Yuan, C. Ye, J. Roberts, A. Wisthaler, Y. Lin, T. Li, C. Wu, Y. Peng, C. Wang, S. Wang, S. Yang, B. Wang, J. Qi, C. Wang, W. Song, W. Hu, X. Wang, W. Xu, N. Ma, Y. Kuang, J. Tao, Z. Zhang, H. Su, Y. Cheng, X. Wang & M. Shao: High Concentrations of Atmospheric Isocyanic Acid (HNCO) Produced from Secondary Sources in China. Environmental Science & Technology, 54(19), 11818-11826, doi:10.1021/acs.est.0c02843, 2020.

Wilson, J., M. Octaviani, B. A. M. Bandowe, M. Wietzoreck, C. Zetzsch, U. Pöschl, T. Berkemeier & G. Lammel: Modeling the Formation, Degradation, and Spatiotemporal Distribution of 2-Nitrofluoranthene and 2-Nitropyrene in the Global Atmosphere. Environmental Science & Technology, 54(22), 14224-14234, doi:10.1021/acs.est.0c04319, 2020.

Xie, QR., SH. Su, S. Chen, YS. Xu, D. Cao, J. Chen, LJ. Ren, SY. Yue, WY. Zhao, YL. Sun, ZF. Wang, HJ. Tong, H. Su, YF. Cheng, K. Kawamura, GB. Jiang, CQ. Liu & PQ. Fu: Molecular characterization of firework-related urban aerosols using Fourier transform ion cyclotron resonance mass spectrometry. Atmos. Chem. Phys. 20 (11), 6803-6820, doi:10.5194/acp-20-6803-2020, 2020.

Xiang, S., J. Liu, W. Tao, K. Yi, J. Xu, X. Hu, H. Liu, Y. Wang, Y. Zhang, H. Yang, J. Hu, Y. Wan, X. Wang, J. Ma, X. Wang & S. Tao: Control of both PM2.5 and O_3 in Beijing-Tianjin-Hebei and the surrounding areas. Atmospheric Environment, 224, 117250, doi:10.1016/j.atmosenv.2020.117259, 2020.

Xie, QR., Y. Li, SY. Yue, SH. Su, D. Cao, YS. Xu, J. Chen, HJ. Tong, H. Su, YF. Cheng, WY. Zhao, W. Hu, Z. Wang, T. Yang, XL. Pan, YL. Sun, ZF. Wang, CQ. Liu, K. Kawamura, GB. Jiang, M. Shiraiwa & PQ. Fu: Increase of High Molecular Weight Organosulfate With Intensifying Urban Air Pollution in the Megacity Beijing. Journal of Geophysical Research-Atmospheres 125 (10), e2019JD032200, doi:10.1029/2019JD032200, 2020.

Xu, SF., LJ. Ren, YC. Lang, SJ. Hou, H. Ren, LF. Wei, LB. Wu, JJ. Deng, W. Hu, XL. Pan, YL. Sun, ZF. Wang, H. Su, YF. Cheng & PQ. Fu: Molecular markers of biomass burning and primary biological aerosols in urban Beijing: size distribution and seasonal variation. Atmos. Chem. Phys. 20 (6), 3623-3644, doi:10.5194/acp-20-3623-2020, 2020.

Yáñez-Serrano, A. M., E. Bourtsoukidis, E. G. Alves, M. Bauwens, T. Stavrakou, J. Llusià, I. Filella, A. Guenther, J. Williams, P. Artaxo, K. Sindelarova, J. Doubalova, J. Kesselmeier & J. Peñuelas: Amazonian biogenic volatile organic compounds under global change. Global Change Biology, doi:10.1111/gcb.15185, 2020.

Zhang, YY., JC. Tao, N. Ma, Y. Kuang, ZB. Wang, P. Cheng, WY. Xu, WD. Yang, SB. Zhang, C. Xiong, WL. Dong, LH. Xie, YL. Sun, PQ. Fu, GS. Zhou, YF. Cheng & H. Su: Predicting cloud condensation nuclei number concentration based on conventional measurements of aerosol properties in the North China Plain. Science of the total Environment 719, 137473, doi:10.1016/j.scitotenv.2020.137473, 2020.

Zhao, Y., H. Ren, JJ. Deng, LJ. Li, W. Hu, LJ. Ren, SY. Yue, YB. Fan, LB. Wu, J. Li, YL. Sun, ZF. Wang, H. Akimoto, X. Zeng, Y. Cheng, SF. Kong, H. Su, YF. Cheng, K. Kawamura & PQ. Fu: High daytime abundance of primary organic aerosols over Mt. Emei, Southwest China in summer. Science of The Total Environment 703, 134475, doi:10.1016/j.scitotenv.2019.134475, 2020.

Zheng, G., H. Su, S. Wang, M. O. Andreae, U. Pöschl & YF. Cheng: Multiphase buffer theory explains contrasts in atmospheric aerosol acidity. Science 369 (6509), 1374-1377, doi:10.1126/science.aba3719, 2020.

Zhou, S., L. Wu, J. Guo, W. Chen, X. Wang, J. Zhao, Y. Cheng, Z. Huang, J. Zhang, Y. Sun, P. Fu, S. Jia, J. Tao, Y. Chen & J. Kuang: Measurement report: Vertical distribution of atmospheric particulate matter within the urban boundary layer in southern China - size-segregated chemical composition and secondary formation through cloud processing and heterogeneous reactions. Atmospheric Chemistry and Physics, 20(11), 6435-6453, doi:10.5194/acp-20-6435-2020, 2020.

Ziegler, K., A. T. Kunert, K. Reinmuth-Selzle, A. Leifke, D. Widera, M. G. Weller, D. Schuppan, J. Fröhlich-Nowoisky, K. Lucas & U. Pöschl: Chemical modification of pro-inflammatory proteins by peroxynitrite increases activation of TLR4 and NF-κB: Implications for the health effects of air pollution and oxidative stress. Redox Biology, doi:10.1016/j.redox.2020.101581, 2020.

2019

Alpert, P. A., P. C. Arroyo, J. Dou, U. K. Krieger, S. S. Steimer, J. D. Förster, F. Ditas, C. Pöhlker, S. Rossignol, M. Passananti, S. Perrier, C. George, M. Shiraiwa, T. Berkemeier, B. Watts & M. Ammann: Visualizing reaction and diffusion in xanthan gum aerosol particles exposed to ozone. Royal Society of Chemistry 21 (37), 20613-20627, doi:10.1039/c9cp03731d, 2019.

Bandowe, B. A. M, M. A. Nkansah, S. Leimer, D. Fischer, G. Lammel & Y. Han: Chemical (C, N, S, black carbon, soot and char) and stable carbon isotope composition of street dusts from a major West African metropolis: Implications for source apportionment and exposure, Science of the Total Environment 655, 1468-1478, doi:10.1016/j.scitotenv.2018.11.089, 2019.

Filippi, A., F. Liu, J. Wilson, S. Lelieveld, K. Korschelt, T. Wang, Y. Wang, T. Reich, U. Pöschl, W. Tremel & H. Tong: Antioxidant activity of cerium dioxide nanoparticles and nanorods in scavenging hydroxyl radicals, Royal Society of Chemistry 9, 11077-11081, doi:10.1039/c9ra00642g, 2019.

Garzón-Porras, A. M., D. L. Bertuzzi, K. Lucas & C. Ornelas: Anti-inflammatory activity of polyamide dendrimers bearing bile acid termini synthesized via SPAAC, Journal of Nanoparticle Research 21 (11), 227, doi:10.1007/s11051-019-4672-5, 2019.

Klingebiel, M., V. P. Ghate, A. K. Naumann, F. Ditas, M. Pöhlker, C. Pöhlker, K. Kandler, H. Konow & B. Stevens: Remote Sensing of Sea Salt Aerosol below Trade Wind Clouds, Journal of the Atmospheric Sciences 76, 1189-1202, doi:10.1175/JAS-D-18-0139.1, 2019.

Könemann T., N. Savage, T. Klimach, D, Walter, J. Fröhlich-Nowoisky, H. Su, U. Pöschl, J. A. Huffman & C. Pöhlker: Spectral Intensity Bioaerosol Sensor (SIBS): an instrument for spectrally resolved fluorescence detection of single particles in real time. Atmospheric Measurement Techniques 12, 1337–1363, doi:10.5194/amt-12-1337-2019, 2019.

Kunert, A. T., M. L. Pöhlker, K. Tang., C. S. Krevert, C. Wieder, K. R. Speth, L. E. Hanson, C. E. Morris, D. G. Schmale III, U. Pöschl & J. Fröhlich-Nowoisky: Macromolecular fungal ice nuclei in Fusarium: effects of physical and chemical processing. Biogeosciences 16, 4647–4659, doi:10.5194/bg-16-4647-2019, 2019.

Lelieveld, J., K. Klingmüller, A. Pozzer, U. Pöschl, M. Fnais, A. Daiber & T. Münzel: Cardiovascular disease burden from ambient airpollution in Europe reassessed using novel hazard ratio functions. European Heart Journal 40, 1590–1596, doi:10.1093/eurheartj/ehz135, 2019.

Li, G., Y. Cheng, U. Kuhn, R. Xu, Y. Yang, H. Meusel, Z. Wang, N. Ma, Y. Wu, M. Li, J. Williams, T. Hoffmann, M. Ammann, U. Pöschl, M. Shao & H. Su: Physicochemical uptake and release of volatile organic compounds by soil in coated-wall flow tube experiments with ambient air. Atmospheric Chemistry and Physics 19, 2209-2232, doi:10.5194/acp-19-2209-2019, 2019.

Li, M., S. Hang, G. Li, N. Ma, U. Pöschl, & Y. Cheng: Relative importance of gas uptake on aerosol and ground surfaces characterized by equivalent uptake coefficients. Atmospheric Chemistry and Physics 19, 10981-11011, doi:10.5194/acp-19-10981-2019, 2019.

Li M., Q. Zhang, B. Zheng, D. Tong, Y. Lei, F. Liu, C. Hong, S. Kang, L. Yan, Y. Zhang, Y. Bo, H. Su, Y. Cheng & K. He: Persistent growth of anthropogenic non-methane volatile organic compound (NMVOC). Atmospheric Chemistry and Physics 19 (13), 8897-8913, doi:10.5194/acp-19-8897-2019, 2019.

Macholdt, D.S., J. D. Förster, M. Müller, B. Weber, M. Kappl, A. L. D. Kilcoyne, M. Weigand, J. Leitner, K. P. Jochum, C. Pöhlker & M. O. Andreae: Artifacts from manganese reduction in rock samples prepared by focused ion beam (FIB) slicing for X-ray microspectroscopy, Geoscientific Instrumentation Methods and Data Systems 8, 97-111, doi:10.5194/gi-8-97-2019, 2019.

Mulder, M. D., Y. Dumanoglu, C. Efstathiou, P. Kukucka, J. Matejovicova, C. Maurer, P. Pribylova, R. Prokes, A. Sofuoglu, S. C. Sofuoglu, J. Wilson, C. Zetzsch, G. Wotawa & G. Lammel: Fast Formation of Nitro-PAHs in the Marine Atmosphere Constrained in a Regional-Scale Lagrangian Field Experiment. Environmental Science & Technology 53 (15), 8914-8924, doi:10.1021/acs.est.9b03090, 2019.

Nežiková, B., C. Degrendele, P. Čupr, P. Hohenblum, W. Moche, R. Prokeš, L. Vaňková; P. Kukučka, J. Martiník, O. Audy, P. Přibylová, I. Holoubek, P. Weiss, J. Klánová & G. Lammel: Bulk atmospheric deposition of persistent organic pollutants and polycyclic aromatic hydrocarbons in Central Europe. Environmental Science and Pollution Research 26 (23), 23429-23441, doi:10.1007/s11356-019-05464-9, 2019.

Neumann, J., K. Ziegler, M. Gelléri, J. Fröhlich-Nowoisky, F. Liu, I. Bellinghausen, D. Schuppan, U. Birk, U. Pöschl, C. Cremer & K. Lucas: Nanoscale distribution of TLR4 on primary human macrophages stimulated with LPS and ATI. Royal Society of Chemistry, Nanoscale 11, 9769, doi:10.1039/c9nr00943d, 2019.

Octaviani, M., H. Tost & G. Lammel: Global simulation of semivolatile organic compounds - development and evaluation of the MESSy submodel SVOC (v1.0). Geoscientific Model Development 12 (8), 3585-3607, doi:10.5194/gmd-12-3585-2019, 2019.

Pöhlker, C. D. Walter, H. Paulsen, T. Könemann, E. Rodiguez-Caballero, D. Moran-Zuloaga, J. Brito, S. Carbone, C. Degrendele, V. R. Després, F. Ditas, B. A. Holanda, J. W. Kaiser, G. Lammel, J. V. Lavri, J. Ming, D. Pickersgill, M. L. Pöhlker, M. Praß, N. Löbs, J. Saturno, M. Sörgel, Q. Wang, B. Weber, S. Wolff, P. Artaxo, U. Pöschl & M. O. Andreae: Land cover and its transformation in the backward trajectory footprint region of the Amazon Tall Tower Observatory. Atmospheric Chemistry and Physics 19, 8425–8470, doi:10.5194/acp-19-8425-2019, 2019.

Porada, P., A. Tamm, J. Raggio, Y. Cheng, A. Kleidon, U. Pöschl & B. Weber: Global NO and HONO emissions of biological soil crusts estimated by a process-based non-vascular vegetation model. Biogeosciences 16, 2003–2031, doi:10.5194/bg-16-2003-2019, 2019.

Shahpoury P., T. Harner, G. Lammel, S. Lelieveld S., H. Tong and J. Wilson: Development of an antioxidant assay to study oxidative potential of airborne particulate matter. Atmos. Meas. Techn. 12 6529–6539, doi:10.5194/amt-12-6529-2019, 2019.

Tong, H., Y. Zhang, A. Filippi, T. Wang, C. Li, F. Liu, D. Leppla, I. Kourtchev, K. Wang, H. Keskinen, J. T. Levula, A. M. Arangio, F. Shen, F. Ditas, S. T. Martin, P. Artaxo, R. H. M. Godoi, C. I. Yamamoto, R. A. F. de Souza, R. Huang, T. Berkemeier, Y. Wang, H. Su, Y. Cheng, F. D. Pope, P. Fu, M. Yao, C. Pöhlker, T. Petäjä, M. Kulmala, M. O. Andreae, M. Shiraiwa, U. Pöschl, T. Hoffmann & M. Kalberer: Radical Formation by Fine Particulate Matter Associated with HighlyOxygenated Molecules. Environmental Science & Technology 53, 12506-12518, doi:10.1021/acs.est.9b05149, 2019.

Wang, K., Y. Zhang, R. Huang, M. Wang, H. Ni, C. J. Kampf, YF. Cheng, M. Bilde, M. Glasius & T. Hoffmann: Molecular Characterization and Source Identification of Atmospheric Particulate Organosulfates Using Ultrahigh Resolution Mass Spectrometry. Environmental Science & Technology 53, 6192-6202, doi:10.1021/acs.est.9b02628, 2019.

Wang, X., K. Binder, C. Chen, T. Koop, U. Pöschl, H. Su & Y. Cheng: Second inflection point of water surface tension in the deeply supercooled regime revealed by entropy anomaly and surface structure using molecular dynamics simulations. Physical Chemistry Chemical Physics 21 (6), 3360-3369, doi:10.1039/c8cp05997g, 2019.

Wu, D., M. A. Horn, T. Behrendt, S. Müller, J. Li, J. A. Cole, B. Xie, X. Ju, G. Li, M. Ermel, R. Oswald, J. Fröhlich-Nowoisky, P. Hoor, C. Hu, M. Liu, M. O. Andreae, U. Pöschl, Y. Cheng, H. Su, I. Trebs, B. Weber & M. Sörgel: Soil HONO emissions at high moisture content are driven by microbial nitrate reduction to nitrite: tackling the HONO puzzle. ISME Journal 13, 1688-1699, doi:0.1038/s41396-019-0379-y, 2019.

Zhang, Y., M. Li, Y. Cheng, G. Geng, C. Hong, H. Li, X. Li, D. Tong, N. Wu, X. Zhang, B. Zheng, Y. Zheng, Y. Bo, H. Su & Q. Zhang: Modeling the aging process of black carbon during atmospheric transport using a new approach: a case study in Beijing. Atmospheric Chemistry and Physics 19 (14), 9663-9680, doi:10.5194/acp-19-9663-2019, 2019.

Zhang, M., T. Klimach, N. Ma, T. Könemann, C. Pöhlker, Z. Wang, U. Kuhn, N. Scheck, U. Pöschl, H. Su & Y. Cheng: Size-Resolved Single-Particle Fluorescence Spectrometer for Real-Time Analysis of Bioaerosols: Laboratory Evaluation and Atmospheric Measurements. Environmental Science & Technology 53, 13257-13264, doi:10.1021/acs.est.9b01862, 2019.

Ziegler, K., J. Neumann, F. Liu, J. Fröhlich-Nowoisky, C. Cremer, J. Saloga, K. Reinmuth-Selzle, U. Pöschl, D. Schuppan, I. Bellinghausen & K. Lucas: Nitration of Wheat Amylase Trypsin Inhibitors Increases Their Innate and Adaptive Immunostimulatory Potential in vitro. Frontiers in Immunology 9, 3174, doi:10.3389/fimmu.2018.03174, 2019.

2018

Andreae, M. O., A. Afchine, R. Albrecht, B. A. Holanda, P. Artaxo, H. M. J. Barbosa, S. Borrmann, M. A. Ceccini, A. Costa, M. Dollner, D. Futterer, E. Jarvinen, T. Jurkat, T. Klimach, T. Könemann, C. Knote, M. Krämer, T. Krisna, L. A. T. Machado, S. Mertes, A. Minikin, C. Pöhlker, M. L. Pöhlker, U. Pöschl, D. Rosenfeld, D. Sauer, H. Schlager, M. Schnaiter, J. Schneider, C. Schulz, A. Spanu, V. B. Sperling, C. Voigt, A. Walser, J. Wang, B. Weinzierl, M. Wendisch & H. Ziereis: Aerosol characteristics and particle production in the upper troposphere over the Amazon Basin. Atmospheric Chemistry and Physics 18 (2), 921-61, doi:10.5194/acp-18-921-2018, 2018.

Caesar, J, A. Tamm, N. Ruckteschler, A. L. Leifke & B. Weber: Revisiting chlorophyll extraction methods in biological soil crusts - methodology for determination of chlorophyll a and chlorophyll a plus b as compared to previous methods. Biogeosciences 15 (5), doi:10.5194/bg-15-1415-2018, 2018.

Carlsson P.M., H. Andersson., K, Breivik, E. Brorström-Lundén, I. Cousins, J. Christensen, J. Grimalt., C. Halsall, R. Kallenborn, A. Khaled, G. Lammel, J. Munthe, M. MacLeod, J.Ø. Odland, J. Pawlak, A. Rauto, L.O. Reiersen, M. Schlabach, I. Stemmler., S. Wilson & H. Wöhrnschimmel: Polychlorinated biphenyls (PCBs) as sentinels for the elucidation of Arctic environmental change processes: A comprehensive review combined with ArcRisk project results. Environ. Sci. Pollut. Res. 25, 22499–22528, doi:10.1007/s11356-018-2625-7, 2018.

Chen, Y., R. Wolke, L. Ran, W. Birmili, G. Spindler, W. Schröder, H. Su, Y. Cheng, I. Tegen & A. Wiedernsohler: A parameterization of the heterogeneous hydrolysis of N_2O_5 for mass-based aerosol models: improvement of particulate nitrate prediction. Atmospheric Chemistry and Physics 18 (2), 673-689, doi:10.5194/acp-18-673-2018, 2018.

Degrendele, C., J. Wilson, P. Kukucka, J. Klanova & G. Lammel: Are atmospheric PBDE levels declining in central Europe? Examination of the seasonal and semi-long-term variations, gas-particle partitioning and implications for long-range atmospheric transport. Atmospheric Chemistry and Physics 18 (17), 12877-12890, doi:10.5194/acp-18-12877-2018, 2018.

Ditas, J., N. Ma, Y. Zhang, D. Assmann, M. Neumeier, H. Riede, E. Karu, J. Williams, D. Scharffe, Q. Wang, J. Saturno, J. P. Schwarz, J. M. Katich, G. R. McMeeking, A. Zahn, M. Hermann, C. A. M. Brenninkmeijer, M. O. Andreae, U. Pöschl, H. Su & YF. Cheng: Strong impact of wildfires on the abundance and aging of black carbon in the lowermost stratosphere. PNAS 115 (50), E11595-E11603, doi:10.1073/pnas.1806868115, 2018.

Fan, JW., D. Rosenfeld, YW. Zhang, S. E. Giangrande, ZQ Li, L. A. T. Machado, S. T. Scot, Y. Yang, J. Wang, P. Artaxo, H. M. J. Barbosa, R. C. Braga, J. M. Comstock, Z. Feng, WH. Gao, H. B. Gomes, F. Mei, C. Pöhlker, M. L. Pöhlker, U. Pöschl & R. A. F. de Souza: Substantial convection and precipitation enhancements by ultrafine aerosol particles. Science 359, 411-418, doi:10.1126/science.aan8461, 2018.

Gao, M., Z. Han, Z. Liu, M. Li, J. Xin, Z. Tao, J. Li, J.E. Kang, K. Huang, X. Dong, B. Zhuang, S. Li, B. Ge, Q. Wu, Y. Cheng, Y. Wang, H.J. Lee, C.H. Kim, J. S. Fu, T. Wang, M. Chin, J.H. Woo, Q. Zhang, Z. Wang & G. R. Carmichael: Air quality and climate change, Topic 3 of the Model Inter-Comparison Study for Asia Phase III (MICS-Asia III) – Part 1: Overview and model evaluation. Atmos. Chem. Phys. 18, 4859–4884, doi: 10.5194/acp-18-4859-2018, 2018.

He, PZ., B. Alexander, L. Geng, XY. Chi, SD. Fan, HC. Zhan, H. Kang, GJ. Zheng, YF. Cheng, H. Su, C. Liu & ZQ. Xie: Isotopic constraints on heterogeneous sulfate production in Beijing haze. Atmospheric Chemistry and Physics 18 (8), 5515-5528, doi:10.5194/acp-18-5515-2018, 2018.

Hong, J., HB. Xu, HB. Tan, CQ. Yin, LQ. Hao, F. Li, MF. Cai, XJ. Deng, N. Wang, H. Su, YF. Cheng, L. Wang, T. Petaja & VM. Kerminen: Mixing state and particle hygroscopicity of organic-dominated aerosols over the Pearl River Delta region in China. Atmospheric Chemistry and Physics 18 (19), 14079-14094, doi:10.5194/acp-18-14079-2018, 2018.

Hummel, M., C. Hoose, B. Pummer, C. Schaupp, J. Fröhlich-Nowoisky & O. Möhler: Simulating the influence of primary biological aerosol particles on clouds by heterogeneous ice nucleation. Atmospheric Chemistry and Physics 18 (20), 15437-15450, doi:10.5194/acp-18-15437-2018, 2018.

Kandler, K., K. Schneiders, M. Ebert, M. Hartmann, S. Weinbruch, M. Prass & C. Pöhlker: Composition and mixing state of atmospheric aerosols determined by electron microscopy: method development and application to aged Saharan dust deposition in the Caribbean boundary layer. Atmospheric Chemistry and Physics 18 (18), 13429-13455, doi:10.5194/acp-18-13429-2018, 2018.

Knackstedt, K. A., B. F. Moffett, S. Hartmann, H. Wex, T. C. J. Hill, E. D. Glasgo, L. A. Reitz, S. Augustin-Bauditz, B. F. N. Beall, G. S. Bullerjahn, J. Fröhlich-Nowoisky, S. Grawe, J. Lubitz, F. Stratmann & R. M. L. McKay: Terrestrial Origin for Abundant Riverine Nanoscale Ice-Nucleating Particles. Environmental Science & Technology 52 (21), 12358-12367, doi:10.1021/acs.est.8b03881, 2018.

Könemann, T., N. J. Savage, J. A. Huffmann & C. Pöhlker: Characterization of steady-state fluorescence properties of polystyrene latex spheres using off- and online spectroscopic methods. Atmospheric Measurement Techniques 11 (7), 3987-4003, doi:10.5194/amt-11-3987-2018, 2018.

Krisna, T. C., M. Wendisch, A. Ehrlich, E. Jeakel, W. A. Frank, R. Weigel, S. Borrmann, C. Mahnke, U. Pöschl, M. O. Andreae, C. Voigt & L. A. T. Machado: Comparing airborne and satellite retrievals of cloud optical thickness and particle effective radius using a spectral radiance ratio technique: two case studies for cirrus and deep convective clouds. Atmospheric Chemistry and Physics 18 (7), 4439-4426, doi:10.5194/acp-18-4439-2018, 2018.

Kunert, A. T., M. Lamneck, F. Helleis, U. Pöschl, M. L. Pöhlker & J. Fröhlich-Nowoisky: Twin-plate Ice Nucleation Assay (TINA) with infrared detection for high-throughput droplet freezing experiments with biological ice nuclei in laboratory and field samples. Atmospheric Measurement Techniques 11 (11), 6327-6337, doi:10.5194/amt-11-6327-2018, 2018.

Lammel, G., C. Degrendele, S. S. Gunthe, Q. Mu, A. Muthalagu, O. Audy, C. V. Biju, P. Kukucka, M. D. Mulder, M. Octaviani, P. Pribylova, P. Shahpoury, I. Stemmler & A. E. Valsan: Revolatilisation of soil-accumulated pollutants triggered by the summer monsoon in India. Atmospheric Chemistry & Physics 18 (15), 11031-11040, doi:10.5194/acp-18-11031-2018, 2018.

Lang-Yona, N., D. A. Pickersgill, I. Maurus, D. Teschner, J. Wehking, E. Thines, U. Pöschl, V. E. Despres & J. Fröhlich-Nowoisky: Species Richness, rRNA Gene Abundance, and Seasonal Dynamics of Airborne Plant-Pathogenic Oomycetes. Frontiers in microbiology 9, 2673, doi:10.3389/fmicb.2018.02673, 2018.

Lang-Yona, N., A. T. Kunert, L. Vogel, C. J. Kampf, I. Bellinghausen, J. Saloga, A. Schink, K. Ziegler, K. Lucas, D. Schuppan, U. Pöschl, B. Weber & J. Fröhlich-Nowoisky: Fresh water, marine and terrestrial cyanobacteria display distinct allergen characteristics. Science of the Total Environment 612, 767-774, doi:10.1016/j.scitotenv.2017.08.069, 2018.

Lang-Yona, N., S. Maier, D. S. Macholdt, I. Müller-German, P. Yordanova, E. Rodriguez-Caballero, K. P. Jochum, A. Al-Amri, M. O. Andreae, J. Fröhlich-Nowoisky & B. Weber: Insights into microbial involvement in desert varnish formation retrieved from metagenomic analysis. Environmental Microbiology Reports 10 (3), 264-271, doi:10.1111/1758-2229.12634, 2018.

Lei, T., A. Zünd, YF. Cheng, H. Su, WG. Wang & MF. Ge: Hygroscopicity of organic surrogate compounds from biomass burning and their effect on the efflorescence of ammonium sulfate in mixed aerosol particles. Atmospheric Chemistry and Physics 18 (2), 1045-64, doi:10.5194/acp-18-1045-2018, 2018.

Li, G., H. Su, U. Kuhn, H. Meusel, M. Ammann, M. Shao, U. Pöschl & YF. Cheng: Technical note: Influence of surface roughness and local turbulence on coated-wall flow tube experiments for gas uptake and kinetic studies. Atmospheric Chemistry and Physics 18 (4), 2669-2686, doi:10.5194/acp-18-2669-2018, 2018.

Machado, L. A. T., A. J. P. Calheiros, T. Biscaro, S. Giangrande, M. A. F. S. Dias, M. A. Cecchini, R. Albrecht, M. O. Meinrat, W. F. Wagner, P. Artaxo, S. Borrmann, R. Braga, C. Burleyson, C. W. Eichholz, JW Fan, Z. Feng, G. F. Fisch, M. P. Jensen, S. T. Martin, U. Pöschl, C. Pöhlker, M. L. Pöhlker, JF. Ribaud, D. Rosenfeld, J. M. B. Saraiva, C. Schumacher, R. Thalmann, D. Walter & M. Wendisch: Overview: Precipitation characteristics and sensitivities to environmental conditions during GoAmazon2014/5 and ACRIDICON-CHUVA. Atmospheric Chemistry and Physics 18 (9), 6461-6482, doi:10.5194/acp-18-6461-2018, 2018.

Maier, S., A. Tamm, DM. Wu, J. Ceasar, M. Grube & B. Weber: Photoautotrophic organisms control microbial abundance, diversity, and physiology in different types of biological soil crusts. ISME Journal 12 (4), 1032-1046, doi:10.1038/s41396-018-0062-8, 2018.

Meusel, H., A. Tamm, U. Kuhn, DM. Wu, AL Leifke, S. Fiedler, N. Ruckteschler, P. Yordanova, N. Lang-Yona, M. L. Pöhlker, J. Lelieveld, T. Hoffmann, U. Pöschl, H. Su, B. Weber & YF. Cheng: Emission of nitrous acid from soil and biological soil crusts represents an important source of HONO in the remote atmosphere in Cyprus. Atmospheric Chemistry and Physics 18 (2), 799-813, doi:10.5194/acp-18-799-2018, 2018.

Moran-Zuloaga, D., F. Ditas, D. Walters, J. Saturno, J. Brito, S. Carbone, XG. Chi, I. Hrabe de Angelis, H. Baars, R. H. M. Godoi, B. Heese, B. A. Holanda, J. V. Lavric, S. T. Martin, J. Ming, M. L. Pöhlker, N. Ruckteschler, H. Su, YQ. Wang, QQ Wang, ZB. Wang, B. Weber, S. Wolff, P. Artaxo, U. Pöschl, M. O. Andreae & C. Pöhlker: Long-term study on coarse mode aerosols in the Amazon rain forest with the frequent intrusion of Saharan dust plumes. Atmospheric Chemistry and Physics 18 (13), 10055-88, doi:10.5194/acp-18-10055-2018, 2018.

Morris, G., K. Walder, A. F. Carvalho, S. J. Tye, K. Lucas, M. Berk & M. Maes: The role of hypernitrosylation in the pathogenesis and pathophysiology of neuroprogressive diseases. Neuroscience and Biobehavioral Reviews 84, 453-469, doi:10.1016/j.neubiorev.2017.07.017, 2018.

Mu, Q., M. Shiraiwa, M. Octaviani, N. Ma, AJ. Ding, H. Su, G. Lammel, U. Pöschl & YF. Cheng: Temperature effect on phase state and reactivity controls atmospheric multiphase chemistry and transport of PAHs. Sciences Advances 4 (3), UNSPeaap7314, doi:10.1126/sciadv.aap7314, 2018.

Pöhlker, M. L., F. Ditas, J. Saturno, T. Klimach, I. Hrabe de Angelis, A. C. Araujo, J. Brito, S. Carbone, YF Cheng, XG Chi, R. Ditz, S. S. Gunthe, B. A. Holanda, K. Kandler, J. Kesselmeier, T. Könemann, O. O. Krüger, J. V. Lavric, S. T. Martin, E. Mikhailov, D. Moran-Zuloaga, L. V. Rizzo, D. Rose, H. Su, R. Thalmann, D. Walter, J. Wang, S. Wolff, H. M. J. Barbosa, P. Artaxo, M. O. Andreae, U. Pöschl & C. Pöhlker: Long-term observations of cloud condensation nuclei over the Amazon rain forest - Part 2: Variability and characteristics of biomass burning, long-range transport, and pristine rain forest aerosols. Atmospheric Chemistry & Physics 18 (14), 10289-10331, doi:10.5194/acp-18-10289-2018, 2018.

Rodriguez-Caballero, E., J. Belnap, B. Budel, P. J. Crutzen, M. O. Andreae, U. Pöschl & B. Weber: Dryland photoautotrophic soil surface communities endangered by global change. Nature Geoscience 11 (3), 185-189, doi:10.1038/s41561-018-0072-1, 2018.

Rodriguez-Caballero, E., AJ. Castro, S. Chamizo, C. Quintas-Soriano, M. Garcia-Llorente, Y. Canton & B. Weber: Ecosystem services provided by biocrusts: From ecosystem functions to social values. Journal of Arid Environments 159, 45-53, doi:10.1016/j.jaridenv.2017.09.005, 2018.

Saturno, J., F. Ditas, M. Penning de Vries, B. A. Holanda, M. L. Pöhlker, S. Carbone, D. Walter, N. Bobrowski, J. Brito, XG. Chi, A. Gutmann, I. Hrabe de Angelis, L. A. T. Machado, D. Moran-Zuloaga, J. Rüdiger, J. Schneider, C. Schulz, QQ Wang, M. Wendisch, P. Artaxo, T. Wagner, U. Pöschl, M. O. Andreae & C. Pöhlker: African volcanic emissions influencing atmospheric aerosols over the Amazon rain forest. Atmospheric Chemistry & Physics 18 (14), 10391-10405, doi:10.5194/acp-18-10391-2018, 2018.

Saturno, J., B. A. Holanda, C. Pöhlker, F. Ditas, QQ. Wang, D. Moran-Zuloaga, J. Brito, S. Carbone, YF. Cheng, XG. Chi, J. Ditas, T. Hoffmann, I. Hrabe de Angelis, T. Könemann, J. V. Lavric, N. Ma, J. Ming, H. Paulsen, M. L. Pöhlker, L. V. Rizzo, P. Schlag, H. Su, D. Walter, S. Wolff, YX. Zhang, P. Artaxo, U. Pöschl & M. O. Andreae: Black and brown carbon over central Amazonia: long-term aerosol measurements at the ATTO site. Atmospheric Chemistry & Physics 18 (17), 12817-12843, doi:10.5194/acp-18-12817-2018, 2018.

Schink, A., K. Naumoska, Z. Kitanovski, C. J. Kampf, J. Fröhlich-Nowoisky, E. Thines, U. Pöschl, D. Schuppan, K. Lucas: Anti-inflammatory effects of cinnamon extract and identification of active compounds influencing the TLR2 and TLR4 signaling pathways. Food & Function 9 (11), 5950-5964, doi:10.1039/c8fo01286e, 2018.

Schink, A., J. Neumann, A. L. Leifke, K. Ziegler, J. Fröhlich-Nowoisky, C. Cremer, E. Thines, B. Weber, U. Pöschl, D. Schuppan, K. Lucas: Screening of herbal extracts for TLR2-and TLR4-dependent anti-inflammatory effects. Plos One 13 (10), e0203907, doi:10.1371/journal.pone.0203907, 2018.

Schmale, J., S. Henning, S. Decesari, B. Henzing, H. Keskinen, K. Sellegri, J. Ovadnevaite, ML. Pöhlker, J. Brito, A. Bougiatioti, A. Kristensson, N. Kalivitis, I. Stavroulas, S. Carbone, A. Jefferson, M. Park, P. Schlag, Y. Iwamoto, P. Aalto, M. Aijala, N. Bukowiecki, M. Ehn, G. Frank, R. Frohlich, A. Frumau, E. Herrmann, H. Herrmann, R. Holzinger, G. Kos, M. Kulmala, N. Mihalopoulos, A. Nenes, C. O`Dowd, T. Petaja, D. Picard, C. Pöhlker, U. Pöschl, L. Poulain, A. S. H. Prevot, E. Swietlicki, M. O. Andreae, P. Artaxo, A. Wiedensohler, J. Ogren, A. Matsuki, SS. Yum, F. Stratmann, U. Baltensperger & M. Gysel: Long-term cloud condensation nuclei number concentration, particle number size distribution and chemical composition measurements at regionally representative observatories. Atmospheric Chemistry and Physics 18 (4), 2853-2881, doi:10.5194/acp-18-2853-2018, 2018.

Schulz C., J. Schneider, B. A. Holanda, O. Appel, A. Costa, S. S. de Saa, V. Dreiling, D. Fütterer, T. Jurkat-Witschas, T. Klimach, C. Knote, M. Krämer, S. T. Martin, S. Mertes, M. L. Pöhlker, D. Sauer, C. Voigt, A. Walser, B. Weinzierl, H. Ziereis, M. Zöger, M. O. Andreae, P. Artaxo, L. A. T. Machado, U. Pöschl, M. Wendisch & S. Borrmann: Aircraft-based observations of isoprene-epoxydiol-derived secondary organic aerosol (IEPOX-SOA) in the tropical upper troposphere over the Amazon region. Atmospheric Chemistry and Physics 18 (20), 14979-15001, doi:10.5194/acp-18-14979-2018, 2018.

Shahpoury, P., Z. Kitanovsky & G. Lammel: Snow scavenging and phase partitioning of nitrated and oxygenated aromatic hydrocarbons in polluted and remote environments in central Europe and the European Arctic. Atmospheric Chemistry and Physics 18 (18), 13495-13510, doi:10.5194/acp-18-13495-2018, 2018.

Tamm, A., J. Caesar, N. Kunz, C. Colesie, H. Reichenberger & B. Weber: Ecophysiological properties of three biological soil crust types and their photoautotrophs from the Succulent Karoo, South Africa. Plant and Soil 429 (1-2), 127-146, doi:10.1007/s11104-018-3635-4, 2018.

Tong, HJ., P. S. J. Lakey, A. M. Arangio, J. Socorro, FX Shen, K. Lucas, W. H. Brune, U. Pöschl & M. Shiraiwa: Reactive Oxygen Species Formed by Secondary Organic Aerosols in Water and Surrogate Lung Fluid. Environmental Science & Technology 52 (20), 11642-11651, doi:10.1021/acs.est.8b03695, 2018.

Wang, J. P., W. Nie, YF. Cheng, YC. Shen, XG. Chi, JD. Wang, X. Huang, YN. Xie, P. Sun, Z. Xu, XM. Qi, H. Su & AJ. Ding: Light absorption of brown carbon in eastern China based on 3-year multi-wavelength aerosol optical property observations and an improved absorption Angstrom exponent segregation method. Atmospheric Chemistry and Physics 18 (12), 9061-9074, doi:10.5194/acp-18-9061-2018, 2018.

Wang, X., C. Chen, K. Binder, U. Kuhn, U. Pöschl, H. Su & Y. Cheng: Molecular dynamics simulation of the surface tension of aqueous sodium chloride: from dilute to highly supersaturated solutions and molten salt. Atmospheric Chemistry and Physics 18, 17077–17086, doi:10.5194/acp-18-17077-2018, 2018.

Weber, B., A. Tamm, S. Maier & E. Rodríguez-Caballero: Biological soil crusts of the Succulent Karoo: a review. African Journal of Range & Forest Science 35 (3&4): 335-350, doi:10.2989/10220119.2018.1527782, 2018.

Wehking, J., D. A. Pickersgill, R. M. Bowers, D. Teschner, U. Pöschl, J. Fröhlich-Nowoisky & V. R. Despres: Community composition and seasonal changes of archaea in coarse and fine air particulate matter. Biogeosciences 15, 4205-4214, doi:10.5194/bg-15-4205-2018, 2018.

Westmeier, D., A. Hahlbrock, C. Reinhardt, J. Fröhlich-Nowoisky, S. Wessler, C. Vallet, U. Pöschl, S. K. Knauer & R. H. Stauber: Nanomaterial-microbe cross-talk: physicochemical principles and (patho)biological consequences. Chemical Society Reviews 47 (14), doi:10.1039/c6cs00691d, 2018.

Williams, L., P. Jung, L.-J. Zheng, S. Maier, T. Peer, M. Grube, B. Weber & B. Büdel: Assessing recovery of Biological Soil Crusts across a latitudinal gradient in Western Europe. Restoration Ecology 26 (3), 543-554, doi:10.1111/rec.12579, 2018.

Zhang, YX., Q. Zhang, YF. Cheng, H. Su, HY. Li, M. Li, X. Zhang, AJ. Ding & KB. He: Amplification of light absorption of black carbon associated with air pollution. Atmospheric Chemistry and Physics 18 (13), 9879-9896, doi:10.5194/acp-18-9879-2018, 2018.

Zhang, YX., X. Li, M. Li, YX. Zheng, GN. Geng, CP. Hong, HY. Li, D. Tong, X. Zhang, YF. Cheng, H. Su, KB. He & Q. Zhang: Reduction in black carbon light absorption due to multi-pollutant emission control during APEC China 2014. Atmospheric Chemistry and Physics 18 (14), 10275-10287, doi:10.5194/acp-18-10275-2018, 2018.

Zhang, YX., H. Su, N. Ma, G. Li, S. Kecorius, Z. Wang, M. Hu, T. Zhu, K. He, A. Wiedensohler, Q. Zhang & Y. Cheng: Sizing of Ambient Particles From a Single-Particle Soot Photometer Measurement to Retrieve Mixing State of Black Carbon at a Regional Site of the North China Plain. Journal of Geophysical Research-Atmospheres 123 (22), 12778-12795, doi:10.1029/2018JD028810, 2018.

Book Chapters

Pöschl, U.: Air Pollution, Oxidative Stress, and Public Health in the Anthropocene. Health of People, Health of Planet and Our Responsibility. Springer, Cham., Al-Delaimy W., Ramanathan V., Sánchez Sorondo M. (eds), doi:10.1007/978-3-030-31125-4_7, 2020.

Doctoral Theses

Löbs, Nina: Cryptogams under the influence of tropical microclimate and their contribution to biosphere-atmosphere exchange. Universität Mainz, 2020.

Kunert, Anna: Protein interactions related to biological ice nucleation, allergies, and inflammation. Universität Mainz, 2020.

Könemann, Tobias: Laboratory and field characteriza-tion of a new online instrument for analysis of single bioaerosol particle fluorescence spec-tra. Universität Mainz, 2019.

Wang, Xiaoxiang: Investigation of the Surface Tension of Atmospheric Liquids by Molecular Dynamics Simulations. Universität Mainz, 2019.

Zhang, Minghui: Development of an in situ laser-induced fluorsescence spectrometer for real-time analysis of bioaerosols. Universität Mainz, 2019.

Ziegler, Kira: Inflammatory processes and TLR4 signaling influenced by nitrated proteins and related substances. Universität Mainz, 2019.

Wang, Xin: Comprehensive analyses of hygroscopicity and effective density of native and air pollutant-modified protein particles. Universität Mainz, 2019.

Pöhlker, Mira: Investigation of atmospheric aerosols and cloud condensation nuclei under pristine and polluted conditions. Universität Mainz, doi:10.25358/openscience-2838, 2018.

Mu, Qing: Regional modeling of polycyclic aromatic hydrocarbons and other persistent organic pollutants: model development and applications. Universität Mainz, 2018.

Neumann, Jan: Development and Application of Advanced Fluorescence Microscopy Techniques for the Investigation of Inflammatory Processes. Universität Mainz, 2018.

Pickersgill, Daniel: Computational analysis if Bioaerosol: The analysis of molecular genetic datasets in context of environmental factors. Universität Mainz, 2018.

Saturno Iribarren, Jorge Luis: Light absorption by carbonaceous aerosols over the Amazon rain forest. Universität Mainz, 2018.

Schink, Anne: Herbal extracts and their active compounds as modulators of the inflammatory signaling pathways of Toll-like receptor 2 and 4. Universität Mainz, 2018.

Wang, Kai: Chemical characterization of organic aerosol from Chinese cities using high resolution mass spectrometry. Universität Mainz, 2018.

Wehking, Jörn: Bioinformatic analyses of biogenic aerosol particles by classical and high-throughput sequencing: diversity, seasonal dynamics, and characterization of airborne microbial communities. Universität Mainz, 2018.

Li, Guo: Exchange of Volatile Organic Compounds at the Atmosphere-Soil Interface. Universität Mainz, 2018.

Octaviani, Mega: Investigation of Atmospheric Transport and Chemistry of Semivolatile Organic Pollutants Using Earth System Models. Universität Mainz, 2018.

Diploma/Master Theses

Brill, Sebastian: Bioaerosol emission patterns of tropical fungi in the Amazon region. Universität Mainz, 2020.

Paulsen, Hauke: The impact of local meteorology on bioaerosol size distribution in the central Amazon. Universität Mainz, 2019.

Bachelor Theses

Förster, Jan-David: Advancing the analytical scope of X-ray microspectroscopy for aerosols and geological samples. Universität Mainz, 2019.

Hildmann, Stefanie: Hydrochinone in synthetischen Lungenflüssigkeiten – Gleichgewicht mit den korrespondierenden Chinonen und Implentierung einer gaschromotographischen Bestimmungsmethode. Universität Mainz, 2018.

PARTICLE CHEMISTRY DEPARTMENT (S. Borrmann et al.)

Journal Articles

2020

Barnes, J. J., F. M. McCubbin, A. R. Santos, J. M. D. Day, J. W. Boyce, S. P. Schwenzer, U. Ott, I. A. Franchi, S. Messenger, M. Anand & C. B. Agee: Multiple early-formed water reservoirs in the interior of Mars. Nature Geoscience, 13(4), 260-264, doi:10.1038/s41561-020-0552-y, 2020.

Baumgartner, M., R. Weigel, A. H. Harvey, F. Plöger, U. Achatz & P. Spichtinger, P.: Reappraising the appropriate calculation of a common meteorological quantity: potential temperature. Atmospheric Chemistry and Physics, 20(24), 15585-15616. doi:10.5194/acp-20-15585-2020, 2020.

Celik, S., F. Drewnick, F. Fachinger, J. Brooks, E. Darbyshire, H. Coe, J.-D. Paris, P.G. Eger, J. Schuladen, I. Tadic, N. Friedrich, D. Dienhart, B. Hottmann, H. Fischer, J.N. Crowley, H. Harder & S. Borrmann: Influence of vessel characteristics and atmospheric processes on the gas and particle phase of ship emission plumes: In-situ measurements in the Mediterranean Sea and around the Arabian Peninsula, Atmos. Chem. Phys., 20, 4713-4734, doi:10.5194/acp-20-4713-2020, 2020.

Clemen, H.-C., J. Schneider, T. Klimach, F. Helleis, F. Köllner, A. Hünig, F. Rubach, S. Mertes, H. Wex, F. Stratmann, A. Welti, R. Kohl, F. Frank & S. Borrmann: Optimizing the detection, ablation, and ion extraction efficiency of a single-particle laser ablation mass spectrometer for application in environments with low aerosol particle concentrations. Atmospheric Measurement Techniques, 13(11), 5923-5953, doi:10.5194/amt-13-5923-2020, 2020.

Drewnick, F., J. Pikmann, F. Fachinger, L. Moormann, F. Sprang & S. Borrmann: Aerosol filtration efficiency of household materials for homemade face masks: Influence of material properties, particle size, particle electrical charge, face velocity, and leaks, Aerosol Science & Technology, doi:10.1080/02786826.2020.1817846, 2020.

Friedrich, N., I. Tadic, J. Schuladen, J. Brooks, E. Darbyshire, F. Drewnick, H. Fischer, J. Lelieveld & J. N. Crowley: Measurement of NO_X and NO_Y with a thermal dissociation cavity ring-down spectrometer (TD-CRDS): instrument characterisation and first deployment. Atmospheric Measurement Techniques, 13(10), 5739-5761, doi:10.5194/amt-13-5739-2020, 2020.

Glienke, S., A. B. Kostinski, R. A. Shaw, M. L. Larsen, J. P. Fugal, O. Schlenczek & S. Borrmann: Holographic observations of centimter-scale non-uniformities within marine stratocumulus clouds, J. Atmos. Sci., 77, 499 – 512, doi:10.1175/JAS-D-19-0164.1, 2020.

Hartmann, M., K. Adachi, O. Eppers, C. Haas, A. Herber, R. Holzinger, A. Hünerbein, E. Jäkel, C. Jentzsch, M. van Pinxteren, H. Wex, S. Willmes & F. Stratmann: Wintertime Airborne Measurements of Ice Nucleating Particles in the High Arctic: A Hint to a Marine, Biogenic Source for Ice Nucleating Particles, Geophys. Res. Lett., 47, e2020GL087770, doi:10.1029/2020GL087770, 2020.

Holanda, B. A., M.L. Pöhlker, D. Walter, J. Saturno, M. Sörgel, J. Ditas, F. Ditas, C. Schulz, M. A. Franco, Q. Wang, T. Donth, P. Artaxo, H. M. J. Barbosa, S. Borrmann, R. Braga, J. Brito, YF. Cheng, M. Dollner, J. W. Kaiser, T. Klimach, C. Knote, O. O. Krüger, D. Fuetterer, J. V. Lavric, N. Ma, L. A. T. Machado, J. Ming, F. G. Morais, H. Paulsen, D. Sauer, H. Schlager, J. Schneider, H. Su, B. Weinzierl, A. Walser, M. Wendisch, , H. Ziereis, M. Zoeger, U. Pöschl, M. O. Andreae & C. Pöhlker: Influx of African biomass burning aerosol during the Amazonian dry season through layered transatlantic transport of black carbon-rich smoke. Atmospheric Chemistry and Physics, 20 (8), 4757-4785, doi:10.5194/acp-20-4757-2020, 2020.

Leitner J., K. Metzler, C. Vollmer, C. Floss, P. Haenecour, J. Kodolány, D. Harries & P: Hoppe: The presolar grain inventory of the Mighei-type (CM) chondrites. Meteorit. Planet. Sci., 55, 1176-1206, doi:10.1111/maps.13412, 2020.

Lelieveld, J., F. Helleis, S. Borrmann, Y. Cheng, F. Drewnick, G. Haug, G., T. Klimach, J. Sciare, H. Su & U. Pöschl: Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments. International Journal of Environmental Research and Public Health, 17(21), 8114, doi:10.3390/ijerph17218114, 2020.

Lloyd. G, T. Choularton. K. N. Bower, J. Crosier, M. Gallagher, M. Flynn, J. Dorsey, D. Liu, J. Taylor, O. Schlenczek, J. Fugal, R. Cotton, P. Field, A. Blyth & S. Borrmann: Small Ice Particles at Slightly Supercooled Temperatures in Tropical Maritime Convection, Atmos. Chem. Phys., 20, 3895–3904, doi:10.5194/acp-20-3895-2020, 2020.

Lou, S., M. Shrivastava, R. C. Easter, Y. Yang, P.-L. Ma, H. Wang, M. J. Cubison, P. Campuzano-Jost, J. L. Jimenez, Q. Zhang, P. J. Rasch, J. E. Shilling, A. Zelenyuk, M. Dubey, P. Cameron-Smith, S. T. Martin, J. Schneider & C. Schulz: New SOA Treatments Within the Energy Exascale Earth System Model (E3SM): Strong Production and Sinks Govern Atmospheric SOA Distributions and Radiative Forcing. Journal of Advances in Modeling Earth Systems, 12, e2020MS002266, doi: 10.1029/2020MS002266, 2020.

Mei, Fan; J. Wang, J. M. Comstock, R. Weigel, M. Krämer, C. Mahnke, J. E. Shilling, J. Schneider, C. Schulz, C. N. Long, M. Wendisch, L. A. T. Machado, B. Schmid, T. Krisna, M. Pekour, J. Hubbe, A. Giez, B. Weinzierl, M. Zoeger, M. L. Pöhlker, H. Schlager, M. A. Cecchini, M. O. Andreae, S. T. Martin, S. S. de Sá, J. Fan, J. Tomlinson, S. Springston, U. Pöschl, P. Artaxo, C. Pöhlker, T. Klimach, A. Minikin, A. Afchine & S. Borrmann: Comparison of aircraft measurements during GoAmazon2014/5 and ACRIDICON-CHUVA, Atmos. Meas. Tech., 13, 661–684, doi:10.5194/amt-13-661-2020, 2020.

Molleker, S., F. Helleis, T. Klimach, O. Appel, H.-C. Clemen, A. Dragoneas, C. Gurk, A. Hünig, F. Köllner, F. Rubach, C. Schulz, J. Schneider & S. Borrmann: Application of an O-ring pinch device as a constant pressure inlet for airborne sampling, Atmos. Meas. Tech., 13 (7), 3651-3660, doi:10.5194/amt-13-3651-2020, 2020.

Nakoudi, K., C. Ritter, C. Boeckmann, D. Kunkel, O. Eppers, V. Rozanov, L. Mei, V. Pefanis, E. Jaekel, A. Herber, M. Maturilli & R. Neuber: Does the Intra-Arctic Modification of Long-Range Transported Aerosol Affect the Local Radiative Budget? (A Case Study). Remote Sensing, 12(13), 2112, doi:10.3390/rs12132112, 2020.

Patzek M., P. Hoppe, A. Bischoff, R. Visser & T. John: Hydrogen isotopic composition of CI- and CM-like clasts from meteorite breccias – sampling unknown sources of carbonaceous chondrite materials. Geochim. Cosmochim. Acta, 272, 177-197, doi:10.1016/j.gca.2019.12.017, 2020.

Polonik, P.; C. Knote, T. Zinner, F. Ewald, T. Kölling, B. Mayer, M. O. Andreae, T.Jurkat-Witschas, T. Klimach, C. Mahnke, S. Molleker, C. Pöhlker, M. L. Pöhlker, U. Pöschl, D. Rosenfeld, C. Voigt, R. Weigel & M. Wendisch: The challenge of simulating the sensitivity of the Amazonian cloudmicrostructure to cloud condensation nuclei number concentrations; Atmos. Chem. Phys., 20, 1591–1605, doi:10.5194/acp-20-1591-2020, 2020.

Theis, A., M. Szakáll, S. K. Mitra, A. Heymsfield & S. Borrmann: A Wind Tunnel Investigation on the Aerodynamics of Lobed Hailstones, Atmosphere, 11 (5), doi:10.3390/atmos11050494, 2020.

Vollmer, C., J. Leitner, D. Kepaptsoglou, Q. M. Ramasse, A. J. King, P. F. Schofield, A. Bischoff, T. Araki & P. Hoppe: A primordial ^{15}N-depleted organic component detected within the carbonaceous chondrite Maribo. Scientific Reports, 10(1), 20251, doi:10.1038/s41598-020-77190-z, 2020.

Vollmer, C., J. Leitner, D. Kepaptsoglou, Q. M. Ramasse, H. Busemann, H. & P. Hoppe: Isotopic compositions, nitrogen functional chemistry, and low-loss electron spectroscopy of complex organic aggregates at the nanometer scale in the carbonaceous chondrite Renazzo. Meteoritics and Planetary Science, 55(6), 1293-1319. doi:10.1111/maps.13389, 2020.

Weitzel, M., S. K. Mitra, M. Szakáll, J. P. Fugal & S. Borrmann: Application of holography and automated image processing for laboratory experiments on mass and fall speed of small cloud ice crystals. Atmos. Chem. Phys., 20, 14889–14901, doi:10.5194/acp-20-14889-2020, 2020.

Zanatta, M., H. Bozem, F. Köllner, J. Schneider, D. Kunkel, P. Hoor, J. de Faria, A. Petzold, U. Bundke, K. Hayden, R. M. Staebler, H. Schulz & A. B. Herber: Airborne survey of trace gases and aerosols over the Southern Baltic Sea: from clean marine boundary layer to shipping corridor effect, Tellus B: Chemical and Physical Meteorology, 72:1, 1-24, doi:10.1080/16000889.2019.1695349, 2020.

2019

Abbatt, J. P. D., W. R. Leaitch, A. A. Aliabadi, A. K. Bertram, J.-P. Blanchet, A. Boivin-Rioux, H. Bozem, J. Burkart, R. Y. W. Chang, J. Charette, J. P. Chaubey, R. J. Christensen, A. Cirisan, D. B. Collins, B. Croft, J. Dionne, G. J. Evans, C. G. Fletcher, M. Galí, R. Ghahremaninezhad, E. Girard, W. Gong, M. Gosselin, M. Gourdal, S. J. Hanna, H. Hayashida, A. B. Herber, S. Hesaraki, P. Hoor, L. Huang, R. Hussherr, V. E. Irish, S. A. Keita, J. K. Kodros, F. Köllner, F. Kolonjari, D. Kunkel, L. A. Ladino, K. Law, M. Levasseur, Q. Libois, J. Liggio, M. Lizotte, K.M. Macdonald, R. Mahmood, R., R.V. Martin, R. H. Mason, L. A. Miller, A. Moravek, E. Mortenson, E. L.Mungall, J. G. Murphy, M. Namazi, A.-L. Norman, N. T. O'Neill, J. R. Pierce, L. M. Russell, J. Schneider, H. Schulz, S. Sharma, M. Si, R. M. Staebler, N. S. Steiner, J. L. Thomas, K. von Salzen, J. J. B. Wentzell, M. D. Willis, G. R. Wentworth, J.-W. Xu & J. D. Yakobi-Hancock: Overview paper: New insights into aerosol and climate in the Arctic, Atmos. Chem. Phys., 19, 2527-2560, doi:10.5194/acp-19-2527-2019, 2019.

Albrecht, B., Ghate, V., Mohrmann, J., Wood, R., Zuidema, P., Bretherton, C., Schwartz, C., Eloranta, E., Glienke, S., Donaher, S., Sarkar, M., McGibbon, J., Nugent, A.D., Shaw, R.A., Fugal, J., Minnis, P., Paliknoda, R., Lussier, L., Jensen, J., Vivekanandan, J., Ellis, S., Tsai, P., Rilling, R., Haggerty,J., Campos, T., Stell, M., Reeves, M., Beaton, S., Allison, J., Stossmeister, G., Hall, S. & Schmidt, S.: Cloud System Evolution in the Trades (CSET): Following the Evolution of Boundary Layer Cloud Systems with the NSF/NCAR GV, Bull. Am. Meteorol. Soc., 100 (1), 93-121, doi:10.1175/BAMS-D-17-0180.1, 2019.

Bozem, H., P. Hoor, D. Kunkel, F. Köllner, J. Schneider, A. Herber, H. Schulz, W. R. Leaitch, A. A. Aliabadi, M. D. Willis, J. Burkart & J.P. D. Abbatt: Characterization of Transport Regimes and the Polar Dome during Arctic Spring and Summer using in-situ Aircraft Measurements, Atmos. Chem. Phys., 19, 15049–15071, doi:10.5194/acp-19-15049-2019, 2019.

Desai, N., S. Glienke, J. Fugal, & R. A. Shaw: Search for microphysical signatures of stochastic condensation in marine boundary layer clouds using airborne digital holography, Journal of Geophysical Research: Atmospheres, 124, 2739–2752, doi:10.1029/2018JD029033, 2019.

Eger, P.G., N. Friedrich, J. Schuladen, J. Shenolikar, H. Fischer, I. Tadic, H. Harder, M. Martinez, R. Rohloff, S. Tauer, F. Drewnick, F. Fachinger, J. Brooks, E. Darbyshire, J. Sciare, M. Pikridas, J. Lelieveld & J.N. Crowley: Shipborne measurements of $ClNO_2$ in the Mediterranean Sea and around the Arabian Peninsula during summer, Atmos. Chem. Phys., 19, 12121-12140, doi:10.5194/acp-19-12121-2019, 2019.

Ehrlich, A., M. Wendisch, C. Lüpkes, M. Buschmann, H. Bozem, D. Chechin, H.-C. Clemen, R. Dupuy, O. Eppers, J. Hartmann, A. Herber, E. Jäkel, E. Järvinen, O. Jourdan, U. Kästner, L.L. Kliesch, F. Köllner, M. Mech, S. Mertes, R. Neuber, E. Ruiz-Donoso, M. Schnaiter, J. Schneider, J. Stapf & M. Zanatta: A comprehensive in situ and remote sensing data set from the Arctic CLoud Observations Using airborne measurements during polar Day (ACLOUD) campaign, Earth Syst. Sci. Data, 11, 1853–1881, doi:10.5194/essd-11-1853-2019, 2019.

Fujiya W., P. Hoppe, T. Ushikubo, K. Fukuda, P. Lindgren, M. R. Lee, M. Koike, K. Shirai & Y. Sano: Migration of asteroids from the cold, outer solar system inferred from carbonate in meteorites, Nature Astronomy, doi:10.1038/s41550-019-0801-4, 2019.

Gute, E., L. Lacher, Z. A. Kanji, R. Kohl, J. Curtius, D. Weber, H. Bingemer, H.-C. Clemen, J. Schneider, M. Gysel-Beer, S. T. Ferguson & J. P. D. Abbatt, Field evaluation of a Portable Fine Particle Concentrator (PFPC) for ice nucleating particle measurements, Aerosol Science and Technology, doi: 10.1080/02786826.2019.1626346, 2019.

Gobbi, G.P., F. Barnaba, L. Di Liberto, A. Bolignano, F. Lucarelli, S. Nava, C. Perrino, A. Pietrodangelo, S. Basart, F. Costabile, D. Dionisi, U. Rizza, S. Canepari, R. Sozzi, M. Morelli, M. Manigrasso, F. Drewnick, C. Struckmeier, K. Poenitz & H. Wille: An inclusive view of Saharan dust advections to Italy and the Central Mediterranean, Atm. Env., 201, 242-256, doi:10.1016/j.atmosenv.2019.01.002, 2019.

Haslett, S., J. Taylor, M. Evans, E. Morris, B. Vogel, A. Dajuma, J. Brito, A. Batenburg, S. Borrmann, J. Schneider, C. Schulz, C. Denjean, T. Bourrianne, P. Knippertz, R. Dupuy, A. Schwarzenböck, D. Sauer, C. Flamant, J. Dorsey, J. Crawford & C. Hugh: Remote biomass burning dominates southern West African air pollution during the monsoon, Atmos. Chem. Phys., 19, 15217–15234, doi:10.5194/acp-19-15217-2019, 2019.

Hiranuma, N., K. Adachi, D. M. Bell, F. Belosi, H. Beydoun, B. Bhaduri, H. Bingemer, C. Budke, H.-C. Clemen, F. Conen, K. M. Cory, J. Curtius, P. J. DeMott, O. Eppers, S. Grawe, S. Hartmann, N. Hoffmann, K. Höhler, E. Jantsch, A. Kiselev, T. Koop, G. Kulkarni, A. Mayer, M. Murakami, B. J. Murray, A. Nicosia, M. D. Petters, M. Piazza, M. Polen, N. Reicher, Y. Rudich, A. Saito, G. Santachiara, T. Schiebel, G. P. Schill, J. Schneider, L. Segev, E. Stopelli, R. C. Sullivan, K. Suski, M. Szakáll, T. Tajiri, H. Taylor, Y. Tobo, R. Ullrich, D. Weber, H. Wex, T. F. Whale, C. L. Whiteside, K. Yamashita, A. Zelenyuk & O. Möhler: A comprehensive characterization of ice nucleation by three different types of cellulose particles immersed in water, Atmos. Chem. Phys., 19, 4823-4849, doi:10.5194/acp-19-4823-2019, 2019.

Höpfner, M., J. Ungermann, S. Borrmann, R. Wagner, R. Spang, M. Riese, G. Stiller, O. Appel, A. M. Batenburg, S. Bucci, F. Cairo, A. Dragoneas, F. Friedl-Vallon, A. Hünig, S. Johansson, L. Krasauskas, B. Legras, T. Leisner, C. Mahnke, O. Möhler, S. Molleker, R. Müller, T. Neubert, J. Orphal, P. Preusse, M. Rex, H. Saathoff, F. Stroh, R. Weigel & I. Wohltmann: Ammonium nitrate particles formed in upper troposphere from ground ammonia sources during Asian monsoons, Nature Geoscience, doi:10.1038/s41561-019-0385-8, 2019.

Hoppe P., R. J. Stancliffe R. J., M. Pignatari & S. Amari: Isotopic signatures of supernova nucleosynthesis in presolar silicon carbide grains of Type AB with super-solar 14N/15N ratios. Astrophys. Journal, 887 (8), doi:10.3847/1538-4357/ab521c, 2019.

Hoppe, P., M. Pignatari & S. Amari: Presolar SiC grains of Type AB with isotopically light nitrogen: Contributions from supernovae? In Nuclei in the Cosmos XV – NIC2018 (ed. A. Formicola, Springer Proceedings in Physics, 373-376, doi:10.1007/978-3-030-13876-9_68, 2019.

Huffman, J. Alex, A. E. Perring, N. J. Savage, B. Clot, B. Crouzy, F. Tummon, O. Shoshanim, B. Damit, J. Schneider, V. Sivaprakasam, M. A. Zawadowicz, I. Crawford, M. Gallagher, D. Topping, D. Doughty, S. C. Hill & Y. Pan: Real-time sensing of bioaerosols: Critical review and current perspectives, Aerosol Science and Technology, 54 (5), doi:10.1080/02786826.2019.1664724, 2019.

Jacob D. E., B. Ruthensteiner, P. Trimby, H. Henry, S. O. Martha, J. Leitner, L. M. Otter & J. Scholz: Architecture of Anoteropora latirostris (Bryozoa, Cheilostomata) and implications for their biomineralization. Sci. Rep., 9:11439, doi:10.1038/s41598-019-47848-4, 2019.

Jochum K.P., A. Jentzen, R. Schiebel, B. Stoll, U. Weis, J. Leitner, J. Repschläger, D. Nürnberg & G. H Haug: High-Resolution Mg/Ca Measurements of Foraminifer Shells using Femtosecond LA–ICP–MS for Paleoclimate Proxy Development. Geochem. Geophys. Geosyst., 20, 2053–2063, doi:10.1029/2018GC008091, 2019.

Jost, A., M. Szakall, K. Diehl, S. K. Mitra, A. Hundertmark, B. S. Klug & S. Borrmann: The effect of turbulence on the accretional growth of graupel, Journal of the Atmospheric Sciences, 76, 3047–3061, doi:10.1175/JAS-D-18-0200.1D-18-0200.1, 2019.

Leitner J. & P. Hoppe: A new population of dust from stellar explosions among meteoritic stardust. Nature Astronomy, 3, 725-729, doi:10.1038/s41550-019-0788-x, 2019.

Macholdt D. S., J.-D. Förster, M. Müller, B. Weber, M. Kappl, A. L. D. Kilcoyne, M. Weigand, J. Leitner, K. P. Jochum, C. Pöhlker & M.O. Andreae: Artifacts from manganese reduction in rock samples prepared by focused ion beam (FIB) slicing for X-ray microspectroscopy. Geosci. Instrum. Method. Data Syst., 8, 1–15, doi:10.5194/gi-8-97-2019, 2019.

O'Shea, S. J., J. Crosier, J. Dorsey, W. Schledewitz, I. Crawford, S. Borrmann, R. Cotton & A. Bansemer: Revisiting particle sizing using grayscale optical array probes: evaluation using laboratory experiments and synthetic data: Atmos. Meas. Tech., 12, 3067–3079, doi:10.5194/amt-12-3067-2019, 2019.

Ott U., T. Stephan, P. Hoppe & M. Savina: Isotopes of barium as chronometer for supernova dust formation. Astrophys. J., 885, doi:10.3847/1538-4357/ab41f3, 2019.

Otter L., O. B. A. Agbaje, M. Kilburn, C. Lenz, H. Henry, P. Trimby, P. Hoppe & D. Jacob: Insights into architecture, growth dynamics, and biomineralization from pulsed Sr-labelled Katelysia rhytiphora shells (Mollusca, Bivalvia), Biogeosciences, 16, 3439–3455, doi:10.5194/bg-16-3439-2019, 2019.

Ramseyer K., K. Juhász-Bodnár, C. Büker, P. Hoppe, A. Matter, J. Terken, J.J. Amthor & F. Driehorst: Tectonically controlled diagenesis and fluid evolution in the Al Khlata reservoir sandstones, Sultanate of Oman. In H. R. AlAnzi, R. A. Rahmani, R. J. Steel, and O. M. Soliman, eds., Silici clastic reservoirs of the Arabian plate. AAPG Memoir 116, p. 37–82, doi:10.1306/13642173M1183804, 2019.

Stephan T., R. Trappitsch, P. Hoppe, A.M. Davis, M. Pellin & O. S. Pardo: Molybdenum isotopes in presolar silicon carbide grains: Details of s-process nucleosynthesis in parent stars and implications for r- and p-processes. Astrophys. J., 877, 101 (16pp), doi:10.3847/1538-4357/ab1c60, 2019.

Wendisch, M., A. Macke, A. Ehrlich, C. Lüpkes, M. Mech, D. Chechin, K. Dethloff, C.B. Velasco, H. Bozem, M. Brückner, H. Clemen, S. Crewell, T. Donth, R. Dupuy, K. Ebell, U. Egerer, R. Engelmann, C. Engler, O. Eppers, M. Gehrmann, X. Gong, M. Gottschalk, C. Gourbeyre, H. Griesche, J. Hartmann, M. Hartmann, B. Heinold, A. Herber, H. Herrmann, G. Heygster, P. Hoor, S. Jafariserajehlou, E. Jäkel, E. Järvinen, O. Jourdan, U. Kästner, S. Kecorius, E.M. Knudsen, F. Köllner, J. Kretzschmar, L. Lelli, D. Leroy, M. Maturilli, L. Mei, S. Mertes, G. Mioche, R. Neuber, M. Nicolaus, T. Nomokonova, J. Notholt, M. Palm, M. van Pinxteren, J. Quaas, P. Richter, E. Ruiz-Donoso, M. Schäfer, K. Schmieder, M. Schnaiter, J. Schneider, A. Schwarzenböck, P. Seifert, M.D. Shupe, H. Siebert, G. Spreen, J. Stapf, F. Stratmann, T. Vogl, A. Welti, H. Wex, A. Wiedensohler, M. Zanatta & S. Zeppenfeld: The Arctic Cloud Puzzle: Using ACLOUD/PASCAL Multiplatform Observations to Unravel the Role of Clouds and Aerosol Particles in Arctic Amplification. Bull. Amer. Meteor. Soc., 100, 841–871, doi:10.1175/BAMS-D-18-0072.1, 2019.

2018

Andreae, M. O., A. Afchine, R. Albrecht, B. A. Holanda, P. Artaxo, H. M. J. Barbosa, S. Borrmann, M. A. Cecchini, A. Costa, M. Dollner, D. Fütterer, E. Järvinen, T. Jurkat, T. Klimach, T. Konemann, C. Knote, M. Krämer, T. Krisna, L. A. T. Machado, S. Mertes, A. Minikin, C. Pöhlker, M. L. Pöhlker, U. Pöschl, D. Rosenfeld, D. Sauer, H. Schlager, M. Schnaiter, J. Schneider, C. Schulz, A. Spanu, V. B. Sperling, C. Voigt, A. Walser, J. Wang, B. Weinzierl, M. Wendisch & H. Ziereis: Aerosol characteristics and particle production in the upper troposphere over the Amazon Basin, Atmos. Chem. Phys., 18, 921-961, doi:10.5194/acp-18-921-2018, 2018.

Barth M. I. F., D. Harries, F. Langenhorst & P. Hoppe: Sulfide-oxide assemblages in Acfer 094 – Clues to nebular metal-gas interactions. Meteorit. Planet. Sci., 53, 187-203, doi:10.1111/maps.12992, 2018

Beck, A., J. Henneberger, J.P. Fugal, R. O. David, L. Lacher & U. Lohmann: Impact of surface and near-surface processes on ice crystal concentrations measured at mountain-top research stations, Atmos. Chem. Phys., 18, 8909–8927, doi:10.5194/acp-18-8909-2018, 2018.

DeMott, P. J., O. Möhler, D. J. Cziczo, N. Hiranuma, M. D. Petters, S. S. Petters, O. Eppers, M. Szakáll, et al.: „The Fifth International Workshop on Ice Nucleation phase 2 (FIN-02). Laboratory intercomparison of ice nucleation measurements. Atmos. Meas. Tech. 11 (11), 6231–6257. doi:10.5194/amt-11-6231-2018, doi:10.5194/amt-11-6231-2018, 2018.

de Sá, S. S., B. B. Palm, P. Campuzano-Jost, D. A. Day, W. Hu, G. Isaacman-VanWertz, L. D. Yee, J. Brito, S. Carbone, I. O. Ribeiro, G. G. Cirino, Y. Liu, R. Thalman, A. Sedlacek, A. Funk, C. Schumacher, J. E. Shilling, J. Schneider, P. Artaxo, A. H. Goldstein, R. A. F. Souza, J. Wang, K. A. McKinney, H. Barbosa, M. L. Alexander, J. L. Jimenez & S. T. Martin: Urban influence on the concentration and composition of submicron particulate matter in central Amazonia, Atmos. Chem. Phys., 18, 12185-12206, doi:10.5194/acp-18-12185-2018, 2018.

Diehl, K. & V. Grützun: Model simulations with COSMO-SPECS: Impact of heterogeneous freezing modes and ice nucleating particle types on ice formation and precipitation in a deep convective cloud. Atmos. Chem. Phys., 18, 1-21, doi:10.5194/acp-18-3619-2018, 2018.

Di Ianni, A., F. Costabile, F. Barnaba, L. Di Liberto, K. Weinhold, A. Wiedensohler, C. Struckmeier, F. Drewnick, G. P. Gobbi: Black Carbon Aerosol in Rome (Italy): Inference of a Long-Term (2001-2017) Record and Related Trends from AERONET Sun-Photometry Data. Atmosphere 9, 81, doi:10.339/atmos9030081, 2018.

Eriksen Hammer, S., S. Mertes, J. Schneider, M. Ebert, K. Kandler & S. Weinbruch: Composition of ice particle residuals in mixed-phase clouds at Jungfraujoch (Switzerland): enrichment and depletion of particle groups relative to total aerosol, Atmos. Chem. Phys., 18, 13987-14003, doi:10.5194/acp-18-13987-2018, 2018.

Fachinger, F., F. Drewnick, R. Gieré & S. Borrmann: Communal biofuel burning for district heating: Emissions and immissions from medium-sized (0.4 and 1.5 MW) facilities. Atmospheric Environment 181, 177-185, doi:10.1016/j.atmosenv.2018.03.014, 2018.

Gobbi, G.P., F. Barnaba, L. Di Liberto, A. Bolignano, F. Lucarelli, S. Nava, C. Perrino, A. Pietrodangelo, S. Basart, F. Costabile, D. Dionisi, U. Rizza, S. Canepari, R. Sozzi, M. Morelli, M. Manigrasso, F. Drewnick, C. Struckmeier, k. Poenitz & H. Wille: An inclusive view of Saharan dust advections to Italy and the Central Mediterranean. Atmospheric Environment 201, 242-256, 2019, doi:10.1016/j.atmosenv.2019.01.002, 2018.

Grawe, S., S. Augustin-Bauditz, H.-C. Clemen, M. Ebert, S. Eriksen Hammer, J. Lubitz, N. Reicher, Y. Rudich, J. Schneider, R. Staacke, F. Stratmann, A. Welti & H. Wex: Coal fly ash: linking immersion freezing behavior and physicochemical particle properties, Atmos. Chem. Phys., 18, 13903-13923, doi:10.5194/acp-18-13903-2018, 2018.

Heymsfield, A., M. Szakáll, A. Jost, I. Giammanco & R. Wright, A comprehensive observational study of graupel and hail terminal velocity, mass flux, and kinetic energy. J. Atmos. Sci., 75 (11), 3861-3885, doi:10.1175/JAS-D-18-0035.1, 2018.

Herenz, P., H. Wex, S. Henning, T. B. Kristensen, F. Rubach, A. Roth, S. Borrmann, H. Bozem, H. Schulz & F. Stratmann: Measurements of aerosol and CCN properties in the Mackenzie River delta (Canadian Arctic) during spring–summer transition in May 2014, Atmos. Chem. Phys., 18, 4477-4496, doi:10.5194/acp-18-4477-2018, 2018.

Hoppe P., M. Pignatari, J. Kodolányi, E. Gröner & S. Amari: NanoSIMS isotope studies of rare types of presolar silicon carbide grains from the Murchison meteorite: Implications for supernova models and the role of 14C. Geochim. Cosmochim. Acta, 221, 182-199, doi:10.1016/j.gca.2017.01.051, 2018.

Hoppe, P., J. Leitner & J. Kodolányi: New insights into the Galactic chemical evolution of magnesium and silicon isotopes from studies of silicate stardust. Astrophys. J. 69, 47 (13pp), doi:10.3847/1538-4357/aaec0a, 2018.

Hoppe, P., M. Rubin & K. Altwegg: Presolar isotopic signatures in meteorites and comets: New insights from the Rosetta mission to comet 67P/Churyumov-Gerasimenko. Space Sci. Rev., 214, 106 (28pp), doi:10.1007/s11214-018-0540-3, 2018.

Kodolányi, J., C. Vollmer, P. Hoppe & M. Müller: Structural investigation of silicon carbide X grains: Constraints on condensation in supernova ejecta. Astrophys. J., 868, 34 (28pp), doi:10.3847/1538-4357/aae482, 2018.

Kodolanyi J., T. Stephan, R. Trappitsch, P. Hoppe, M. Pignatari, A.M. Davis & M.J. Pellin: Iron and nickel isotope compositions of presolar silicon carbide grains from supernovae. Geochim. Cosmochim. Acta, 221, 127-144, doi:10.1016/j.gca.2017.05.029, 2018.

Krisna, T. C.; M. Wendisch, A. Ehrlich, E. Jäkel, F. Werner, R. Weigel, S. Borrmann, C. Mahnke, U. Pöschl, M. O. Andreae, C. Voigt & L. A. T. Machado; Comparing airborne and satellite retrievals of cloud optical thickness and particle effective radius using a spectral radiance ratio technique: two case studies for cirrus and deep convective clouds; Atmos. Chem. Phys., 18, 4439-4462, doi:10.5194/acp-18-4439-2018, 2018.

Larsen, M. L., R. A. Shaw, A. B. Kostinski & S. Glienk: Fine-Scale Droplet Clustering in Atmospheric Clouds: 3D Radial Distribution Function from Airborne Digital Holography. Phys. Rev. Lett., 121, 204501, doi:10.1103/PhysRevLett.121.204501, 2018.

Leitner J., P. Hoppe P. & J. Zipfel: A study of presolar material in hydrated lithic clasts from metal-rich carbonaceous chondrites. Meteorit. Planet. Sci., 53, 204-231, doi:10.1111/maps.12994, 2018.

Leitner J., C. Vollmer, T. Henkel, U. Ott & P. Hoppe: An isotopic, elemental and structural study of silicon nitride from enstatite chondrites. Geochim. Cosmochim. Acta, 235, 153-172, doi:10.1016/j.gca.2018.05.025, 2018.

Leitner J., P. Hoppe, C. Floss, F. Hillion & T. Henkel: Correlated nanoscale characterization of a unique complex oxygen-rich stardust grain: Implications for circumstellar dust formation. Geochim. Cosmochim. Acta, 221, 255-274, doi:10.1016/j.gca.2017.05.003, 2018.

Machado, L. A. T., A. J. P. Calheiros, T. Biscaro, S. Giangrande, M. A. F. Silva Dias, M. A. Cecchini, R. Albrecht, M. O. Andreae, W. F. Araujo, P. Artaxo, S. Borrmann, R. Braga, C. Burleyson, C. W. Eichholz, J. Fan, Z. Feng, G. F. Fisch, M. P. Jensen, S. T. Martin, U. Pöschl, C. Pöhlker, M. L. Pöhlker, J.-F. Ribaud, D. Rosenfeld, J. M. B. Saraiva, C. Schumacher, R. Thalman, D. Walter & M. Wendisch: Overview: Precipitation characteristics and sensitivities to environmental conditions during GoAmazon2014/5 and ACRIDICON-CHUVA, Atmos. Chem. Phys., 18, 6461-6482, doi:10.5194/acp-18-6461-2018, 2018.

Nakoudi, K., C. Ritter, C. Böckmann, D. Kunkel, O. Eppers, V. Rozanov, L. Mei, V. Pefanis, E. Jäkel, A. Herber, M. Maturilli, R. Neuber: Does the Intra-Arctic Modification of Long-Range Transported Aerosol Affect the Local Radiative Budget? (A Case Study). Remote Sens, 12, 2112, doi:10.3390/rs12132112, 2020.

Nguyen, A. N., L. R. Nittler, C. M. O. Alexander & P. Hoppe.: Titanium isotopic compositions of rare presolar SiC grain types from the Murchison meteorite. Geochim. Cosmochim. Acta, 221, 162-181, doi:10.1016/j.gca.2017.02.026, 2018.

Pignatari M., P. Hoppe, R. Trappitsch, C. Fryer, F.X. Timmes, F. Herwig & R. Hirschi: The neutron capture process in the He shell in core-collapse supernovae: Presolar silicon carbide grains as a diagnostic tool for nuclear astrophysics. Geochim. Cosmochim. Acta, 221, 37-46, doi:10.1016/j.gca.2017.06.005, 2018.

Rao, M. N., L. E. Nyquist, D. K. Ross, S. R. Sutton, P. Hoppe, C. Shih, S. W. Wentworth & D. H. Garrison: Signatures of Martian regolith components entrained in some impact – melt glasses in shergottites. Meteo. Planet. Sci., 53, 2558-2582, doi:10.1111/maps.13177, 2018.

Saturno, J., F. Ditas, M. Penning de Vries, B. A. Holanda, M. L. Pöhlker, S. Carbone, D. Walter, N. Bobrowski, J. Brito, X. Chi, A. Gutmann, I. Hrabe de Angelis, IL. A. T. Machado, D. Moran-Zuloaga, J. Rüdiger, J. Schneider, C. Schulz, Q. Wang, M. Wendisch, P. Artaxo, T. Wagner, U. Pöschl, M. O. Andreae & C. Pöhlker: African volcanic emissions influencing atmospheric aerosols over the Amazon rain forest, Atmos. Chem. Phys., 18, 10391-10405, doi: 10.5194/acp-18-10391-2018, 2018.

Schulz, C., J. Schneider, B. A. Holanda, O. Appel, A. Costa, S. S. de Sá, V. Dreiling, D. Fütterer, T. Jurkat-Witschas, T. Klimach, C. Knote, M. Krämer, S. T. Martin, S. Mertes, M. L. Pöhlker, D. Sauer, C. Voigt, A. Walser, B. Weinzierl, H. Ziereis, M. Zöger, M. O. Andreae, P. Artaxo, L. A. T. Machado, U. Pöschl, M. Wendisch & S. Borrmann: Aircraft-based observations of isoprene-epoxydiol-derived secondary organic aerosol (IEPOX-SOA) in the tropical upper troposphere over the Amazon region, Atmos. Chem. Phys., 18, 14979-15001, doi:10.5194/acp-18-14979-2018, 2018.

Stephan T., R. Trappitsch, A. M. Davis, M. J. Pellin, D. Rost, M. R. Savina, M. Jadhav, C. H. Kelly, F. Gyngard, P. Hoppe & N. Dauphas: Strontium and barium isotopes in presolar silicon carbide grains measured with CHILI - two types of X grains. Geochim. Cosmochim. Acta, 221, 109-126, doi:10.1016/j.gca.2017.05.001, 2018.

Szakáll, M. & I. Urbich, Wind tunnel study on the size distribution of droplets after collision induced breakup of levitating water drops; Atmos. Res., 213, 51-56, doi:10.1016/j.atmosres.2018.05.007, 2018.

Vescovi, D., M. Busso, S. Palmerini, O. Tripella, S. Cristallo, L. Piersanti, A. Chieffi, M. Limongi, P. Hoppe & K.-L. Kratz: The origin of the early solar system radioactivities. Problems with the asymptotic giant branch and massive star scenarios. Astrophys. J., 863, 115 (21pp), doi:10.3847/1538-4357/aad191, 2018.

Weger, M., B. Heinold, C. Engler, U. Schumann, A. Seifert, R. Fößig, C. Voigt, H. Baars, U. Blahak, S. Borrmann, C. Hoose, S. Kaufmann, M. Krämer, P. Seifert, F. Senf, J. Schneider & I. Tegen: The impact of mineral dust on cloud formation during the Saharan dust event in April 2014 over Europe, Atmos. Chem. Phys., 18, 17545-17572, doi:10.5194/acp-18-17545-2018, 2018.

Conference Papers

Hoppe, P., M. Pignatari & S. Amari: Presolar SiC Grains of Type AB with Isotopically Light Nitrogen: Contributions from Supernovae?, in Nuclei in the Cosmos XV: Conference proceedings, 373–376., doi:10.1007/978-3-030-13876-9_68, 2019.

Ramseyer, K., K. Juhász-Bodnár, C. Büker, P. Hoppe, A. Matter, J. Terken, J. E. Amthor & F. Driehorst: Tectonically Controlled Diagenesis and Fluid Evolution in Al Khlata Reservoir Sandstones, Sultanate of Oman, in Siliciclastic Reservoirs of the Arabian Plate: Contains 11 papers selected from an AAPG Geoscience Technology Workshop (GTW) by the same title, held in Kuwait in 2015, as well as a few invited contributions, 37–82., doi:10.1306/13642173M1183804, 2019.

Gong, W., S. Beagley, J. Zhang, R. Staebler, A. A. Aliabadi, S. Sharma, D. Tarasick, J. Burkart, M. Willis, G. Wentworth, J. Murphy, H. Bozem, F. Köllner, J. Schneider, A. Herber, W. R. Leaitch & J. Abbatt: Modelling Regional Air Quality in the Canadian Arctic: Simulation of an Arctic Summer Field Campaign, In: Mensink C., Kallos G. (eds) Air Pollution Modeling and its Application XXV. ITM 2016. Springer Proceedings in Complexity. Springer, Cham., 401-406, doi:10.1007/978-3-319-57645-9_63, 2018.

Doctoral Theses

Hünig, Andreas: Development, characterization, and first field deployments of a novel aerosol mass spectrometer combining laser ablation and flash vaporization techniques for aircraft application at high altitudes. Universität Mainz, 2020.

Glienke, Susanne: Aircraft-borne In-Situ Measurements of Microphysical Properties of Marine Stratocumulus Clouds. Universität Mainz, 2019.

Schulz, Christiane: Secondary organic aerosol in the pristine amazonian atmosphere: Chemical proterties, formation pathways, and interations with clouds. Universität Mainz, 2019.

Köllner, Franziska: Aerosol particles in the summertime arctic lower troposhere: Chemical composition, sources, and formation. Universität Mainz, 2019

Weitzel, Maximilian: Application of holography and automated image processing for laboratory experiments on mass and fall speed of small cloud ice crystals. Universität Mainz, 2019.

Schütze, Katharina: Sammlung und Charakterisierung von Aerosolpartikeln in der polaren Stratosphäre. Zusammen betreut mit. Stephan Weinbruch, TU Darmstadt, 2018.

Ludwig, Anna: Characterization Schütz, Katharina: Sammlung und Charakterisierung von Aerosolpartikeln in der polaren Stratosphäre. Zusammen betreut mit. Stephan Weinbruch, TU Darmstadt, 2018.

Mahnke, Christoph: Untersuchungen zu Wolkenbildung und Aerosolmikrophysik in der tropischen Troposphäre und UT/LS: Messtechnik und flugzeuggetragene in-situ Beobachtungen. Universität Mainz, 2018.

Schlenczek, Oliver: Airborne and ground-based holographic measurement of hydrometeors in liquid-phase, mixed-phase and ice clouds. Universität Mainz, 2018.

Master Theses

Celik, Siddika: Untersuchung der Gas- und Partikelphase von Schiffsemissionen im Mittelmeer und um die Arabische Halbinsel. Univerität Mainz, 2019.

Ludwig, Anna: Characterization and further development of an aerosol mass spectrometer for routine measurements in IAGOS-CARIBIC. Universität Mainz, 2019.

Klug, Birte Salome: Numerical simulations of turbulence at a vertical wind tunnel. Universität Mainz, 2018.

Bachelor Theses

Debertshäuser, Michael: Synergetische Studie vom Immersionsgefrieren in einem Windkanal und in einem akustischem Levitator. Universität Mainz, 2019.

Willimzik, Laura Henriette: Eine Windkanal-Studie zur Aerodynamik von modellhaften Hagelkörnern, Universität Mainz (AG Szakáll, IPA), 2019.

Schalamon, Florina: Thermographic Observation of the Onset Conditions for Melting of Hail in the Vertical Wind Tunnel Mainz. Universität Mainz (AG Szakáll, IPA), 2019.

Christian Philipp Lackner: Untersuchung zum Immersionsgefrieren von Wüstenstaub in einem akustischen Levitator. Universität Mainz, 2018.

FURTHER RESEARCH GROUPS

Aerosols & Regional Air Quality Group (Y. Cheng et al.)

Journal Articles

2020

Chen, Y., Y. Cheng, N. Ma, C. Wei, L. Ran, R. Wolke, J. Groess, Q. Wang, A. Pozzer, H. A. C. D. van der Gon, G. Spindler, J. Lelieveld, I. Tegen, H. Su & A. Wiedensohler: Natural sea-salt emissions moderate the climate forcing of anthropogenic nitrate. Atmospheric Chemistry and Physics, 20(2), 771-786, doi:10.5194/acp-20-771-2020, 2020.

Gao, M., Z. Han, Z. Tao, J. Li, J.-E. Kang, K. Huang, X. Dong, B. Zhuang, S. Li, B. Ge, Q. Wu, H.-J. Lee, C.-H. Kim, J. S. Fu, T. Wang, M. Chin, M. Li, J.-H. Woo, Q. Zhang, Y. Cheng, Z. Wang & G. R. Carmichael: Air quality and climate change, Topic 3 of the Model Inter-Comparison Study for Asia Phase III (MICS-Asia III) - Part 2: aerosol radiative effects and aerosol feedbacks. Atmospheric Chemistry and Physics, 20(2), 1147-1161, doi:10.5194/acp-20-1147-2020, 2020.

Holanda, B. A., M. L. Pöhlker, D. Walter, J. Saturno, M. Sörgel, J. Ditas, J., F. Ditas, C. Schulz, M. A. Franco, Q. Wang, T. Donth, P. Artaxo, H. M. J. Barbosa, S. Borrmann, R. Braga, J. Brito, Y. Cheng, M. Dollner, J. W. Kaiser, T. Klimach, C. Knote, O. O. Krüger, D. Fütterer, J. V. Lavrič, N. Ma, L. A. T. Machado, J. Ming, F. G. Morais, H. Paulsen, D. Sauer, H. Schlager, J. Schneider, H. Su, B. Weinzierl, A. Walser, M. Wendisch, H. Ziereis, M. Zöger, U. Pöschl, M. O. Andreae & C. Pöhlker: Influx of African biomass burning aerosol during the Amazonian dry season through layered transatlantic transport of black carbon-rich smoke. Atmospheric Chemistry and Physics, 20(8), 4757-4785, doi:10.5194/acp-20-4757-2020, 2020.

Kong, L., X. Tang, J. Zhu, Z. Wang, J. S. Fu, X. Wang, S. Itahashi, K. Yamaji, T. Nagashima, H.-J. Lee, C.-H. Lee, C.-Y. Lin, L. Chen, M. Zhang, Z. Tao, J. Li, M. Kajino, H. Liao, Z. Wang, K. Sudo, Y. Wang, Y. Pan, G. Tang, M. Li, Q. Wu, B. Ge & G. R. Carmichael: Evaluation and uncertainty investigation of the NO_2, CO and NH_3 modeling over China under the framework of MICS-Asia III. Atmospheric Chemistry and Physics, 20(1), 181-202, doi:10.5194/acp-20-181-2020, 2020.

Kuang, Y., Y. He, W. Xu, B. Yuan, G. Zhang, Z. Ma, C. Wu, C. Wang, S. Wang, S. Zhang, J. Tao, N. Ma, H. Su, Y. Cheng, M. Shao & Y. Sun: Photochemical Aqueous-Phase Reactions Induce Rapid Daytime Formation of Oxygenated Organic Aerosol on the North China Plain. Environmental Science & Technology, 54(7), 3849-3860, doi:10.1021/acs.est.9b06836, 2020.

Kuang, Y., Y. He, W. Xu, P. Zhao, Y. Cheng, G. Zhao, G., J. Tao, N. Ma & H. Su: Distinct diurnal variation in organic aerosol hygroscopicity and its relationship with oxygenated organic aerosol. Atmospheric Chemistry and Physics, 20(2), 865-880, doi:10.5194/acp-20-865-2020, 2020.

Lei, T., Ma, N., Hong, J., Tuch, T., Wang, X., Wang, Z., M. L. Pöhlker, M. Ge, W. Wang, E. Mikhailov, T. Hoffmann, U. Pöschl, H. Su, A. Wiedensohler & Y. Cheng: Nano-hygroscopicity tandem differential mobility analyzer (nano-HTDMA) for investigating hygroscopic properties of sub-10nm aerosol nanoparticles. Atmospheric Measurement Techniques, 13(10), 5551-5567, doi:10.5194/amt-13-5551-2020, 2020.

Lelieveld, J., F. Helleis, S. Borrmann, Y. Cheng, F. Drewnick, G. Haug, T. Klimach, J. Sciare, H. Su & U. Pöschl: Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments. International Journal of Environmental Research and Public Health, 17(21), 8114, doi:10.3390/ijerph17218114, 2020.

Leung, D. M., H. Shi, B. Zhao, J. Wang, E. M. Ding, Y. Gu, H. Zheng, G. Chen, K.-N. Liou, S. Wang, J. D. Fast, G. Zheng, J. Jiang, X. Li & J. H. Jiang: Wintertime Particulate Matter Decrease Buffered by Unfavorable Chemical Processes Despite Emissions Reductions in China. Geophysical Research Letters, 47(14): e2020GL087721, doi:10.1029/2020GL087721, 2020.

Li, G., H. Su, N. Ma, G. Zheng, U. Kuhn, M. Li, T. Klimach, U. Pöschl & Y. Cheng: Multifactor colorimetric analysis on pH-indicator papers: an optimized approach for direct determination of ambient aerosol pH. Atmospheric Measurement Techniques, 13(11), 6053-6065, doi:10.5194/amt-13-6053-2020, 2020.

Liu, L., Y. Cheng, S. Wang, C. Wei, M. L. Pöhlker, C. Pöhlker, P. Artaxo, M. Shrivastava, M. O. Andreae, U. Pöschl & H. Su: Impact of biomass burning aerosols on radiation, clouds, and precipitation over the Amazon: relative importance of aerosol–cloud and aerosol–radiation interactions. Atmospheric Chemistry and Physics, 20(21), 13283-13301, doi:10.5194/acp-20-13283-2020, 2020.

Shinozuka, Y., P. E. Saide, G. A. Ferrada, S. P. Burton, R. Ferrare, S. J. Doherty, H. Gordon, K. Longo, M. Mallet, Y. Feng, Q. Wang, Y. Cheng, A. Dobracki, S. Freitag, S. G. Howell, S. LeBlanc, C. Flynn, M. Segal-Rosenhaimer, K. Pistone, J. R. Podolske, E. J. Stith, J. R. Bennett, G. R. Carmichael, A. da Silva, R. Govindaraju, R. Leung, Y. Zhang, L. Pfister, J.-M. Ryoo, J. Redemann, R. Wood & P. Zuidema: Modeling the smoky troposphere of the southeast Atlantic: a comparison to ORACLES airborne observations from September. Atmospheric Chemistry and Physics, 20(19), 11491-11526, doi:10.5194/acp-20-11491-2020, 2020.

Su, H., Y. Cheng & U. Pöschl: New Multiphase Chemical Processes Influencing Atmospheric Aerosols, Air Quality, and Climate in the Anthropocene. Accounts of Chemical Research, 53(10), 2034-2043, doi:10.1021/acs.accounts.0c00246, 2020.

Sun, Y., Y. He, Y. Kuang, W. Xu, S. Song, N. Ma, J. Tao, P. Cheng, C. Wu, H. Su, Y. Cheng, C. Xie, C. Chen, L. Lei, Y. Qiu, P. Fu, P. Croteau & D. R. Worsnop: Chemical Differences Between PM1 and PM2.5 in Highly Polluted Environment and Implications in Air Pollution Studies. Geophysical Research Letters, 47(5): e2019GL086288, doi:10.1029/2019GL086288, 2020.

Tao, W., H. Su, G. Zheng, J. Wang, C. Wei, L. Liu, N. Ma, M. Li, Q. Zhang, U. Pöschl, Y. Cheng: Aerosol pH and chemical regimes of sulfate formation in aerosol water during winter haze in the North China Plain. Atmospheric Chemistry and Physics, 20(20), 11729-11746, doi:10.5194/10.5194/acp-20-11729-2020, 2020.

Wang, C., B. Yuan, C. Wu, S. Wang, J. Qi, B. Wang, Z. Wang, W. Hu, W. Chen, C. Ye, W. Wang, Y. Sun, C. Wang, S. Huang, W. Song, X. Wang, S. Yang, S. Zhang, W. Xu, N. Ma, Z. Zhang, B. Jiang, H. Su, Y. Cheng, X. Wang & M. Shao: Measurements of higher alkanes using NO^+ chemical ionization in PTR-ToF-MS: important contributions of higher alkanes to secondary organic aerosols in China. Atmospheric Chemistry and Physics, 20(22), 14123-14138, doi:10.5194/acp-20-14123-2020, 2020.

Wang, S., H. Su, C. Chen, W. Tao, D. G. Streets, Z. Lu, B. Zheng, G. R. Carmichael, J. Lelieveld, U. Pöschl & Y. Cheng: Natural gas shortages during the "coal-to-gas" transition in China have caused a large redistribution of air pollution in winter 2017. Proceedings of the National Academy of Sciences of the United States of America, 117: 202007513, doi:10.1073/pnas.2007513117, 2020.

Wang, X., H. Lei, R. Berger, Y. Zhang, H. Su & Y. Cheng: Hygroscopic properties of NaCl nanoparticles on the surface: a scanning force microscopy study. Physical Chemistry Chemical Physics, 22(18), 9967-9973, doi:10.1039/d0cp00155d, 2020.

Wang, Z., B. Yuan, C. Ye, J. Roberts, A. Wisthaler, Y. Lin, T. Li, C. Wu, Y. Peng, C. Wang, S. Wang, S. Yang, B. Wang, J. Qi, C. Wang, W. Song, W. Hu, X. Wang, W. Xu, N. Ma, Y. Kuang, J. Tao, Z. Zhang, H. Su, Y. Cheng, X. Wang & M. Shao: High Concentrations of Atmospheric Isocyanic Acid (HNCO) Produced from Secondary Sources in China. Environmental Science & Technology, 54(19), 11818-11826, doi:10.1021/acs.est.0c02843, 2020.

Xie, Q., Y. Li, S. Yue, S. Su, D. Cao, Y. Xu, J. Chen, H. Tong, H. Su, Y. Cheng, W. Zhao, W. Hu, Z. Wang, T. Yang, X. Pan, Y. Sun, Z. Wang, C.-Q. Liu, K. Kawamura, G. Jiang, M. Shiraiwa & P. Fu: Increase of High Molecular Weight Organosulfate With Intensifying Urban Air Pollution in the Megacity Beijing. Journal of Geophysical Research: Atmospheres, 125(10): e2019JD032200, doi:10.1029/2019JD032200, 2020.

Xu, S., L. Ren, Y. Lang, S. Hou, H. Ren, L. Wei, L. Wu, J. Deng, W. Hu, X. Pan, Y. Sun, Z. Wang, H. Su, Y. Cheng & P. Fu: Molecular markers of biomass burning and primary biological aerosols in urban Beijing: size distribution and seasonal variation. Atmospheric Chemistry and Physics, 20(6), 3623-3644. doi:10.5194/acp-20-3623-2020, 2020.

Zhang, Y., J. Tao, N. Ma, Y. Kuang, Z. Wang, P. Cheng, W. Xu, W. Yang, S. Zhang, C. Xiong, W. Dong, L. Xie, Y. Sun, P. Fu, G. Zhou, Y. Cheng & H. Su: Predicting cloud condensation nuclei number concentration based on conventional measurements of aerosol properties in the North China Plain. Science of the Total Environment, 719: 137473, doi:10.1016/j.scitotenv.2020.137473, 2020.

Zhao, Y., H. Ren, J. Deng, L. Li, W. Hu, L. Ren, S. Yue, Y. Fan, L. Wu, J. Li, Y. Sun, Z. Wang, H. Akimoto, X. Zeng, Y. Cheng, S. Kong, H. Su, Y. Cheng, K. Kawamura & P. Fu: High daytime abundance of primary organic aerosols over Mt. Emei, Southwest China in summer. Science of the Total Environment, 703: 134475, doi:10.1016/j.scitotenv.2019.134475, 2020.

Zheng, G., H. Su, S. Wang, M. O. Andreae, U. Pöschl & Y. Cheng: Multiphase buffer theory explains contrasts in atmospheric aerosol acidity. Science, 369(6509), 1374-1377, doi:10.1126/science.aba3719, 2020.

Zhou, S., L. Wu, J. Guo, W. Chen, X. Wang, J. Zhao, Y. Cheng, Z. Huang, J. Zhang, Y. Sun, P. Fu, S. Jia, J. Tao, Y. Chen & J. Kuang: Measurement report: Vertical distribution of atmospheric particulate matter within the urban boundary layer in southern China - size-segregated chemical composition and secondary formation through cloud processing and heterogeneous reactions. Atmospheric Chemistry and Physics, 20(11), 6435-6453, doi:10.5194/acp-20-6435-2020, 2020.

2019

Li, G., Y. Cheng, U. Kuhn, R. Xu, Y. Yang, H. Meusel, Z. Wang, N. Ma, Y. Wu, M. Li, J. Williams, T. Hoffmann, M. Ammann, U. Pöschl, M. Shao & H. Su: Physicochemical uptake and release of volatile organic compounds by soil in coated-wall flow tube experiments with ambient air. Atmospheric Chemistry and Physics, 19(4), 2209-2232, doi:10.5194/acp-19-2209-2019, 2019.

Li, M., H. Su, G. Li, N. Ma, U. Pöschl & Y. Cheng: Relative importance of gas uptake on aerosol and ground surfaces characterized by equivalent uptake coefficients. Atmospheric Chemistry and Physics, 19(16), 10981-11011, doi:10.5194/acp-19-10981-2019, 2019.

Li, M., Q. Zhang, B. Zheng, D. Tong, Y. Lei, F. Liu, C. Hong, S. Kang, L. Yan, Y. Zhang, Y. Bo, H. Su, Y. Cheng & K. He: Persistent growth of anthropogenic non-methane volatile organic compound (NMVOC) emissions in China during 1990-2017: drivers, speciation and ozone formation potential. Atmospheric Chemistry and Physics, 19(13), 8897-8913, doi:10.5194/acp-19-8897-2019, 2019.

Porada, P., A. Tamm, J. Raggio, Y. Cheng, A. Kleidon, U. Pöschl & B. Weber: Global NO and HONO emissions of biological soil crusts estimated by a process-based non-vascular vegetation model. Biogeosciences, 16(9), 2003-2031, doi:10.5194/bg-16-2003-2019, 2019.

Tong, H., Y. Zhang, A. Filippi, T. Wang, C. Li, F. Liu, D. Leppla, I. Kourtchev, K. Wang, H.-M. Keskinen, J. T. Levula, A. Arangio, F. Shen, F. Ditas, S. T. Martin, P. Artaxo, R. H. M. Godoi, C. I. Yamamoto, R. A. F. de Sousa, R.-J. Huang, T. Berkemeier, Y. Wang, H. Su, Y. Cheng, F. D. Pope, P. Fu, M. Yao, C. Pöhlker, T. Petaja, M. Kulmala, M. O. Andreae, M. Shiraiwa, U. Pöschl, T. Hoffmann & M. Kalberer: Radical Formation by Fine Particulate Matter Associated with Highly Oxygenated Molecules. Environmental Science & Technology, 53(21), 12506-12518, doi:10.1021/acs.est.9b05149, 2019.

Wang, K., Y. Zhang, R.-J Huang, M. Wang, H. Ni, C. J. Kampf, C. J., Y. Cheng, M. Bilde, M. Glasius &. T. Hoffmann: Molecular Characterization and Source Identification of Atmospheric Particulate Organosulfates Using Ultrahigh Resolution Mass Spectrometry. Environmental Science & Technology, 53(11), 6192-6202, doi:10.1021/acs.est.9b02628, 2019.

Wang, X., K. Binder, C. Chen, T. Koop, U. Pöschl, H. Su, H. & Y. Cheng: Second inflection point of water surface tension in the deeply supercooled regime revealed by entropy anomaly and surface structure using molecular dynamics simulations. Physical Chemistry Chemical Physics, 21(6), 3360-3369, doi:10.1039/c8cp05997g, 2019.

Wu, D., M. A. Horn, T. Behrendt, S. Mueller, J. Li, J. A. Cole, B. Xie, X. Ju, G. Li, M. Ermel, R. Oswald, J. Fröhlich-Nowoisky, P. Hoor, C. Hu, M. Liu, M. O. Andreae, U. Pöschl, Y. Cheng, H. Su, I. Trebs, B. Weber & M. Sörgel: Soil HONO emissions at high moisture content are driven by microbial nitrate reduction to nitrite: tackling the HONO puzzle. The ISME Journal, 13(7), 1688-1699, doi:10.1038/s41396-019-0379-y, 2019.

Zhang, M., T. Klimach, N. Ma, T. Könemann, C. Pöhlker, Z. Wang, U. Kuhn, N. Scheck, U. Pöschl, H. Su & Y. Cheng: Size-Resolved Single-Particle Fluorescence Spectrometer for Real-Time Analysis of Bioaerosols: Laboratory Evaluation and Atmospheric Measurements. Environmental Science & Technology, 53(22), 13257-13264, doi:10.1021/acs.est.9b01862, 2019.

Zhang, Y., M. Li, Y. Cheng, G. Geng, C. Hong, H. Li, X. Li, D. Tong, N. Wu, X. Zhang, B. Zheng, Y. Zheng, Y. Bo, H. Su & Q. Zhang: Modeling the aging process of black carbon during atmospheric transport using a new approach: a case study in Beijing. Atmospheric Chemistry and Physics, 19(14), 9663-9680, doi:10.5194/acp-19-9663-2019, 2019.

Zhang, Y., H. Su, N. Ma, G. Li, S. Kecorius, Z. Wang, M. Hu, T. Zhu, K. He, A. Wiedensohler, Q. Zhang & Y. Cheng: Search for Microphysical Signatures of StochasticCondensation in Marine Boundary Layer CloudsUsing Airborne Digital Holography of the North China Plain. Journal of Geophysical Research: Atmospheres, 124, doi:10.1029/2018JD029033, 2019.

2018

Chen, Y., R. Wolke, L. Ran, W. Birmili, G. Spindler, W. Schröder, H. Su, Y. Cheng, I. Tegen, A. Wiedernsohler: A parameterization of the heterogeneous hydrolysis of N_2O_5 for mass-based aerosol models: improvement of particulate nitrate prediction. Atmospheric Chemistry and Physics 18 (2), 673-689, doi:10.5194/acp-18-673-2018, 2018.

Ditas, J., N. Ma, Y. Zhang, D. Assmann, M. Neumeier, H. Riede, E. Karu, J. Williams, D. Scharffe, Q. Wang, J. Saturno, J. P. Schwarz, J. M. Katich, G. R. McMeeking, A. Zahn, M. Hermann, C. A. M. Brenninkmeijer, M. O. Andreae, U. Pöschl, H. Su & YF. Cheng: Strong impact of wildfires on the abundance and aging of black carbon in the lowermost stratosphere. PNAS 115 (50), E11595-E11603, doi:10.1073/pnas.1806868115, 2018.

Gao, M., Z. Han, Z. Liu, M. Li, J. Xin, Z. Tao, J. Li, J.-E. Kang, K. Huang, X. Dong, B. Zhuang, S. Li, B. Ge, Q. Wu, Y. Cheng, Y. Wang, H.-J. Lee, C.-H. Kim, J. S. Fu, T. Wang, M. Chin, J.-H. Woo, Q. Zhang, Z. Wang, G. R. Carmichael: Air quality and climate change, Topic 3 of the Model Inter-Comparison Study for Asia Phase III (MICS-Asia III) - Part 1: Overview and model evaluation. Atmospheric Chemistry and Physics, 18(7), 4859-4884, doi:10.5194/acp-18-4859-2018, 2018.

He, P., B. Alexander, L. Geng, X. Chi, S. Fan, H. Zhan, H. Kang, G. Zheng, Y. Cheng, H. Su, C. Liu & Z. Xie: Isotopic constraints on heterogeneous sulfate production in Beijing haze. Atmospheric Chemistry and Physics 18 (8), 5515-5528, doi: 10.5194/acp-18-5515-2018, 2018.

Hong, J., H. Xu, H. Tan, C. Yin, L. Hao, F. Li, M. Cai, X. Deng, N. Wang, H. Su, Y. Cheng, L. Wang, T. Petaja & V.-M. Kerminen: Mixing state and particle hygroscopicity of organic-dominated aerosols over the Pearl River Delta region in China. Atmospheric Chemistry and Physics 18 (19), 14079-14094, doi: 10.5194/acp-18-14079-2018, 2018.

Lei, T., A. Zünd, Y. Cheng, H. Su, W. Wang & M. Ge: Hygroscopicity of organic surrogate compounds from biomass burning and their effect on the efflorescence of ammonium sulfate in mixed aerosol particles. Atmospheric Chemistry and Physics 18 (2), 1045-64, doi: 10.5194/acp-18-1045-2018, 2018.

Li, G., H. Su, U. Kuhn, H. Meusel, M. Ammann, M. Shao, U. Pöschl & Y. Cheng: Technical note: Influence of surface roughness and local turbulence on coated-wall flow tube experiments for gas uptake and kinetic studies. Atmospheric Chemistry and Physics 18 (4), 2669-2686, doi:10.5194/acp-18-2669-2018, 2018.

Meusel, H., A. Tamm, U. Kuhn, D. Wu, A.-L. Leifke, S. Fiedler, N. Ruckteschler, P. Yordanova, N. Lang-Yona, M. L. Pöhlker, J. Lelieveld, T. Hoffmann, U. Pöschl, H. Su, B. Weber & Y. Cheng: Emission of nitrous acid from soil and biological soil crusts represents an important source of HONO in the remote atmosphere in Cyprus. Atmospheric Chemistry and Physics 18 (2), 799-813, doi:10.5194/acp-18-799-2018, 2018.

Mu, Q., M. Shiraiwa, M. Octaviani, N. Ma, A. Ding, H. Su, G. Lammel, U. Pöschl & Y. Cheng: Temperature effect on phase state and reactivity controls atmospheric multiphase chemistry and transport of PAHs. Sciences Advances 4 (3), UNSPeaap7314, doi:10.1126/sciadv.aap7314, 2018.

Pöhlker, M. L., F. Ditas, J. Saturno, T. Klimach, I. Hrabe de Angelis, A. C. Araujo, J. Brito, S. Carbone, Y. Cheng, X. Chi, R. Ditz, S. S. Gunthe, B. A. Holanda, K. Kandler, J. Kesselmeier, T. Könemann, O. O. Krüger, J. V. Lavric, S. T. Martin, E. Mikhailov, D. Moran-Zuloaga, L. V. Rizzo, D. Rose, H. Su, R. Thalmann, D. Walter, J. Wang, S. Wolff, H. M. J. Barbosa, P. Artaxo, M. O. Andreae, U. Pöschl & C. Pöhlker: Long-term observations of cloud condensation nuclei over the Amazon rain forest - Part 2: Variability and characteristics of biomass burning, long-range transport, and pristine rain forest aerosols. Atmospheric Chemistry & Physics 18 (14), 10289-10331, doi:10.5194/acp-18-10289-2018, 2018.

Saturno, J., B. A. Holanda, C. Pöhlker, F. Ditas, Q. Wang, D. Moran-Zuloaga, J. Brito, S. Carbone, Y. Cheng, X. Chi, J. Ditas, T. Hoffmann, I. Hrabe de Angelis, T. Könemann, J. V. Lavric, N. Ma, J. Ming, H. Paulsen, M. L. Pöhlker, L. V. Rizzo, P. Schlag, H. Su, D. Walter, S. Wolff, Y. Zhang, P. Artaxo, U. Pöschl & M. O. Andreae: Black and brown carbon over central Amazonia: long-term aerosol measurements at the ATTO site. Atmospheric Chemistry & Physics 18 (17), 12817-12843, doi:10.5194/acp-18-12817-2018, 2018.

Wang, J., W. Nie, Y. Cheng, Y. Shen, X. Chi, J. Wang, X. Huang, Y. Xie, P. Sun, Z. Xu, X. Qi, H. Su & A. Ding: Light absorption of brown carbon in eastern China based on 3-year multi-wavelength aerosol optical property observations and an improved absorption Angstrom exponent segregation method. Atmospheric Chemistry and Physics 18 (12), 9061-9074, doi:10.5194/acp-18-9061-2018, 2018.

Wang, X., C. Chen, K. Binder, U. Kuhn, U. Pöschl, H. Su & Y. Cheng: Molecular dynamics simulation of the surface tension of aqueous sodium chloride: from dilute to highly supersaturated solutions and molten salt. Atmospheric Chemistry and Physics 18, 17077–17086, doi:10.5194/acp-18-17077-2018, 2018.

Zhang, Y., Q. Zhang, Y. Cheng, H. Su, H. Li, M. Li, X. Zhang, A. Ding & K. He: Amplification of light absorption of black carbon associated with air pollution. Atmospheric Chemistry and Physics 18 (13), 9879-9896, doi:10.5194/acp-18-9879-2018, 2018.

Zhang, Y., X. Li, M. Li, Y. Zheng, G. Geng, C. Hong, H. Li, D. Tong, X. Zhang, Y. Cheng, H. Su, K. He & Q. Zhang: Reduction in black carbon light absorption due to multi-pollutant emission control during APEC China 2014. Atmospheric Chemistry and Physics 18 (14) 10275-10287, doi: 10.5194/acp-18-10275-2018, 2018. Zhang, Y., H. Su, N. Ma, G. Li, S. Kecorius, Z. Wang, M. Hu, T. Zhu, K. He, A. Wiedensohler, Q. Zhang & Y. Cheng: Sizing of Ambient Particles From a Single-Particle Soot Photometer Measurement to Retrieve Mixing State of Black Carbon at a Regional Site of the North China Plain. Journal of Geophysical Research-Atmospheres 123 (22), 12778-12795, doi:10.1029/2018JD028810, 2018.

High Pressure Chemistry and Physics Group (M. Eremets et al.)

Journal Articles

2020

Flores-Livas, J. A., L. Boeri, A. Sanna, G. Profeta, R. Arita, R. & M. Eremets: A perspective on conventional high-temperature superconductors at high pressure: Methods and materials. Physics Reports: Review Section of Physics Letters, 856, 1-78, doi:10.1016/j.physrep.2020.02.003, 2020.

Kuzovnikov, M. A., V. S. Minkov, S. Chariton, V. B. Prakapenka & M. I. Eremets: Synthesis of osmium hydride under high hydrogen pressure. Physical Review B, 102(21), 214109, doi:10.1103/PhysRevB.102.214109, 2020.

Minkov, V. S., V. B. Prakapenka, E. Greenberg & M. I. Eremets, M. I.: A Boosted Critical Temperature of 166 K in Superconducting D3S Synthesized from Elemental Sulfur and Hydrogen. Angewandte Chemie, International Edition in English, doi:10.1002/anie.202007091, 2020.

Pickard, C. J., I. Errea, I. & M. I. Eremets: Superconducting Hydrides Under Pressure. Annual Review of Condensed Matter Physics, 11, 57-76. doi:10.1146/annurev-conmatphys-031218-013413, 2020.

Pickett, W. & M. Eremets, M.: Notes on superconducting hydrides. Physics Today, 73(1), 12-13, doi:10.1063/PT.3.4381, 2020.

2019

Antonov, V. E., V. M. Gurev, I. V. Kulakov, M. Kuzovnikov, I. A. Sholin & V. Y.: Solubility of deuterium and hydrogen in fcc iron at high pressures and temperatures. Physical Review Materials, 3(11): 113604, doi:10.1103/PhysRevMaterials.3.113604, 2019.

Drozdov, A. P., P. P. Kong, V. S. Minkov, S. P. Besedin, M. A. Kuzovnikov, S. Mozaffari, L. Balicas, F. F. Balakirev, D. E. Graf, V. B. Prakapenka, E. Greenberg, D. A. Knyazev, M. Tkacz & M. I. Eremets: Superconductivity at 250 K in lanthanum hydride under high pressures. Nature, 569, 528-531, doi:10.1038/s41586-019-1201-8, 2019.

Eremets, M. I., A. P. Drozdov, P. Kong & H. Wang: Semimetallic molecular hydrogen at pressure above 350 GPa. Nature Physics, 15(12), 1246-1249. doi:10.1038/s41567-019-0646-x, 2019.

Kuzovnikov, M. A., & M. Tkacz: High-Pressure Synthesis of Novel Polyhydrides of Zr and Hf with a Th4H15-Type Structure. The Journal of Physical Chemistry C, 123(50), 30059-30066, doi:10.1021/acs.jpcc.9b07918, 2019.

Mozaffari, S., D. Sun, V. S. Minkov, A. P. Drozdov, D. A. Knyazev, J. B. Betts, M. Einaga, K. Shimizu, M. I. Eremets, L. Balicas & F. F. Balakirev: Superconducting phase diagram of H3S under high magnetic fields. Nature Communications, 10: 2522, doi:10.1038/s41467-019-10552-y, 2019.

Pickett, W. & M. I. Eremets: The quest for room-temperature superconductivity in hydrides. Physics today, 72(5), 52-58, doi:10.1063/PT.3.4204, 2019.

Shimizu, K., M. Einaga, M. Sakata, A. Masuda, H. Nakao & M. Eremets: Superconductivity and structural studies of highly compressed hydrogen sulfide (vol 552, pg 27, 2018). Physica C-Superconductivity and its Applications, 567: UNSP 1253497, doi:10.1016/j.physc.2019.05.008, 2019.

Zemtsova, V. M., A. Y. Fedorov, E. A. Fedorova, C. Boa, S. G. Arkhipov, D. A. Rychkov, V. S. Minkov, C. R. Pulham & E. V. Boldyreva: A novel crystal form of metacetamol: the first example of a hydrated form. Acta Crystallographica Section C-Structural Chemistry, 75, 1465-1470, doi:10.1107/S2053229619012981, 2019.

2018

Shimizu, K., M. Einaga, M. Sakata, A. Masuda, H. Nakao, M. Eremets, M., A. P. Drozdov, I. Troyan, N. Hirao, S. Kawaguchi & Y. Ohishi: Superconductivity and structural studies of highly compressed hydrogen sulfide. Physica C, 552, 27-29, doi:10.1016/j.physc.2018.05.011, 2018.

Terrestrial Palaeoclimates Group (K. Fitzsimmons et al.)

Journal Articles

2020

Alenius, T., L. Marquer, C. Molinari, M. Heikkilä & A. Ojala, A.: The environment they lived in. Anthropogenic changes in local and regional vegetation composition in eastern Fennoscandia during the Neolithic. Vegetation History and Archaeobotany, doi:10.1007/s00334-020-00796-w, 2020.

Allen, S., A. Simonneau, G. Le Roux, F. Mazier, L. Marquer, D. Galop & S. Binet: Considering lacustrine erosion records and the De Ploey erosion model in an examination of mountain catchment erosion susceptibility and total rainfall reconstruction. Catena, 187, 104278, doi:10.1016/j.catena.2019.104278, 2020.

Barrows, T.T., K. E. Fitzsimmons, S. Mills, J. Tumney, D. Pappin & N. Stern: Late Pleistocene lake level history of Lake Mungo, Australia. Quaternary Science Reviews, 238, 106338, doi:10.1016/j.quascirev.2020.106338, 2020.

Braadbaart, F., F. H. Reidsma, W. Roebroeks, L. Chiotti, V. Slon, M. Meyer, I. Théry-Parisot, A. van Hoesel, K. G. J. Nierop, J. Kaal, B. van Os & L. Marquer: Heating histories and taphonomy of ancient fireplaces: A multi-proxy case study from the Upper Palaeolithic sequence of Abri Pataud (Les Eyzies-de-Tayac, France). Journal of Archaeological Science: Reports, 33, 102468, doi:10.1016/j.jasrep.2020.102468, 2020.

Fischer, P., O. Jöris, K. E. Fitzsimmons, M. Vinnepand, C. Prud'homme, P. Schulte, C. Hatté, U. Hambach, S. Lindauer, C. Zeeden, Z. Perić, F. Lehmkuhl, T. Wunderlich, D. Wilken, W. Schirmer & A. Vött: Millennial-scale terrestrial ecosystem responses to Upper Pleistocene climatic changes: 4D-reconstruction of the Schwalbenberg Loess-Palaeosol-Sequence (Middle Rhine Valley, Germany). Catena, 196, 104913, doi:10.1016/j.catena.2020.104913, 2020.

Fitzsimmons, K.E., A. Dobos, M. Probst & R. Iovita: Thinking outside the box at open-air archaeological contexts: examples from loess landscapes in southeast Romania. Frontiers in Earth Sciences, 8, 561207, doi:10.3389/feart.2020.561207, 2020.

Fitzsimmons, K.E., M. Nowatzki, A. K. Dave & H. Harder: Intersections between wind regimes, topography and sediment supply: Perspectives from aeolian landforms in Central Asia. Palaeogeography, Palaeoclimatology, Palaeoecology, 540, 109531, doi:10.1016/j.palaeo.2019.109531, 2020.

> Fitzsimmons, K.E., M. Nowatzki, A. K. Dave, H. Harder: Corrigendum to "Intersections between wind regimes, topography and sediment supply: Perspectives from aeolian landforms in Central Asia". Palaeogeography, Palaeoclimatology, Palaeoecology, 552, 109795, doi:10.3389/feart.2020.561207, 2020.

Hainbucher, D., M. Alvarez, B. A. Uceda, G. Bachi, V. Cardin, P. Celentano, S. Chaikalis, M. del Mar Chaves Montero, G. Civitarese, N. M. Fajar, F. Fripiat, L. Gerke, A. Gogou, E. F. Guallart, B. Gülk, A. El Raman Hassoun, N. Lange, A. Rochner, C. Santinelli, T. Steinhoff, T. Tanhua, L. Urbini, D. Velaoras, F. Wolf & A. Welsch: Physical and biogeochemical parameters of the Mediterranean Sea during a cruise with RV Maria S. Merian in March 2018. Earth System Science Data, 12(4), 2747-2763, doi:10.5194/essd-12-2747-2020, 2020.

Li, Y., Y. Song, K. E. Fitzsimmons, X. Chen, C. Prud'homme & X. Zong: Origin of loess deposits in the North Tian Shan piedmont, Central Asia. Palaeogeography, Palaeoclimatology, Palaeoecology, 559, 109972, doi:10.1016/j.palaeo.2020.109972, 2020.

Marquer, L., F. Mazier, S. Sugita, D. Galop, T. Houet, E. Faure, M. J. Gaillard, S. Haunold, N. de Munnik, A. Simonneau, F. De Vleeschouwer & G. Le Roux: Pollen-based reconstruction of Holocene land-cover in mountain regions: evaluation of the Landscape Reconstruction Algorithm in the Vicdessos valley, Northern Pyrenees, France. Quaternary Science Reviews, 228, 106049, doi.org/10.1016/j.quascirev.2019.106049, 2020.

Peretto, C., M. Arzarello, M. Coltorti, M. Bertolini, Q. Y. Cui, O. De Curtis, V. Lebreton, G. Lembo, L. Marquer, P. Pieruccini, S. Ravani, E. Rufo, B. Sala, S. Talamo & U. Thun Hohenstein: Grotta Reali, the first multilayered mousterian evidences in the Upper Volturno Basin (Rocchetta a Volturno, Molise, Italy). Archaeological and Anthropological Sciences, 12, 67, doi:10.1007/s12520-020-01015-3, 2020.

Prud'homme, C., R. Vassallo, C. Crouzet, J. Carcaillet, J-L. Mugnier, J. Cortés-Aranda: Paired 10Be sampling of polished bedrock and erratic boulders to improve dating of glacial landforms: an example from the Western Alps. Earth Surface Processes and Landforms, 45(5), 1168-1180, doi:10.1002/esp.4790, 2020.

Timar-Gabor, A., A. Chruscinska, K. Benzid, K. E. Fitzsimmons, R. Begy & M. Bailey: Bleaching studies on Al-hole ([AlO4/h]0) electron spin resonance signals in sedimentary quartz. Radiation Measurements, 130, 106221, doi:10.1016/j.radmeas.2019.106221, 2020.

Vinnepand, M., P. Fischer, K. E. Fitzsimmons, B. Thornton, S. Fiedler & A. Vött: Combining inorganic and organic carbon stable isotope signatures in the Schwalbenberg loess-palaeosol sequence near Remagen (Middle Rhine valley, Germany). Frontiers in Earth Science, 8, 276, doi:10.3389/feart.2020.561207, 2020.

2019

Daniau, A.-L., S. Desprat, J. C. Aleman, L. Bremond, B. Davis, W. Fletcher, J. R. Marlon, L. Marquer, V. Montade, C. Morales Del Molino, F. Naughton, D. Rius & D. H. Urrego: Terrestrial plant microfossils in paleoenvironmental studies, pollen, microcharcoal and phytolith. Towards a comprehensive understanding of vegetation, fire and climate changes over the past one million years. Revue de micropaléontologie, 63, 1-35, doi:10.1016/j.revmic.2019.02.001, 2019.

Dave, A., Courty, M.A., Fitzsimmons, K.E. & A. K. Singhvi: Revisiting the contemporaneity of a mighty river and the Harappans: archaeological, stratigraphic and chronometric constraints. Quaternary Geochronology, 49, 230-235, doi:10.1016/j.quageo.2018.05.002, 2019.

Doerschner, N., K. E. Fitzsimmons, R. Blasco, G. Finlayson, J. Rodriguez-Vidal, J. Rosell, J.-J. Hublin, & C. Finlayson: Chronology of the late Pleistocene archaeological sequence at Vanguard Cave, Gibraltar: insights from quartz single and multiple grain luminescence dating. Quaternary International, 501B, 289-302, doi:10.1016/j.quaint.2018.02.020, 2019.

Fitzsimmons, K. E., N. Stern & C. Spry: Holocene and recent aeolian reactivation of the Willandra Lakes lunettes, semi-arid southeastern Australia. The Holocene, 29(4), 606-621, doi:10.1177/0959683618824790, 2019.

Peric, Z., E. L. Adolphi, T. Stevens, G. Ujvari, C. Zeeden, J. P. Buylaert, S. B. Marković, U. Hambach, P. Fischer, C. Schmidt, P. Schulte, L. Huayu, Y. Shuangwen, F. Lehmkuhl, I. Obreht, D. Veres, C. Thiel, M. Frechen, M. Jain, A. Vött, L. Zoller & M. B. Gavrilov: Quartz OSL dating of late quaternary Chinese and Serbian loess: A cross Eurasian comparison of dust mass accumulation rates. Quaternary International, 502A, 30-44, doi:10.1016/j.quaint.2018.01.010, 2019.

Prud'homme, C., O. Moine, J. Mathieu, S. Saulnier-Copard & P. Antoine: High-resolution quantification of earthworm calcite granules from western European loess sequences reveals stadial–interstadial climatic variability during the Last Glacial. Boreas, 48(1), 257-268, doi:10.1111/bor.12359, 2019.

Smalley, I., J. Marshall, K. E. Fitzsimmons, W. B. Whalley & S. Ngambi: Desert loess: a selection of relevant topics. Geologos, 25(1), 75-86, doi:10.2478/logos-2019-0007, 2019.

Zeeden, C., U. Hambach, D. Veres, K. E. Fitzsimmons, I. Obreht, J. Boesken & F. Lehmkuhl: Corrigendum to “Millennial scale climate oscillations recorded in the Lower Danube loess over the last glacial period” [Palaeogeogr. Palaeoclimatol. Palaeoecol. 509, 15 November 2018 164–181], Palaeogeography, Palaeoclimatology, Palaeoecology, 523, 116–117, doi:10.1016/j.palaeo.2019.01.026, 2019.

Zwyns, N., C. H. Paine, B. Tsedendorj, S. Talamo, K. E. Fitzsimmons, A. Gantumur, L. Guunii, O. Davakhuu, D. Flas, T. Dogandzić, N. Doerschner, F. Welker, J. C. Gillam, J. B. Noyer, R. S. Bakhtiary, A. F. Allshouse, K. N. Smith, A. M. Khatsenovich, E. P. Rybin, G. Byambaa, J.-J. Hublin: The northern route for human dispersal in Central and Northeast Asia: new evidence from the site of Tolbor-16, Mongolia. Scientific Reports, 9, 11759, doi:10.1038/s41598-019-47972-1, 2019.

2018

Despriée, J., G. Bayle, S. Coutard, X. Sun, N. Mercier, G. Courcimault, L. Marquer, P. Voinchet, J. J. Bahain & J. L. Locht.: La formation lœssique du Pléistocène moyen et supérieur de La Jouannière à Bonneval, Eure-et-Loir (France): sédimentologie, géochronologie, paléoenvironnement et préhistoire. Quaternaire, 29(2), 131-148, doi:10.4000/quaternaire.8872, 2018.

Fitzsimmons, K.E., T. Sprafke, C. Zielhofer, C. Guenter, J.-M. Deom, R. Sala & R. Iovita: Loess accumulation in the Tian Shan piedmont: implications for palaeoenvironmental change in arid Central Asia. Quaternary International, 469A, 30-43, doi:10.1016/j.quaint.2016.07.041, 2018.

Fitzsimmons, K.E., S. McLaren, I. Smalley: The first loess map and related topics: contributions by twenty significant women loess scholars. Open Geosciences, 10, 311-322, doi:10.1515/geo-2018-0024, 2018.

Kuosmanen, N., L. Marquer, M. Tallavaara, C. Molinari, Y. Zhang, T. Alenius, K. Edinborough, P. Pesonen, T. Reitalu, H. Renssen, A. K. Trondman & H. Seppä: The role of climate, forest fires and human population size in Holocene vegetation dynamics in Fennoscandia. Journal of Vegetation Science, 29 (3), 382-392, doi:10.1111/jvs.12601, 2018.

Li, Y., K. E. Fitzsimmons, X. Chen, Q. Wang, H. Sun, Z. Zhang: New evidence for the provenance and formation of loess deposits in the Ili Basin, Arid Central Asia. Aeolian Research, 35, 1-8, doi:10.1016/j.aeolia.2018.08.002, 2018.

Li, Y., Y. Song, K. E. Fitzsimmons, H. Chang, R. Orozbaev & X. Li: Aeolian dust dispersal patterns since the last glacial period in eastern Central Asia: insights from a loess-paleosol sequence in the Ili Basin. Climate of the Past, 14, 271-286, doi:10.5194/cp-14-271-2018, 2018.

Lukic, T., D. Bjelajac, K. E. Fitzsimmons, S. B. Markovic, B. Basarin, D. Mladan, T. Micic, R. J. Schaetzl, M. B. Gavrilov, M. Milanovic, G. Sipos, G. Mezosi, N. Knezevic-Lukic, M. Milincic, A. Letal & I. Samaradzic: Factors triggering landslide occurrence on the Zemun loess plateau, Belgrade area, Serbia. Environmental Earth Sciences, 77, paper 519, doi:10.1007/s12665-018-7712-z, 2018.

Marković S.B., P. Sümegi, T. Stevens, TR. J. Schaetzl, I. Obreht, W. Chu, B. Buggle, M. Zech, R., Zech, C. Zeeden, M. B. Gavrilov, Z. Perić, Z. Svirčev, F. Lehmkuhl: The Crvenka loess-paleosol sequence: A record of continuous grassland domination in the southern Carpathian Basin during the Late Pleistocene. Palaeogeography, Palaeoclimatology, Palaeoecology, 509, 33-46, doi:10.1016/j.palaeo.2018.03.019, 2018.

Marquer, L., A. Dallmeyer, A. Poska, J. Pongratz, B. Smith & M.-J. Gaillard: Modelling past human-induced vegetation change is a challenge – the case of Europe. Past Global Changes Magazine, 26 (1), 12-13, doi:10.22498/pages.26.1.12, 2018.

Prud'homme, C., C. Lecuyer, P. Antoine, C. Hatte, O. Moine, F. Fourel, R. Amiot, F. Martineau & D.-D. Rousseau: δ13C signal of earthworm calcite granules: A new proxy for palaeoprecipitation reconstructions during the Last Glacial in Western Europe. Quaternary Science Reviews, 179, 158-166, doi.org/10.1016/j.quascirev.2017.11.017, 2018.

Roberts, N., R. M. Fyfe, J. Woodbridge, M. J. Gaillard, B. A. S. Davis, J. O. Kaplan, L. Marquer, F. Mazier, A. B. Nielsen, S. Sugita, A. K. Trondman, M. Leydet: Europe's lost forests: a pollen based synthesis for the last 11,000 years. Nature Scientific Reports, 8, 716, doi:10.1038/s41598-017-18646-7, 2018.

Schaetzl, R.J., E. A. Bettis, O. Crouvi, K. E. Fitzsimmons, D. A. Grimley, U. Hambach, F. Lehmkuhl, S. B. Marković, J. A. Mason, P. Owczarek, H. M. Roberts, D.-D. Rousseau, T. Stevens, J. Vandenberghe, M. Zarate, D. Veres, S. Yang, M. Zech, J. L. Conroy, A. K. Dave, D. Faust, D., Hao, Q., Obreht, I., Prud'homme, C., Smalley, I., Tripaldi, A., Zeeden, C., Zech, R.: Approaches and challenges to the study of loess. Quaternary Research, 89, 563-618, doi:10.1017/qua.2018.15, 2018.

Schulte, P., T. Sprafke, L. Rodrigues & K. E. Fitzsimmons: Are fixed grain size ratios useful proxies for loess sedimentation dynamics? Experiences from Remizovka, Kazakhstan. Aeolian Research, 31B, 131-140, doi:10.1016/j.aeolia.2017.09.002, 2018.

Sprafke, T., K. E. Fitzsimmons, C. Grützner, A. Elliot, L. Marquer & S. Nigmatova: Reevaluation of Late Pleistocene loess profiles at Remizovka (Kazakhstan) indicates the significance of topography in evaluating terrestrial paleoclimate records. Quaternary Research, 89, 674-690, doi:10.1017/qua.2017.103, 2018.

Yravedra, J., C. Cacho, J. A. Martos, M. Andres, B. Avezuela, J. Jorda-Pardo, L. Marquer, I. Martin-Lerma, C. Sesé & J. Valvidia: Recurrent Magdalenian occupation in the interior of the Iberian Peninsula: new insights from the archaeological site of La Peña de Estebanvela (Segovia, Spain). Archaeological and Anthropological Sciences, doi:10.1007/s12520-018-0620-z, 2018.

Zanon, M., B. A. Davis, L. Marquer, S. Brewer & J. O. Kaplan: European forest cover during the past 12 000 years: A palynological reconstruction based on modern analogues and remote sensing. Frontiers in Plant Science, 9, article 253, doi:10.3389/fpls.2018.00253, 2018.

Zeeden, C., U. Hambach, D. Veres, K. E. Fitzsimmons, I. Obreht, J. Boesken, P. Schulte & F. Lehmkuhl: Millennial-scale climate oscillations recorded in the Lower Danube loess: high resolution correlative age models constrained by Campanian Ignimbrite tephra and luminescence dating. Palaeogeography, Palaeoclimatology, Palaeoecology, 509, 164-181, doi:10.1016/j.palaeo.2016.12.029 2018.

Zielhofer, C., K. Wellbrock, A. S. al-Souliman, M. von Grafenstein, B. Schneider, K. E. Fitzsimmons, A. Stele, T. Lauer, H. von Suchodoletz, H. Al-Khalifa, M. Grottker & H. G. K. Gebel: Climate forcing and shifts in water management on the northwest Arabian Peninsula (mid-Holocene Rasif wetlands, Saudi Arabia). Quaternary International, 473A, 120-140, 2018.

Book Chapters

Le Roux, G., S. V. Hansson, A. Claustres, S. Binet, F. De Vleeschouwer, L. Gandois, F. Mazier, A. Simonneau, R. Teisserenc, D. Allen, T. Rosset, M. Haver, L. Da Ros, D. Galop, P. Durantez, A. Probst, J. M. Sanchez Perez, S. Sauvage, P. Laffaille, S. Jean, D. Schmeller, L. Camarero, L. Marquer & S. Lofts: Trace metal Legacy in Mountain Environments: a view from the Pyrenees mountains. In: Biogeochemical cycles: Ecological drivers and environmental impact, AGU Books & Wiley-Blackwell, pp. 191-206, doi:10.1002/9781119413332.ch9, 2020.

Marquer, L. & T. Otto: Microscopic charcoal analysis in archaeological contexts. In: Henry, A. (Ed.) Analysis of Microscopic Particles in Archaeological Samples. Springer, Cham, pp. 225-254, doi:10.1007/978-3-030-42622-4, 2020.

Fitzsimmons, K. E.: Applications in aeolian environments. In: Bateman, M., Bailiff, I. (eds) Handbook of Luminescence Dating. Whittles Publishing, Caithness, 2019.
.

Satellite Remote Sensing Group (T. Wagner et al.)

Journal Articles

2020

Borger, C., S. Beirle, S. Dörner, H. Sihler & T. & Wagner, T.: Total column water vapour retrieval from S-5P/TROPOMI in the visible blue spectral range. Atmospheric Measurement Techniques, 13(5), 2751-2783, doi:10.5194/amt-13-2751-2020, 2020.

Casaballe, N., M. Di Martino, M. Osorio, J. A. Ferrari, T. Wagner & E. Frins: Improved algorithm with adaptive regularization for tomographic reconstruction of gas distributions using DOAS measurements. Applied Optics, 59(13), D179-D188, doi:10.1364/AO.383584, 2020.

Cheng, S., J. Jin, J. Ma, X. Xu, L. Ran, Z. Ma, J. Chen, J. Guo, P. Yang, Y. Wang & T. Wagner: Measuring the Vertical Profiles of Aerosol Extinction in the Lower Troposphere by MAX-DOAS at a Rural Site in the North China Plain. Atmosphere, 11(10), 1037, doi:10.3390/atmos11101037, 2020.

Compernolle, S., T. Verhoelst, G. Pinardi, J. Granville, D. Hubert, A. Keppens, S. Niemeijer, B. Rino, A. Bais, S. Beirle, F. Boersma, J. P. Burrows, I. De Smedt, H. Eskes, F. Goutail, F. Hendrick, A. Lorente, A. Pazmino, A. Piters, E. Peters, J.-P. Pommereau, J. Remmers, A. Richter, J. Van Geffen, M. Van Roozendael, T. Wagner & J.-C. Lambert: Validation of Aura-OMI QA4ECV NO_2 climate data records with ground-based DOAS networks: the role of measurement and comparison uncertainties. Atmospheric Chemistry and Physics, 20(13), 8017-8045, doi:10.5194/acp-20-8017-2020, 2020.

Donner, S., J. Kuhn, M. Van Roozendael, A. Bais, S. Beirle, T. Boesch, K. Bognar, I. Bruchkouski, K. L. Chan, S. Dörner, T. Drosoglou, C. Fayt, U. Frieß, F. Hendrick, C. Hermans, J. Jin, A. Li, J. Ma, E. Peters, G. Pinardi, A. Richter, S. F. Schreier, A. Seyler, K. Strong, J.-L. Tirpitz, Y. Wang, P. Xie, J. Xu, X. Zhao & T. Wagner: Evaluating different methods for elevation calibration of MAX-DOAS (Multi AXis Differential Optical Absorption Spectroscopy) instruments during the CINDI-2 campaign. Atmospheric Measurement Techniques, 13(2), 685-712, doi:10.5194/amt-13-685-2020, 2020.

Huang, Y., A. Li, T. Wagner, Y. Wang, Z. Hu, Z., P. Xie, J. Xu, H. Ren, J. Remmers, X. Fang & B. Dang: The quantification of NO_X and SO_2 point source emission flux errors of mobile differential optical absorption spectroscopy on the basis of the Gaussian dispersion model: a simulation study. Atmospheric Measurement Techniques, 13(11), 6025-6051. doi:10.5194/amt-13-6025-2020, 2020.

Kreher, K., M. Van Roozendael, F. Hendrick, A. Apituley, E. Dimitropoulou, U. Friess, A. Richter, T. Wagner, J. Lampel, N. Abuhassan, L. Ang, M. Anguas, A. Bais, N. Benavent, T. Boesch, K. Bognar, A. Borovski, I. Bruchkouski, A. Cede, K. L. Chan, S. Donner, T. Drosoglou, C. Fayt, H. Finkenzeller, D. Garcia-Nieto, C. Gielen, L. Gómez-Martin, N. Hao, B. Henzing, J. R. Herman, C. Hermans, S. Hoque, H. Irie, J. Jin, P. Johnston, J. K. Butt, F. Khokhar, T. K. Koenig, J. Kuhn, V. Kumar, C. Liu, J. Ma, A. Merlaud, A. K. Mishra, M. Müller, M. Navarro-Comas, M. Ostendorf, A. Pazmino, E. Peters, G. Pinardi, M. Pinharanda, A. Piters, U. Platt, O. Postylyakov, C. Prados-Roman, O. Puentedura, R. Querel, A. Saiz-Lopez, A. Schönhardt, S. F. Schreier, A. Seyler, V. Sinha, E. Spinei, K. Strong, F. Tack, X. Tian, M. Tiefengraber, J.-L. Tirpitz, J. van Gent, R. Volkamer, M. Vrekoussis, S. Wang, Z. Wang, M. Wenig, F. Wittrock, P. H. Xie, J. Xu, M. Yela, C. Zhang & X. Zhao: Intercomparison of NO_2, O_4, O_3 and HCHO slant column measurements by MAX-DOAS and zenith-sky UV-Visible spectrometers during CINDI-2. Atmospheric Measurement Techniques, 13(5), 2169-2208, doi:10.5194/amt-13-2169-2020, 2020.

Kumar, V., S. Beirle, S. Dörner, A.K. Mishra, S. Donner, Y. Wang, V. Sinha & T. Wagner: Long term MAX-DOAS measurements of NO_2, HCHO and aerosols and evaluation of corresponding satellite data products over Mohali in the Indo-Gangetic plain. Atmos. Chem. Phys., 20, 14183-14235, doi:10.5194/acp-2020-14183-2020, 2020.

Liu, F., B. N. Duncan, N. A. Krotkov, L. N. Lamsal, S. Beirle, D. Griffin, D., C. A. McLinden, D. L. Goldberg & Z. Lu: A methodology to constrain carbon dioxide emissions from coal-fired power plants using satellite observations of co-emitted nitrogen dioxide. Atmospheric Chemistry and Physics, 20(1), 99-116, doi:10.5194/acp-20-99-2020, 2020.

Ma, J., Dörner, S., Donner, S., Jin, J., Cheng, S., Guo, J., Z. Zhang, J. Wang, P. Liu, G. Zhang, J. Pukite, J. Lampel & T. Wagner: MAX-DOAS measurements of NO_2, SO_2, HCHO, and BrO at the Mt. Waliguan WMO GAW global baseline station in the Tibetan Plateau. Atmospheric Chemistry and Physics, 20(11), 6973-6990, doi:10.5194/acp-20-6973-2020, 2020.

Merlaud, A., L. D.-E. Belegante, M. Constantin, A. C. Den Hoed, M. Meier, M. Allaart, M. Ardelean, M. Arseni, T. Boesch, H. Brenot, A. Calcan, E. Dekemper, S. Donner, S. Dörner, M. C. B. Dragomir, L. Georgescu, A. Nemuc, D. Nicolae, G. Pinardi, A. Richter, A. Rosu, T. Ruhtz, A. Schoenhardt, D. Schuettenmeyer, R. Shaiganfar, K. Stebel, F. Tack, S. N. Vajaiac, J. Vasilescu, J. Vanhamel, T. Wagner & M. Van Roozendael: Satellite validation strategy assessments based on the AROMAT campaigns. Atmospheric Measurement Techniques, 13(10), 5513-5535, doi:10.5194/amt-13-5513-2020, 2020.

Pinardi, G., M. Van Roozendael, F. Hendrick, N. Theys, N. Abuhassan, N., A. Bais, F. Boersma, A. Cede, J. Chong, S. Donner, T. Drosoglou, U. Frieß, J. Granville, J. R. Herman, H. Eskes, R. Holla, J. Hovila, H. Irie, Y. Kanaya, D. Karagkiozidis, N. Kouremeti, J.-C. Lambert, J. Ma, E. Peters, A. Piters, O. Postylyakov, A. Richter, J. Remmers, H. Takashima, M. Tiefengraber, P. Valks, T. Vlemmix, T. Wagner & F. Wittrock: Validation of tropospheric NO_2 column measurements of GOME-2A and OMI using MAX-DOAS and direct sun network observations. Atmospheric Measurement Techniques 13, 6141-6174, doi.org/10.5194/amt-13-6141-2020, 2020.

Schwaerzel, M., C. Emde, D. Brunner, R. Morales, T. Wagner, A. Berne, A., B. Buchmann & G. Kuhlmann: Three-dimensional radiative transfer effects on airborne and ground-based trace gas remote sensing. Atmospheric Measurement Techniques, 13(8), 4277-4293, doi:10.5194/amt-13-4277-2020, 2020.

Wang, Y., A. Apituley, A. Bais, S. Beirle, N. Benavent, A. Borovski, A., I. Bruchkouski, K. L. Chan, S. Donner, T. Drosoglou, H. Finkenzeller, M. M. Friedrich, U. Frieß, D. Garcia-Nieto, L. Gomez-Martin, F. Hendrick, A. Hilboll, J. Jin, P. Johnston, T. K. Koenig, K. Kreher, V. Kumar, A. Kyuberis, J. Lampel, C. Liu, H. Liu, J. Ma, O. L. Polyansky, O. Postylyakov, R. Querel, A. Saiz-Lopez, S. Schmitt, X. Tian, J.-L. Tirpitz, M. Van Roozendael, R. Volkamer, Z. Wang, P. Xie, C. Xing, J. Xu, M. Yela, C. Zhang & T. Wagner: Inter-comparison of MAX-DOAS measurements of tropospheric HONO slant column densities and vertical profiles during the CINDI-2 campaign. Atmospheric Measurement Techniques, 13(9), 5087-5116, doi:10.5194/amt-13-5087-2020, 2020.

Wang, Z., K. L. Chan, K.-P. Heue, A. Doicu, T. Wagner, R. Holla & M. Wiegner: A multi-axis differential optical absorption spectroscopy aerosol profile retrieval algorithm for high-altitude measurements: application to measurements at Schneefernerhaus (UFS), Germany. Atmospheric Measurement Techniques, 13(4), 1835-1866, doi:10.5194/amt-13-1835-2020, 2020.

2019

Beirle, S., S. Dörner, S. Donner, J. Remmers, Y. Wang & T. Wagner: The Mainz profile algorithm (MAPA). Atmos. Meas. Tech., 12, 1785–1806, doi:10.5194/amt-12-1785-2019, 2019.

Beirle, S., C. Borger, S. Dörner, A. Li, Z. Hu, F. Liu, Y. Wang & T. Wagner: Pinpointing nitrogen oxide emissions from space. Sci. Adv., 5, (11), doi:10.1126/sciadv.aax9800, 2019.

Dinger, F., S. Bredemeyer, S. Arellano, N. Bobrowski, U. Platt & T. Wagner: On the link between Earth tides and volcanic degassing. Solid Earth, 10, 725–740, doi:10.5194/se-10-725-2019, 2019.

Frieß, U., S. Beirle, L. Alvarado Bonilla, T. Bösch, M.M. Friedrich, F. Hendrick, A. Piters, A. Richter, M. van Roozendael, V.V. Rozanov, E. Spinei, J.-L. Tirpitz, T. Vlemmix, T. Wagner & Y. Wang: Intercomparison of MAX-DOAS vertical profile retrieval algorithms: studies using synthetic data. Atmos. Meas. Tech., 12, 2155–2181, doi:10.5194/amt-12-2155-2019, 2019.

Hoheisel, A., C. Yeman, F. Dinger, H. Eckhardt & M. Schmidt: An improved method for mobile characterisation of $\delta^{13}CH_4$ source signatures and its application in Germany. Atmos. Meas. Tech., 12, 1123–1139, doi:10.5194/amt-12-1123-2019, 2019.

Kuhn, J., U. Platt, N. Bobrowski & T. Wagner: Towards imaging of atmospheric trace gases using Fabry–Pérot interferometer correlation spectroscopy in the UV and visible spectral range. Atmos. Meas. Tech., 12, 735–747, doi:10.5194/amt-12-735-2019 (2019).

Liu, M., J. Lin, K.F. Boersma, G. Pinardi, Y. Wang, J. Chimot, T. Wagner, P. Xie, H. Eskes, M. Van Roozendael, F. Hendrick, P. Wang, T. Wang, Y. Yan, L. Chen & R. Ni: Improved aerosol correction for OMI tropospheric NO_2 retrieval over East Asia: constraint from CALIOP aerosol vertical profile. Atmos. Meas. Tech., 12, 1–21, doi:10.5194/amt-12-1-2019, 2019.

Liu, S., P. Valks, G. Pinardi, I. De Smedt, H. Yu, S. Beirle & A. Richter: An improved total and tropospheric NO_2 column retrieval for GOME-2. Atmos. Meas. Tech., 12, 1029–1057, doi:10.5194/amt-12-1029-2019, 2019.

Lorente, A., K.F. Boersma, H.J. Eskes, J.P. Veefkind, J.H.G.M. van Geffen, M.B. de Zeeuw, H.A.C.D. van der Gon, S. Beirle & M.C. Krol: Quantification of nitrogen oxides emissions from build-up of pollution over Paris with TROPOMI. Sci. Rep., 9 (1), 1–10, doi:10.1038/s41598-019-56428-5, 2019.

Tian, X., P. Xie, J. Xu, Y. Wang, A. Li, F. Wu, Z. Hu, C. Liu & Q. Zhang: Ground-based MAX-DOAS observations of tropospheric formaldehyde VCDs and comparisons with the CAMS model at a rural site near Beijing during APEC 2014. Atmos. Chem. Phys., 19, 3375–3393, doi:10.5194/acp-19-3375-2019, 2019.

Wagner, T., S. Beirle, N. Benavent, T. Bösch, K.L. Chan, S. Donner, S. Dörner, C. Fayt, U. Frieß, D. García-Nieto, C. Gielen, D. González-Bartolome, L. Gomez, F. Hendrick, B. Henzing, J.L. Jin, J. Lampel, J. Ma, K. Mies, M. Navarro, E. Peters, G. Pinardi, O. Puentedura, J. Puķīte, J. Remmers, A. Richter, A. Saiz-Lopez, R. Shaiganfar, H. Sihler, M. Van Roozendael, Y. Wang & M. Yela: Is a scaling factor required to obtain closure between measured and modelled atmospheric O_4 absorptions? An assessment of uncertainties of measurements and radiative transfer simulations for 2 selected days during the MAD-CAT campaign. Atmos. Meas. Tech., 12, 2745–2817, doi:10.5194/amt-12-2745-2019 2019.

Wang, Y., S. Dörner, S. Donner, S. Böhnke, I. De Smedt, R.R. Dickerson, Z. Dong, H. He, Z. Li, Z. Li, D. Li, D. Liu, X. Ren, N. Theys, Y. Wang, Y. Wang, Z. Wang, H. Xu, J. Xu, & T. Wagner: Vertical profiles of NO_2, SO_2, HONO, HCHO, CHOCHO and aerosols derived from MAX-DOAS measurements at a rural site in the central western North China Plain and their relation to emission sources and effects of regional transport. Atmos. Chem. Phys., 19, 5417–5449, doi:10.5194/acp-19-5417-2019, 2019.

Warnach, S., N. Bobrowski, S. Hidalgo, S. Arellano, H. Sihler, F. Dinger, P. Lübcke, J. Battaglia, A. Steele, B. Galle, U. Platt & T. Wagner: Variation of the BrO/SO_2 Molar Ratio in the Plume of Tungurahua Volcano Between 2007 and 2017 and its Relationship to Volcanic Activity. Front. Earth Sc., 7, doi: 10.3389/feart.2019.00132, 2019.

2018

Beirle, S., J. Lampel, Y. Wang, K. Mies, S. Dörner, M. Grossi, D. Loyola, A. Dehn, A. Danielczok, M. Schröder & T. Wagner: The ESA GOME-Evolution “Climate” water vapor product: a homogenized time series of H2O columns from GOME, SCIAMACHY, and GOME-2. Earth Syst. Sci. Data, 10, 449-468, doi:10.5194/essd-10-449-2018, 2018.

Boersma, K. F., H.J. Eskes, A. Richter, I. De Smedt, A. Lorente, S. Beirle, J.H.G.M. van Geffen, M. Zara, E. Peters, M. Van Roozendael, T. Wagner, J.D. Maasakkers, R.J. van der A, J. Nightingale, A. De Rudder, H. Irie, G. Pinardi, J.-C. Lambert & S.C. Compernolle: Improving algorithms and uncertainty estimates for satellite NO_2 retrievals: results from the quality assurance for the essential climate variables (QA4ECV) project. Atmos. Meas. Tech., 11, 6651-6678, doi:10.5194/amt-11-6651-2018, 2018.

De Smedt, I., N. Theys, H. Yu, T. Danckaert, C. Lerot, S. Compernolle, M. Van Roozendael, A. Richter, A. Hilboll, E. Peters, M. Pedergnana, D. Loyola, S. Beirle, T. Wagner, H. Eskes, J. van Geffen, K.F. Boersma & P. Veefkind: Algorithm theoretical baseline for formaldehyde retrievals from S5P TROPOMI and from the QA4ECV project. Atmos. Meas. Tech., 11, 2395-2426, doi:10.5194/amt-11-2395-2018, 2018.

Dinger, F., N. Bobrowski, S. Warnach, S. Bredemeyer, S. Hidalgo, S. Arellano, B. Galle, U. Platt & T. Wagner: Periodicity in the BrO/SO_2 molar ratios in the volcanic gas plume of Cotopaxi and its correlation with the Earth tides during the eruption in 2015. Solid Earth, 9, 247-266, doi:10.5194/se-9-247-2018, 2018.

Lampel, J., J. Zielcke, S. Schmitt, D. Pöhler, U. Frieß, U. Platt & T. Wagner: Detection of O_4 absorption around 328 and 419 nm in measured atmospheric absorption spectra. Atmos. Chem. Phys., 18, 1671-1683, doi:10.5194/acp-18-1671-2018, 2018.

Marais, E. A., D.J. Jacob, S. Choi, J. Joiner, M. Belmonte-Rivas, R.C. Cohen, S. Beirle, L.T. Murray, L.D. Schiferl, V. Shah & L. Jaeglé, L.: Nitrogen oxides in the global upper troposphere: interpreting cloud-sliced NO_2 observations from the OMI satellite instrument. Atmos. Chem. Phys., 18, 17017-17027, doi:10.5194/acp-18-17017-2018, 2018.

Saturno, J., F. Ditas, M. Penning de Vries, B.A. Holanda, M.L. Pöhlker, S. Carbone, D. Walter, N. Bobrowski, J. Brito, X. Chi, A. Gutmann, I. Hrabe de Angelis, L.A.T. Machado, D. Moran-Zuloaga, J. Rüdiger, J. Schneider, C. Schulz, Q. Wang, M. Wendisch, P. Artaxo, T. Wagner, U. Pöschl, M.O. Andreae & C. Pöhlker: African volcanic emissions influencing atmospheric aerosols over the Amazon rain forest. Atmos. Chem. Phys., 18, 10391-10405, doi:10.5194/acp-18-10391-2018, 2018.

Verstraeten, W.W., K.F. Boersma, J. Douros, J.E. Williams, H. Eskes, F. Liu, S. Beirle & A. Delcloo: Top-Down NO_X Emissions of European Cities Based on the Downwind Plume of Modelled and Space-Borne Tropospheric NO_2 Columns. Sensors, 18, 2893, doi:10.3390/s18092893, 2018.

Wang, Y., J. Puķīte, T. Wagner, S. Donner, S. Beirle, A. Hilboll, M. Vrekoussis, A. Richter, A. Apituley, A. Piters, M. Allaart, H. Eskes, A. Frumau, M.V. Roozendael, J. Lampel, U. Platt, S. Schmitt, D. Swart & J. Vonk: Vertical Profiles of Tropospheric Ozone From MAX-DOAS Measurements During the CINDI-2 Campaign: Part 1—Development of a New Retrieval Algorithm. J. Geophys. Res. Atmos., 123, 10,637–10,670, doi:10.1029/2018JD028647, 2018.

Zara, M., K.F. Boersma, I. De Smedt, A. Richter, E. Peters, J.H.G.M. Van Geffen, S. Beirle, T. Wagner, M. Van Roozendael, S. Marchenko, L.N. Lamsal & H.J. Eskes: Improved slant column density retrieval of nitrogen dioxide and formaldehyde for OMI and GOME-2A from QA4ECV: intercomparison, uncertainty characterization, and trends. Atmos. Meas. Tech., 11, 4033-4058, doi:10.5194/amt-11-4033-2018, 2018.

Zhang, C., C. Liu, Y. Wang, F. Si, H. Zhou, M. Zhao, W. Su, W. Zhang, K.L. Chan, X. Liu, P. Xie, J. Liu & T. Wagner: Preflight Evaluation of the Performance of the Chinese Environmental Trace Gas Monitoring Instrument (EMI) by Spectral Analyses of Nitrogen Dioxide. IEE Trans. Geosci. Remote. Sens., 56, 3323-3332, doi: 10.1109/TGRS.2018.2798038, 2018.

Conference Papers

Bruchkouski, I., A. Krasouski, L. Turishev, S. Umreika, A. Elokhov, O. Postylyakov & Y. Wang: Aerosol profile measurements in the coastal zone of Antarctica: instrumentation and preliminary results, in Remote Sensing of Clouds and the Atmosphere XXIII., doi: 10.1117/12.2515120, 2018.

Doctoral Theses

Uhlmannsiek, Katharina: Investigation of the impact of desert dust on bio-marine activity in the upper ocean layers using MAX-DOAS measurements. Universität Mainz, 2020.

Dinger, Florian: On long-term variations of the BrO/SO_2 molar ratios in volcanic gas plumes. Universität Mainz, 2019.

Gu, Myojeong: Long term trends of Stratospheric trace gases from ground-based DOAS observations of Kiruna, Sweden. Universität Heidelberg, 2019.

Choi, Yoon: Development of a spectroscopic method to identify archaeological remains and to and soils using reflectance spectra in the visible to near infrared region. Universität Mainz, 2018.

Kremmling, Beke: Investigation of photon path length distributions derived from oxygen A-band measurements of the GOSAT satellite instrument. Universität Mainz, 2018.

Bachelor Theses

Lauster, Bianca: Estimating real driving emissions from MAX-DOAS measurements at the A60 motorway near Mainz. Universität Mainz, 2019.

2. Publication Analyses

a. Publication Output and Citation Impact

A bibliometric analysis of the MPI for Chemistry, in the publication period 2009–2019, Thomas Scheidsteger and Robin Haunschild, Max Planck Society, Information Retrieval Services (IVS-CPT)

b. Standard Publication Profile: Output and Impact Max Planck Institute for Chemistry (Otto Hahn Institute)

Agile Data Report by the Max Planck Digital Library, Big Data Analytics Group

Publication Output and Citation Impact

A bibliometric analysis of the MPI for Chemistry, in the publication period 2009–2019

contributed by Thomas Scheidsteger & Robin Haunschild, Max Planck Society, Information Retrieval Services (IVS-CPT)

Introduction: The bibliometric analysis of the Max Planck Institute for Chemistry in Mainz (MPIC) deals with the research performance of the institute during the publication period 2009–2019. The methods used and the presentation and interpretation of the results follow the "Standards for the application of bibliometrics in the evaluation of research institutes in the field of natural sciences" (Bornmann et al., 2012; Bornmann et al., 2014; Hicks, Wouters, Waltman, de Rijcke, and Rafols, 2015) and considers the recommendations for research evaluation studies of Marx (2011), Marx and Bornmann (2012), Bornmann and Haunschild (2017), and Haunschild, Schier, and Bornmann (2016).

Data set: The mission of the Max Planck Institutes is to conduct basic research. The result of the research activities is therefore mainly publications in scientific journals. The number of publications (henceforth also referred to as "papers" rather than articles, in order to avoid confusion with the document type "article") that have appeared in peer-reviewed journals covered by Clarivate Analytics' Web of Science (WoS) has become the standard reference for the quantification of scientific output (Birkle, Pendlebury, Schnell, and Adams, 2020). The MPIC publications were identified by the authors' addresses: All publications were selected, in which this Max Planck Institute was stated as an author's address. This publication set has been checked by the local library. 27 papers have been removed, where the given MPIC address is only the current address of the respective author. 51 papers that resulted from an affiliation search in Scopus and 22 papers from the institute's repository have been added. Those publications lack an indexed MPIC address in the WoS but were indicated by the institute's library as affiliated with the MPIC. The data used in this analysis stem – if not otherwise noted – from a bibliometrics database developed and maintained in cooperation with the Max Planck Digital Library (MPDL, Munich) and derived from the Science Citation Index - Expanded (SCI-E), the Social Sciences Citation Index (SSCI), the Conference Proceedings Citation Index - Science (CPCI-S) and the Arts and Humanities Citation Index (AHCI), provided by Clarivate Analytics and updated in calendar week 17 in 2020.

This study deals with publications of the MPIC from 2009 to 2019 of the document types “article” and “review” (and the corresponding citation metrics). It is a standard procedure in bibliometrics to exclude publications of other document types from the statistical analyses. For each publication, the citation impact has been measured from publication until the end of 2019.

Publication output: Out of the total of 2270 publications published by the MPI, n=2187 (96.3%) belong to the document type “article” and n=83 (3.7%) to “review.” According to the WoS web-interface, 64.9% (n=1473) of the total set are Open Access papers. Figure 1 shows the distribution of the publications across the publication years 2009 to 2019. According to the figure, the MPI publishes on average about 206 publications per year (black line in Figure 1). On average, the output has increased over the years. About 86% of the papers have been written as international cooperations. Appendix A includes more information about collaborations of the MPIC on a country basis.

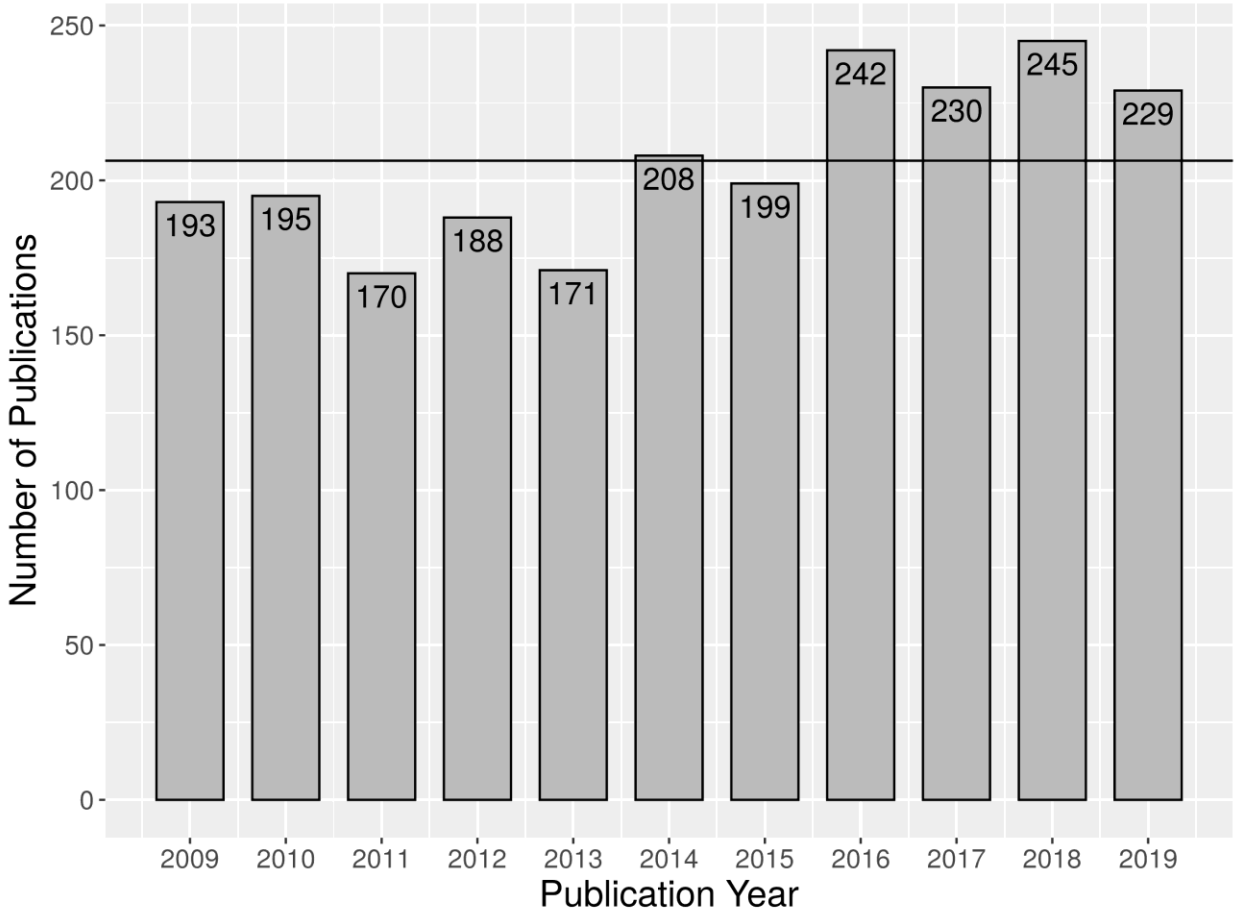

Figure 1: Publication output of the MPIC per year (articles and reviews) in the years 2009 to 2019 (the black line marks the average of about 206 across all years).

Table 1 lists the journals in which at least 10 MPIC papers have appeared between 2009 and 2019. The distribution of the MPIC papers across the journals is very strongly skewed: A quarter of all papers are published in one single journal; it takes only two more to cover more than a third. To cover a half of all papers it only takes nine journals, and for two thirds it takes only 26 journals. In total, the MPIC has published in 364 different journals.

Table 1: Distribution of the MPIC papers (articles and reviews) across journals (limited to journals having published at least 10 MPIC papers) in the period 2009–2019 (sorted in descending order of the absolute number of papers).

Journal	Papers	%Papers	Cumulative %
Atmospheric Chemistry and Physics	584	25.73	25.73
Atmospheric Measurement Techniques	139	6.12	31.85
Journal of Geophysical Research - Atmospheres	91	4.01	35.86
Atmospheric Environment	80	3.52	39.38
Biogeosciences	58	2.56	41.94
Geochimica et Cosmochimica Acta	53	2.33	44.27
Environmental Science and Technology	47	2.07	46.34
Earth and Planetary Science Letters	45	1.98	48.33
Meteoritics and Planetary Science	43	1.89	50.22
Geoscientific Model Development	42	1.85	52.07
Geophysical Research Letters	39	1.72	53.79
Physical Chemistry Chemical Physics	33	1.45	55.24
Chemical Geology	26	1.15	56.39
Scientific Reports	26	1.15	57.53
Geostandards and Geoanalytical Research	24	1.06	58.59
Science of The Total Environment	24	1.06	59.65
Nature Communications	20	0.88	60.53
Atmospheric Research	19	0.84	61.37
The Astrophysical Journal	19	0.84	62.20
Proceedings of the National Academy of Sciences of the United States of America	17	0.75	62.95
Science	17	0.75	63.70
Atmosphere (MDPI)	15	0.66	64.36
Bulletin of the American Meteorological Society	14	0.62	64.98
Environmental Science and Pollution Research	14	0.62	65.59
Nature Geoscience	14	0.62	66.21
Environmental Chemistry	12	0.53	66.74
Nature	11	0.48	67.22
Analytical and Bioanalytical Chemistry	10	0.44	67.67
The Astrophysical Journal Letters	10	0.44	68.11
The Journal of Physical Chemistry A: Molecules, Spectroscopy, Kinetics, Environment and General Theory	10	0.44	68.55

Citation impact: Since the scope and impact of publications vary considerably, the number of publications alone is not sufficient for measuring scholarly success. However, it does not offer a straightforward benchmark for the quality or value of a paper. Indeed, quality may refer to several very distinctive aspects: Elegance, originality, significance or accuracy, but also popularity or even usefulness. Thus, there is no clear definition of quality and no simple way of measuring it. Citations are merely an indication of the attention a paper has received from peers. Nevertheless, numerous studies indicate that a strong correlation exists between impact (measured by citations) and significance or value (measured by rating of peers) (Bornmann, 2011; Diekmann, Naf, and Schubiger, 2012). Given that citations quantify impact as an important aspect of research performance (Martin & Irvine, 1983), they can be recorded and used as proxy data to rate it (provided that the ensembles considered are sufficiently large).
It is a standard approach in bibliometrics to use a minimum citation window of 3 years after publication (Glänzel, 2008). "After an early (third-year) peak … citedness declines steadily as a function of time since publication, probably reflecting the gradual obsolescence of the article contents (individual articles may of course vary greatly in their citational durability)" (Seglen, 1992, p. 629). In general, the longer the citation window, the more reliable and valid is the measurement of a paper's total impact. "A long time-span has the additional benefit of reducing random factors and increasing the substantive reasons for being cited" (Research Evaluation and Policy Project, 2005, pp. 20-21).
The standard approach in bibliometrics of using a three-year citation window interferes with the common request of an institutional evaluation to focus on recent years. As a compromise we include in the citation analysis of this report papers from 2017 and accept the reduced reliability and validity of our citation data for this publication year. More details to the time dependence of the MPIC publications' citations are given in Appendix B.
The MPIC publications of the document types stated (article and review) from 2009 to 2017 (n=1796), were cited 72,553 times until the end of 2019 (including self-citations by the authors themselves). This is an arithmetic average of 40.4 (median=19) citations per paper. Appendix C provides information regarding the countries of origin of the papers citing MPIC publications.

Normalized citation impact: Different disciplines have different citation habits (i.e., different average numbers of references per paper) resulting in different average citation rates (citations per paper). The average citation rates are varying by a factor of about ten between Mathematics and Molecular Biology & Genetics. Furthermore, the average citation rates seem to depend on the size of the corresponding community and whether the research field is popular or not (Waltman and van Eck, 2013).
For assessing the citation impact with regard to a given scientific community (or for comparing different research units), normalization of the citation data is indispensable. The normalized citation impact can be measured as a quotient of an observed citation rate of an institution and an expected citation rate for the fields of publication (i.e., it compares the performance of an institution to the average performance of the world within specific fields). The expected citation rate is calculated based on a specific WoS subject category (i.e., a journal set) and is defined as the average citation rate for all papers of that document type (articles or reviews), in that subject category, and for the selected publication year. Journals (papers) which are assigned to more than one subject category are considered several times.

Table 2 ranks the major subject categories of the journals in which the MPIC has published its papers in the time period 2009-2017. The subject based observed / expected citation ratios are given as a relative impact measure. A subject based observed / expected citation ratio > 1 means that the citation impact is above the average citation rate of the papers within the corresponding subject category. A subject based observed / expected citation ratio < 1 means

that the citation impact is below the average citation rate of the papers within the corresponding subject category.

Table 2: Distribution of the MPIC publications from 2009-2017 across the relevant subject categories (only the 28 subject categories with at least 10 MPIC papers in total were considered). The subject based observed / expected citation ratios are given as a relative impact measure. Note that many journals are assigned to more than one subject category.

Subject Category	Number of papers	Citation ratio
Meteorology & Atmospheric Sciences	875	1.80
Environmental Sciences	427	1.86
Geosciences, Multidisciplinary	217	1.88
Geochemistry & Geophysics	202	1.52
Multidisciplinary Sciences	80	4.52
Ecology	73	1.63
Chemistry, Physical	59	1.69
Physics, Atomic, Molecular & Chemical	50	2.02
Chemistry, Analytical	46	1.02
Engineering, Environmental	40	1.55
Astronomy & Astrophysics	35	1.14
Spectroscopy	26	1.58
Forestry	22	1.27
Geography, Physical	22	1.72
Biochemical Research Methods	21	0.86
Chemistry, Multidisciplinary	20	1.27
Water Resources	19	2.46
Oceanography	19	1.93
Mineralogy	19	1.52
Physics, Applied	15	3.43
Materials Science, Multidisciplinary	14	3.43
Instruments & Instrumentation	14	1.21
Physics, Nuclear	13	1.76
Physics, Condensed Matter	12	3.59
Paleontology	11	1.54
Marine & Freshwater Biology	10	1.78
Plant Sciences	10	0.85
Physics, Multidisciplinary	10	2.42

Figure 2 displays the distribution of the citation ratios for all papers in the 28 WoS subject categories of Table 2. In some categories, some papers have a citation ratio amounting to a high multiple of the respective category mean. Three of these cases – all published in journals of the Nature Publishing Group - have an over proportional influence on the mean citation ratio

of their respective subject categories, thereby causing remarkably high citation ratios above 3.4 in Table 2. The bibliographic data of these three most influential outliers are:

1. *The contribution of outdoor air pollution sources to premature mortality on a global scale* Lelieveld et al (2015), Nature 525 (7569), 367-371, DOI: 10.1038/nature15371.
2. *A safe operating space for humanity*, Rockström et al. (2009), Nature 461 (7263), 472-475, DOI: 10.1038/461472a.
3. *Electronic and magnetic phase diagram of beta-Fe1.01Se with superconductivity at 36.7 K under pressure*, Medvedev et al (2009), Nature Materials 8 (8), 630-633, DOI: 10.1038/nmat2491.

If we neglected the first two papers in the calculation of the citations ratios, it would change the citation ratio from 4.52 to 3.34 for "Multidisciplinary Sciences". If we neglect the third one, the citation ratio would change in four subject categories at once: From 3.59 to 1.58 for "Physics, Condensed Matter", from 3.43 to 1.63 for "Physics, Applied", from 3.43 to 1.86 for "Materials Science, Multidisciplinary", and from 1.69 to 1.36 for "Chemistry, Physical".

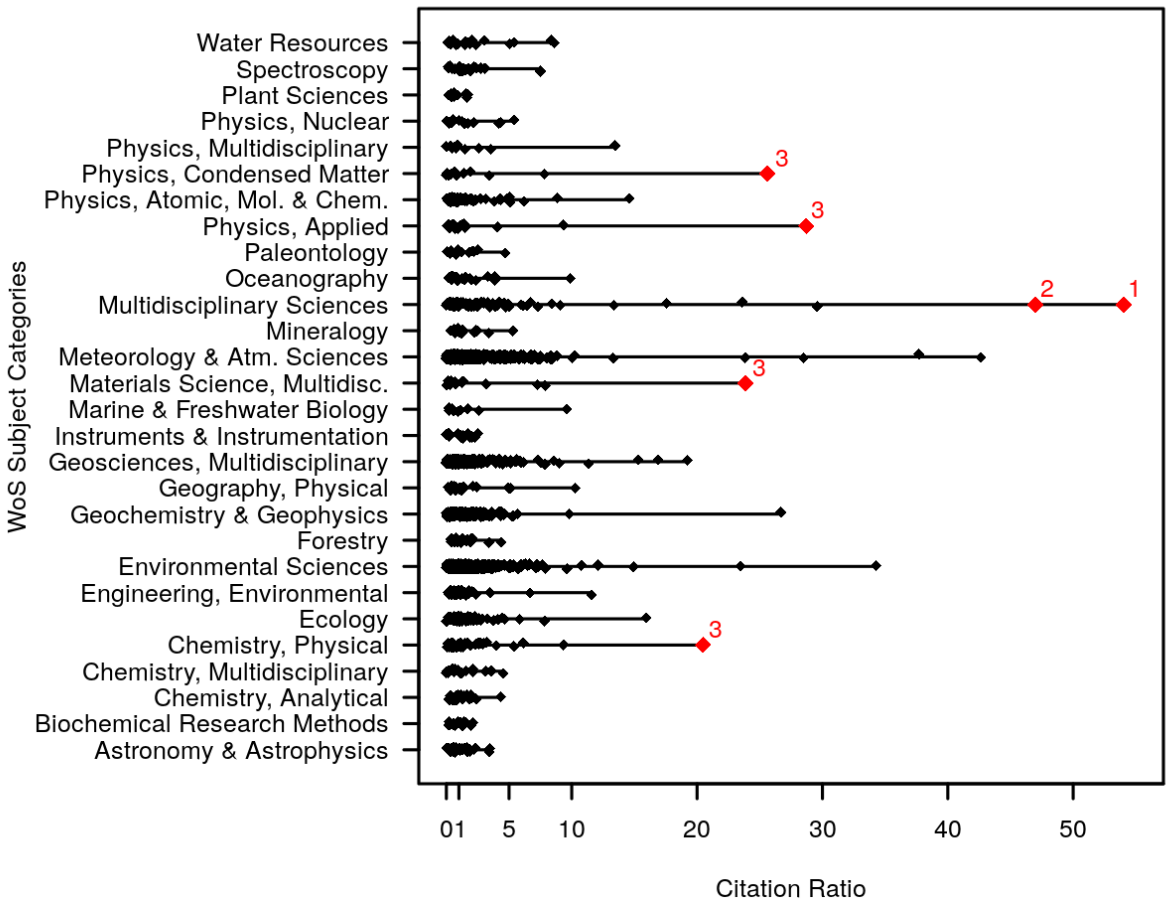

Figure 2: Distribution of citation ratios across the 28 WoS subject categories from Table 2 in alphabetical order. The three most influential outliers are numbered and colored in red and described in the text body.

The following rules of thumb formulated by van Raan (2005) – Professor of Quantitative Studies of Science at the Centre for Science and Technology Studies (CWTS) at Leiden University, Leiden, The Netherlands – specifies the interpretation of the category based normalized impact further on: "I regard the internationally standardized impact indicator CPP/FCSm [Table 2:

Citation ratio] as the crown indicator. This indicator enables us to observe immediately whether the performance of a research group or institute is significantly far below (indicator value < 0.5), below (indicator value 0.5–0.8), about (0.8–1.2), above (1.2–1.5), or far above (>1.5) the international impact standard of the field. I stress, however, that for the interpretation of the measured impact value, one has to take into account the aggregation level of the entity under study. The higher the aggregation level, the larger the volume in publications, and the more difficult it is to have an impact significantly above the international level. Based on my long-standing experiences, I can say the following. At the meso-level (e. g., a university, faculty, or large institute with about 500 or more publications per year), a CPP/FCSm value above 1.2 means that the institute's impact as a whole is significantly above the (Western) world average. With a CPP/FCSm value above 1.5 … the institute can be considered to be scientifically strong, with a high probability of finding very good to excellent groups" (pp. 7-8).

Interpreted against the backdrop of these rules of thumb, Table 2 reveals that the MPIC has achieved a subject based observed / expected citation ratio *far above* (>1.5) the international standard of the corresponding field in 21 of the 28 subject categories with at least 10 MPIC papers. The MPIC has achieved citation ratios between 1.2 and 1.5 in three subject categories in Table 2 which indicates a performance *above* the international standard in these subject categories. In four subject categories of Table 2, the institute has achieved a performance *comparable* to the international standard (citation ratio between 0.8 and 1.2). In none of the subject categories the impact has to be considered as *below* the international standard (citation ratio less than 0.8). The above mentioned removal of three outliers in the citation ratio would only change the assessment of the impact of *one* category, namely "Chemistry, Physical", from "far above average" to "above average".

Citation impact according to percentiles: Until today, it has been customary in evaluative bibliometrics to use the arithmetic mean value to normalize citation data (Waltman, van Eck, van Leeuwen, Visser, and van Raan, 2011). According to the results from Albarrán, Crespo, Ortuño, and Ruiz-Castillo (2011) (and many other studies), the distribution of citations in every subject category is very skewed, however: "The mean is 20 points above the median, while 9-10% of all articles in the upper tail account for about 44% of all citations" (p. 385). The skewed distribution poses the risk that the citation statistics are dominated by a few highly cited papers (Boyack, 2004; Waltman et al., 2012). This is not possible with statistics based on percentiles. Using percentiles to normalize citations can therefore give better comparisons of the impact of publications from different subject areas and years of publication and with different document types than normalization using the arithmetic mean. In the Leiden Manifesto for research metrics, Hicks, Wouters, Waltman, de Rijcke, and Rafols (2015) concluded: "Normalized indicators are required, and the most robust normalization method is based on percentiles" (p. 430).

The percentile provides information about the impact the publication in question has had compared to other publications (in the same subject area and publication year). A percentile is a value below which a certain proportion of observations fall (Bornmann, Mutz, Marx, Schier, and Daniel, 2011; Leydesdorff, Bornmann, Mutz, and Opthof, 2011): The higher the percentile for a publication, the more citations it has received compared to publications in the same subject area and publication year. The percentile for the respective publication is determined using the distribution of the percentile ranks over all publications. For example, a value of 90 means that the publication in question is among the 10% most cited publications; the other 90% of the publications have achieved less impact. A value of 50 represents the median and thus an average citation impact compared to the other publications (from the same subject area and publication year). Since percentiles can be classified into percentile rank classes (e.g., papers

belonging to the 10% most cited papers), it is not necessary to use rules of thumb (see above the rules of thumbs of van Raan for the mean-based indicators) for the interpretation of citation impact figures.

InCites – one of the most important customized, web-based research evaluation tools for analyzing institutional productivity and impact (provided by Clarivate Analytics) – calculates percentiles as follows: "The percentile of a publication is determined by creating a citation frequency distribution for all the publications in the same year, subject category and of the same document type (arranging the papers in descending order of citation count), and determining the percentage of papers at each level of citation, i.e., the percentage of papers cited more often than the paper of interest. If a paper has a percentile of value of one, then 99 percent of the papers in the same subject category, year and of the same document type have a citation count that is lower. A percentile indicates how a paper has performed relative to others in its field, year and document type and is therefore a normalized indicator. ... In the case that a paper is assigned to more than one category, the category in which the percentile value is closest to zero is used (i.e. the best performing value)." (InCites, 2019)

Since in a departure from convention low percentile values mean high citation impact (and vice versa), the percentiles received from InCites are called “inverted percentiles”. By standardizing the citations using inverted percentiles, we can compare the impact of publications from different subject areas and publication years directly.

Figure 3 shows the result of an impact analysis based on inverted percentiles for the publications (articles and reviews) of the MPIC from 2009 to 2017. The box and dot plot in the figure visualizes the distribution of the inverted percentiles for the different publication years. The box plots consist of a box where the outer borders mark the first quartile (25% of the values) and the third quartile (75% of the values). The red line with the diamond inside the box indicates the median (50% of the values are higher or lower than this value). The position of the median in the box gives an insight into the skewness of the values. The median of all papers is represented by the dashed red line. In addition to the boxes, Figure 3 shows the distribution of the percentiles using a dot plot.

For a facilitated interpretation of the percentile results in Figure 3, Table 3 presents median inverted percentile ranks for all papers from the USA, Germany and MPIs clustered in the CPT section of the Max.Planck Society.

Table 3: Median inverted percentile ranks for the USA and Germany and the CPT Section compared to the MPIC (publication years 2009-2017):

Aggregation unit	Median inverted percentile ranks
USA	40.6
Germany	42.4
CPTS	30.5
MPIC	27.3

As shown by the results in Figure 3, the publications of the MPIC have achieved a similar impact each year, which more or less corresponds to the median of all years, med=27.3, based on n=1796 papers. Only the year 2014 shows a significantly lower impact than the other years. This result points out that the papers the MPI has published between 2009 and 2017 have on average an impact in the top quarter within their subject categories. The comparison of the MPI with the USA, Germany and the CPT section in Table 3 shows that the MPI on average

performs significantly better than these countries and slightly better than the average of the institutes in the CPT section of the Max Planck Society.

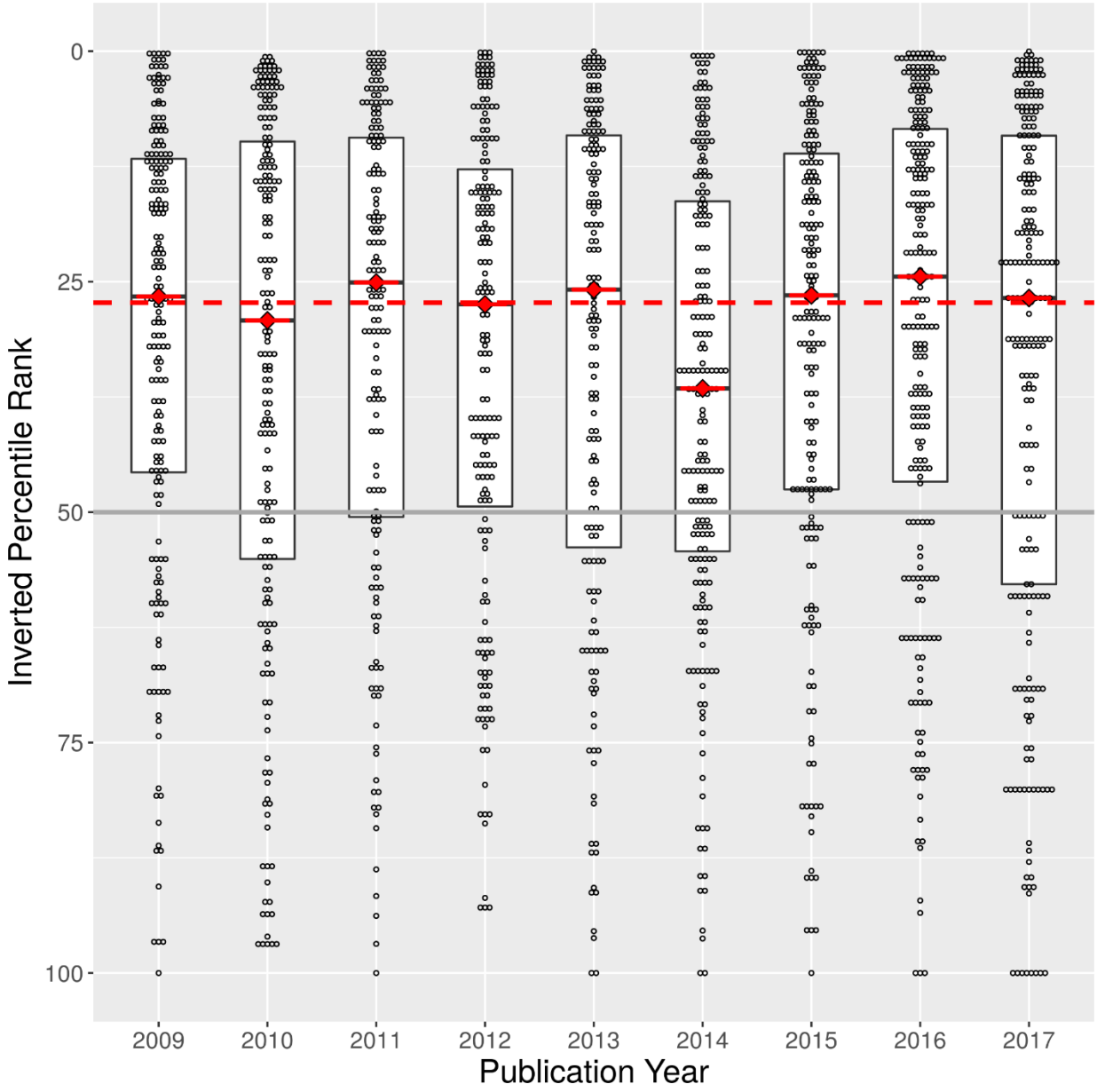

Figure 3: Distribution of the inverted percentiles for papers (articles and reviews) published by the institute between 2009 and 2017 (n=1796)*. The lower the inverted percentile of a publication, the higher is its impact in the scientific community. The red dashed line in the graph marks the overall impact of the MPIC* (median=27.3)*. The red bar with the diamond indicates the median of the institute in that year.*

Top 10% most frequently cited publications: Since publications that rank among the 10% most frequently cited publications in their field are to be considered as highly cited publications, the percentage of papers from the institute that belong to the top 10% in their field has also been calculated. Statistically, one would expect that 10% of an institution's publications would rank among the 10% of the most cited publications (Bornmann, de Moya Anegón, and Leydesdorff, 2012; Bornmann and Haunschild, 2017; Waltman & Schreiber, 2013). Note that this indicator implies another perspective concerning the citation impact of an institutional unit: The higher the percentage of papers that belong to the top 10%, the higher is its citation impact in the scientific community.

23.6% (3.2%) of the MPIC's papers published *between 2009 and 2017* belong to the 10% (1%) most cited papers within their subject categories.
In the Leiden Ranking 2020 of universities (http://www.leidenranking.com/) (Waltman, et al., 2012), the top 10% (1%) values are calculated for different four-year time intervals. For the sake of comparison, we take the MPIC's 879 publications *between 2014 and 2017* and obtain the values of 23.1% (3.9%) highly cited publications. In the subject field Physical Sciences and Engineering, the three top ranked universities with at least 500 publications in that time period are Stanford with 26.6% (4.8%), Harvard with 24.1% (4.1%), and Emory with 23.7% (3.6%).

Note that the Leiden Ranking uses time slices of four years. The time period 2014-2017 was used for comparison. Furthermore, algorithmically constructed clusters rather than WoS subject categories (as in this study) were used in the Leiden Ranking for normalization of citation impact. However, on the aggregation level of universities both approaches produce impact values which are highly correlated (Perianes-Rodriguez & Ruiz-Castillo, 2015).

Conclusions: The bibliometric analysis of the MPIC is based on data retrieved from a bibliometrics database developed and maintained in cooperation with the Max Planck Digital Library (MPDL, Munich) and derived from citation indexes provided by Clarivate Analytics. According to the publication output, this MPI published on average 206 papers (articles and reviews) per year.
There has been an increase of publication output during the considered time period. The different metrics used to measure normalized citation impact point out that the MPIC has reached a comparatively high impact over all the years:

(1) Between 2009 and 2017, the MPIC has published papers which belong on average to the top 27.3% most cited papers within their subject categories. A value of 50% represents the median and thus an average citation impact compared to all publications from the same subject areas and publication years (grey line in Figure 3). A median of 27.3 for the institute (red line in Figure 3) is far above the expected value of 50 based on the relevant community.

(2) Another indicator implies a different perspective concerning citation impact: Nearly one quarter (23.6%) of the papers published between 2009 and 2017 belong to the 10% most cited papers within their subject categories – 10% can be expected if the papers are randomly selected. And even more impressive: More than 3% of the paper set belong to the 1% most cited papers within their subject categories.

List of references

Albarrán, P., Crespo, J., Ortuño, I., & Ruiz-Castillo, J. (2011). The skewness of science in 219 sub-fields and a number of aggregates. *Scientometrics, 88*(2), 385-397. DOI: 10.1007/s11192-011-0407-9.

Birkle, C., Pendlebury, D. A., Schnell, J., Adams, J (2020). Web of Science as a data source for research on scientific and scholarly activity. Quantitative Science Studies, 1(1), 363-376. DOI: 10.1162/qss_a_00018.

Bornmann, L. (2011). Scientific peer review. *Annual Review of Information Science and Technology, 45*, 199-245.

Bornmann, L., Bowman, B. F., Bauer, J., Marx, W., Schier, H., & Palzenberger, M. (2012). Standards für die Anwendung der Bibliometrie bei der Evaluation von Forschungsinstituten im Bereich der Naturwissenschaften. *Zeitschrift für Evaluation, 11*(12), 233-260.

Bornmann, L., Bowman, B. F., Bauer, J., Marx, W., Schier, H., & Palzenberger, M. (2014). Standards for using bibliometrics in the evaluation of research institutes. In B. Cronin & C. Sugimoto (Eds.), *Next generation metrics* (pp. 201-223). Cambridge, MA, USA: MIT Press.

Bornmann, L., de Moya Anegón, F., & Leydesdorff, L. (2012). The new Excellence Indicator in the World Report of the SCImago Institutions Rankings 2011. *Journal of Informetrics, 6*(2), 333-335. DOI: 10.1016/j.joi.2011.11.006.

Bornmann, L. & Haunschild, R. (2017). Expected values in percentile indicators. *COLLNET Journal of Scientometrics and Information Management*. *11*(2), 249-252. DOI: 10.1080/09737766.2017.1292668.

Bornmann, L., Mutz, R., Marx, W., Schier, H., & Daniel, H.-D. (2011). A multilevel modelling approach to investigating the predictive validity of editorial decisions: Do the editors of a high-profile journal select manuscripts that are highly cited after publication? *Journal of the Royal Statistical Society - Series A (Statistics in Society), 174*(4), 857-879. DOI: 10.1111/j.1467-985X.2011.00689.x.

Boyack, K. W. (2004). Mapping knowledge domains: Characterizing PNAS. *Proceedings of the National Academy of Sciences of the United States of America, 101*, 5192-5199.

Diekmann, A., Naf, M., & Schubiger, M. (2012). The impact of (Thyssen)-awarded articles in the scientific community. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 64*(3), 563-581. DOI: 10.1007/s11577-012-0175-4.

Glänzel, W. (2008). *Seven myths in bibliometrics. About facts and fiction in quantitative science studies.* Paper presented at the Proceedings of WIS 2008, Berlin. Fourth International Conference on Webometrics, Informetrics and Scientometrics & Ninth COLLNET Meeting, Berlin, Germany.

Haunschild, R., Schier, H., & Bornmann, L. (2016). Proposal of a minimum constraint for indicators based on means or averages. *Journal of Informetrics, 10*(2), 485-486. DOI: 10.1016/j.joi.2016.03.003.

Hicks, D., Wouters, P., Waltman, L., de Rijcke, S., & Rafols, I. (2015). The Leiden Manifesto for research metrics. *Nature, 520*(7548), 429-431.

InCites (2019). InCItes Indicators Handbook, pp.16-17, accessed on 16 August 2019, http://help.incites.clarivate.com/inCites2Live/8980-TRS/version/default/part/AttachmentData/data/InCites-Indicators-Handbook-6%2019.pdf

Leydesdorff, L., Bornmann, L., Mutz, R., & Opthof, T. (2011). Turning the tables in citation analysis one more time: Principles for comparing sets of documents. *Journal of the American Society for Information Science and Technology, 62*(7), 1370-1381.

Martin, B. R., & Irvine, J. (1983). Assessing basic research - some partial indicators of scientific progress in radio astronomy. *Research Policy, 12*(2), 61-90.

Marx, W. (2011). Bibliometrie in der Forschungsbewertung: Aussagekraft und Grenzen. *Forschung & Lehre, 11*, 680.
Marx, W., & Bornmann, L. (2012). Der Journal Impact Factor: Aussagekraft, Grenzen und Alternativen in der Forschungsevaluation. *Beiträge zur Hochschulforschung, 34*(2), 50-66.
Perianes-Rodriguez, A. & Ruiz-Castillo, J. (2015). A comparison of two ways of evaluating research units working in different scientific fields. *Scientometrics, 106*(2), 539-561. DOI: 10.1007/s11192-015-1801-5.
Research Evaluation and Policy Project. (2005). *Quantitative indicators for research assessment – a literature review (REPP discussion paper 05/1)*. Canberra, Australia: Research Evaluation and Policy Project, Research School of Social Sciences, The Australian National University.
Seglen, P. O. (1992). The skewness of science. *Journal of the American Society for Information Science, 43*(9), 628-638. DOI: 10.1002/(sici)1097-4571(199210)43:9<628::aid-asi5>3.0.co;2-0.
van Raan, A. F. J. (2005). Measurement of central aspects of scientific research: Performance, interdisciplinarity, structure. *Measurement, 3*(1), 1-19.
Waltman, L., Calero-Medina, C., Kosten, J., Noyons, E. C. M., Tijssen, R. J. W., van Eck, N. J., ..., Wouters, P. (2012). The Leiden Ranking 2011/2012: Data collection, indicators, and interpretation. *Journal of the American Society for Information Science and Technology, 63*(12), 2419-2432. DOI: 10.1002/asi.22708.
Waltman, L., & van Eck, N. J. (2013). Source normalized indicators of citation impact: An overview of different approaches and an empirical comparison. *Scientometrics, 96*(3), 699-716. DOI: 10.1007/s11192-012-0913-4.
Waltman, L., van Eck, N. J., van Leeuwen, T. N., Visser, M. S., & van Raan, A. F. J. (2011). Towards a new crown indicator: Some theoretical considerations. *Journal of Informetrics, 5*(1), 37-47. DOI: 10.1016/j.joi.2010.08.001.
Waltman, l., Schreiber, M. (2013). On the calculation of percentile-based bibliometric indicators. *Journal of the American Society for Information Science and Technology, 64*(2), 372-379. DOI: 10.1002/asi.22775.

Appendix A:

Collaborations

The MPIC collaborates with research institutes in different countries. Figure A1 shows a color-coded world map (using a logarithmic scale) according to the amount of co-authorships with MPIC between 2009 and 2019. Figure A2 shows the same for European countries.

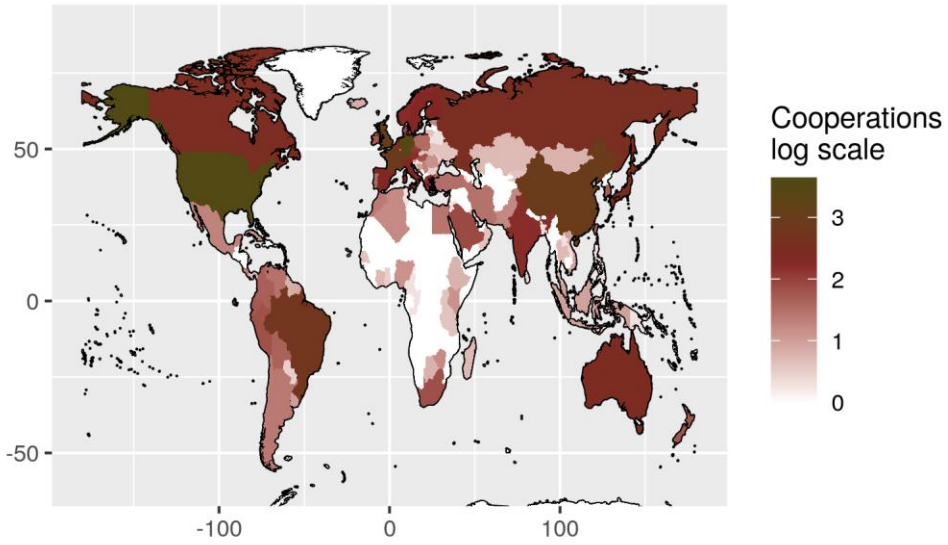

Figure A1: Color-coded world map according to the amount of co-authorships with MPIC between 2009 and 2019

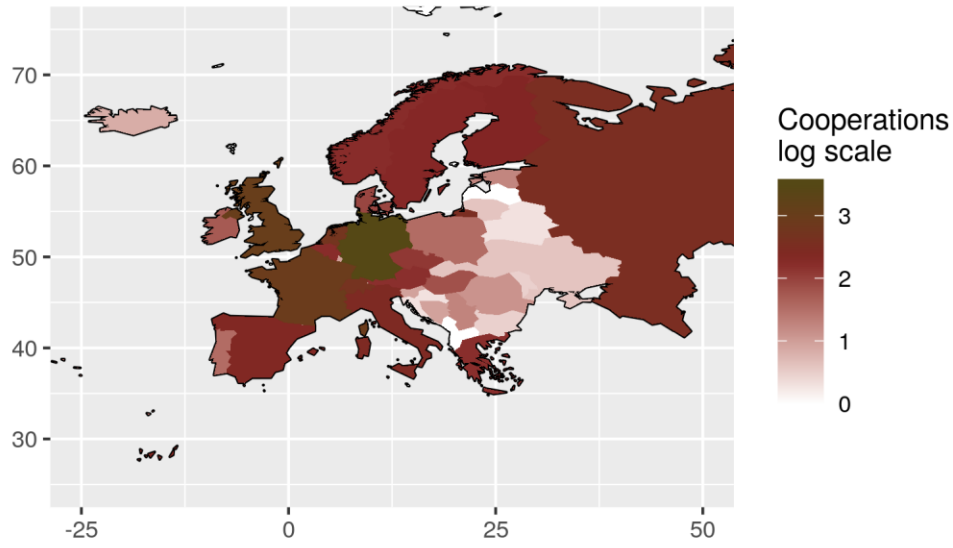

Figure A2: Color-coded map of Europe according to the amount of co-authorships with MPIC between 2009 and 2019

Table A1 lists the number of co-authorships between the MPIC and authors from different countries. MPIC-internal collaborations are not counted.

Table A1: Number of co-authorships between MPIC and authors from different countries. Only countries with at least 50 co-authorships are shown. Note that many papers are counted multiple times when the author list contains multiple affiliations.

Countries	Papers
United States	3610
Germany	3111
Great Britain	1077
China	931
France	860
Brazil	596
Netherlands	505
Switzerland	454
Canada	337
Russian Federation	322
Japan	316
Australia	296
Italy	267
Spain	233
Cyprus	208
Finland	207
Sweden	187
Belgium	167
Norway	165
India	161
Greece	158
Austria	154
Czech Republic	125
Denmark	88
Saudi Arabia	81
Israel	71
South Africa	69
Peru	68
Hungary	67
New Zealand	63
Ireland	54
Ecuador	54
South Korea	50

Appendix B:

Time Dependence of Citations

A common request in scientific evaluation is a sketch of the performance of the last two years. Unfortunately, citation data cannot give a robust answer to this question.

It is a well-known fact that most publications do not get any citation in the year of their publication. In science we usually find a steep increase followed by a slow decrease in the citation rate. The maximum of the citation rate is centred at about three years after publication but this maximum depends strongly on the scientific field, e.g., in mathematics the scientific response in form of citations is strongly delayed. Figure B1 shows the time dependence of the citation rate of all papers published by MPIC irrespective of the time period of the analysis in this report. For example, about 5000 papers cited an MPIC paper within its publication year, and more than 22000 papers cited a MPIC paper, that is two resp. three years old. MPIC papers older than 17 years are cited less often than MPIC papers published in the citing year.

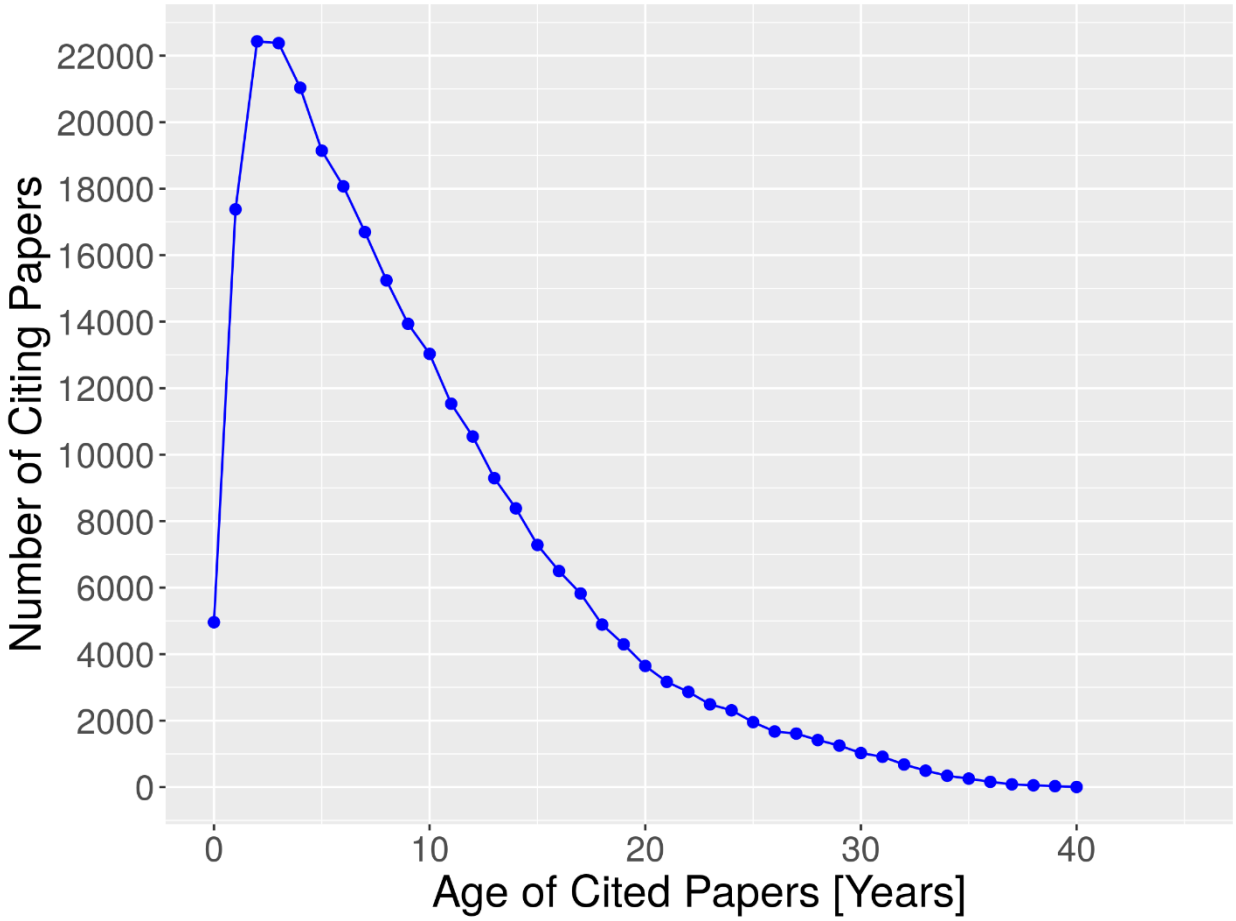

Figure B1: Time dependence of the citation rate of all papers published by MPIC

Appendix C:

Citing countries

The MPIC receives citations from publications authored by scientists from research institutes in different countries. Figure C1 shows a color-coded world map (using a logarithmic scale) according to the amount of citations the MPIC has received from a certain country. Figure C2 shows the same for European countries.

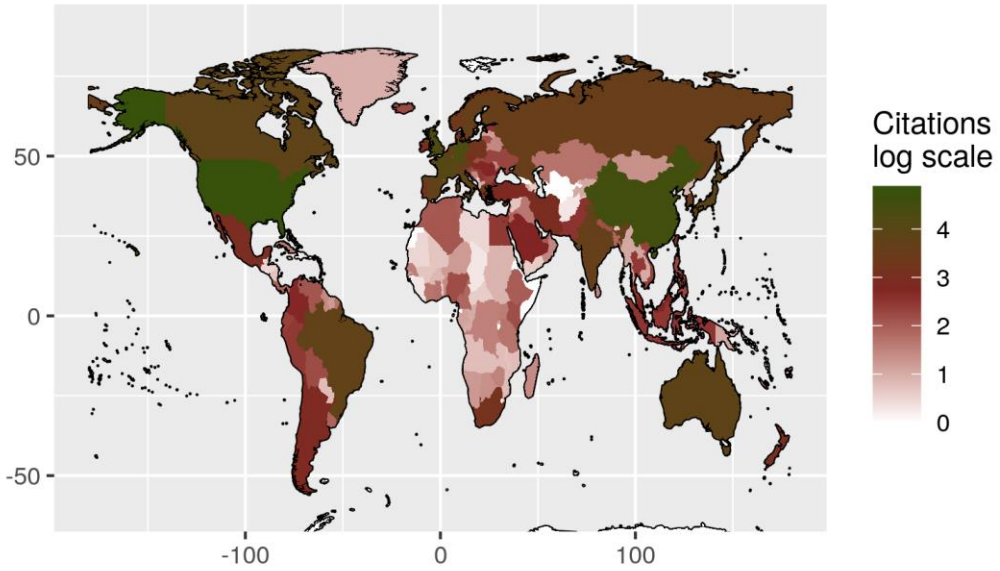

Figure C1: Color-coded world map according to the amount of citations the MPIC has received between 2009 and 2019

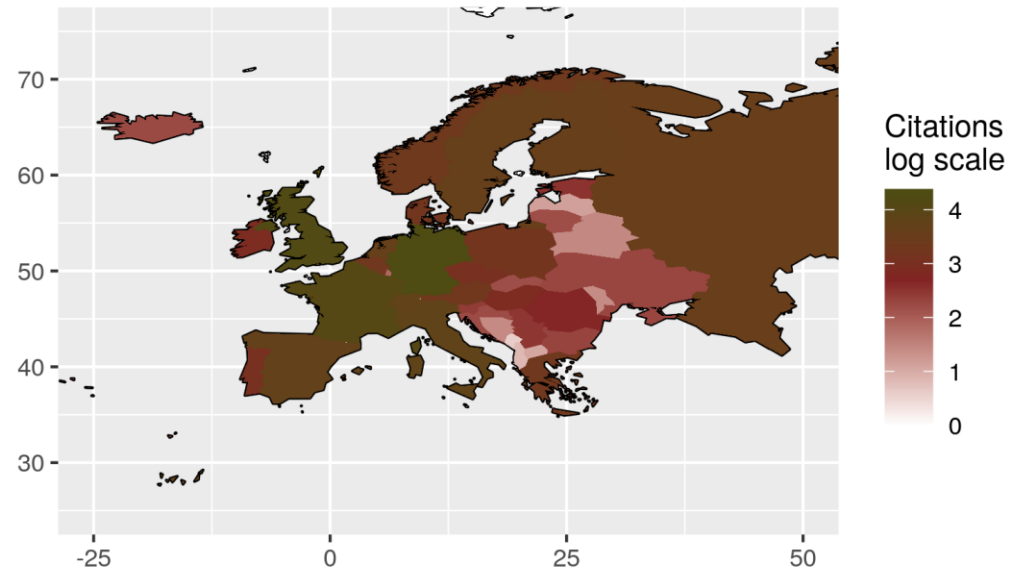

Figure C2: Color-coded map of Europe according to the amount of citations the MPIC has received between 2009 and 2019

Table C1 lists the number of papers citing MPIC publications. Self-citations from MPIC papers are not counted.

Table C1: Number of papers citing publications authored by MPIC. Only countries with at least 1000 papers citing MPIC publications are shown. Note that many citing papers are counted multiple times when the author list contains multiple affiliations.

Countries	Papers
United States	58643
China	36179
Germany	18840
Great Britain	16106
France	11714
Japan	7654
Canada	7055
Australia	6343
Italy	6223
Brazil	5823
Switzerland	5429
Spain	5099
Netherlands	4352
India	4239
Sweden	4127
Finland	3807
Russian Federation	3454
South Korea	2498
Norway	2210
Greece	2077
Austria	1945
Belgium	1778
Denmark	1736
Poland	1469
Taiwan	1359
South Africa	1298
Israel	1194
Portugal	1120
Czech Republic	1118

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PRE-ALPHA

Standard Publication Profile: Output and Impact Max Planck Institute for Chemistry (Otto Hahn Institute)

Agile Data Report by the Max Planck Digital Library, Big Data Analytics Group

München, November 24, 2020

Contents

1 Introduction

This is a preliminary example of a **MPDL.RIO.MPI standard publication profile** report.

MPDL.RIO.MPI is an upcoming service within the Research Information Observatory (RIO) run by the Max Planck Digital Library (MPDL) Big Data Analytics Group. It strives to enhance the exchange of rich quantitative information on research activities between the MPDL and Max Planck Institutes.

The **standard publication profiles** describe publishing activities of Max Planck Institutes based on data from various sources, institutional repositories, bibliographic databases, and other output metadata services. The data are compiled in a large scale setting encompassing all Max Planck Institutes represented in the selected data sources. Reports and supplementary materials are produced by highly automated processes. Depending on the subject domains of the institute, the standard representation might deviate from an adequate description of the publishing activities.

Besides the standard report, a publication profile report specific to individual institutes can be requested. This second type of report would be fine-tuned for the needs and perspectives of the individual institutes, for instance including information on evaluating of different departments and working groups of the institute. Preparations would be on the basis of interaction between institutes and the Big Data Analytics Group.

Interpretation of results should be supported by **informed peers** with a sound understanding of sources of bias, limits of data quality and other caveats to be considered. See also the appendix for in-depth information on features and constraints from the data sources and procedures used.

2 Data Sources and Methods

Data have been compiled from the following sources:

- Web of Science XML raw data (WoS by Clarivate)
- MPG Publication Repository XML raw data (PuRe by MPG)
- Directory of Open Access Journals (DOAJ by IS4OA)
- Crossref (by PILA)
- Unpaywall (by Our Research)
- Institutionenkodierung (Competence Centre for Bibliometrics by Univ. Bielefeld)
- Journal Citation Reports (JCR by Clarivate)
- MPDL.RIO in-house database for metadata on institutions (ANDES INST)
- MPDL.RIO in-house database for metadata on journals and publishers (ANDES JUNE)

Web of Science is a bibliographic database with global scope and broad subject coverage. It includes more than 1.5 mio articles per year from internationally relevant journals. There are, however, deficiencies with respect to some subject fields relevant for MPG, for instance law and arts history. The subset of Web of Science data licensed for analysis is different from the Web interface available to MPG. Therefore, deviations in the number of publications and citations are to be expected.

MPG.PuRe is the institutional publication repository of the Max Planck Society. The data are maintained by the individual Max Planck Institutes. The application (PubMan) is developed and hosted by the Max Planck Digital Library (MPDL). It includes more than 350 K of publicly available metadata records for a large range of document types predominantly authored by Max Planck scientists.

Web of Science and MPG.PuRe records are matched via DOI or pattern matching of several metadata fields. Data are processed with special emphasis on MPG affiliation cleaning and alignment of journals used by MPG for publishing. Publishers are assigned from our in-house database.

DOAJ includes 10 K journals that are MPG.PuRe open access gold and for which metadata are maintained by their publishers. There are, however, some internationally relevant open access gold journals that are not listed. DOAJ records were matched via ANDES JUNE to the final article records.

Crossref run by the Publishers International Linking Association Inc. (PILA) provides reference linking by assigning DOIs to scholarly content. Publishers provide metadata to articles via this source. Hence, the datasource facilitates the search for metadata about the publisher member, as

well as search for journals corresponding to the given member, and DOIs prefixed with that member ID.

Unpaywall is a nonprofit endeavor to make scholarly research more open and accessible. It crawls webpages from more than 50 K locations and identified more than 20 mio of free scholarly articles. Via the API, metadata on open access category and document location were obtained based on the DOIs in the article records.

The open access status of the articles is derived from Crossref, DOAJ and Unpaywall. JCR and the Competence Centre for Bibliometrics data are considered for standardizing the data. MPDL RIO in-house databases (ANDES INST and ANDES JUNE) are used for data analyses. More details about data sources and methods can be found in the appendix.

3 Results for Max Planck Institute for Chemistry (Otto Hahn Institute)

This section provides the result for publication activity of the MPI for Chemistry, including **output** and citation **impact**. Various sources are used for producing final analyses: bibliometric data are compiled from Web of Science and MPG.Pure, and enriched by open access sources DOAJ, Crossref and Unpaywall. Data standardizing and analyses are done using our in-house MPDL.RIO databases. Publication citations are determined by using the Web of Science raw data.The compiled data include the number of publications and their citations as well as further derivative parameters and citation metrics which allow quantitative assessments of the publication impact within the scientific community.

3.1 Output – Overview

The visualizations shown in this version of the publication profile report are based on Web of Science and MPG.PuRe.

Document types assignment to publications are derived from the Web of Science document type classification. Some of the common document types are the following:

- **'article'**: research publications on original works generally published in a journal.
- **'review'**: renewed study of material previously studied, includes review articles and surveys of previously published literature.
- **'letter'**: correspondence to journal editors commenting on previous published literature.
- **'editorial'**: commentary materials including opinions and discussions on previous conferences or published literature.
- 'proceedings paper': generally published in a book of conference proceedings.
- 'meeting abstract': summation of completed papers that were or will be presented at a symposium or conference.

Only those **base document types** marked in bold have been considered in the analyses.

Some records in Web of Science may have two document types: 'article' and 'proceedings paper', i.e. published in a journal as well as in a book of conference proceedings. These cases are considered with the base document type 'article' in the analyses.

Scientific publications appearing elsewhere than in the base document types, for instance in books, repositories, or on web sites are only marginally covered in the WoS. Therefore, the total numbers of articles presented in the analysis can slightly deviate from numbers retrieved from the institute's internal publications database (MPG.PuRe).

The subset of WoS that is licensed for data analysis includes publications in selected journals and proceeding series only (see also appendix 4.1.2). Publications appearing elsewhere (further journals, books, repositories, web sites) are covered from MPG.PuRe only.

In order to see which articles from MPG and from the MPI for Chemistry are reflected in WoS, comparison between data from MPG.PuRe and data from WoS are provided in figures 1 and 2.

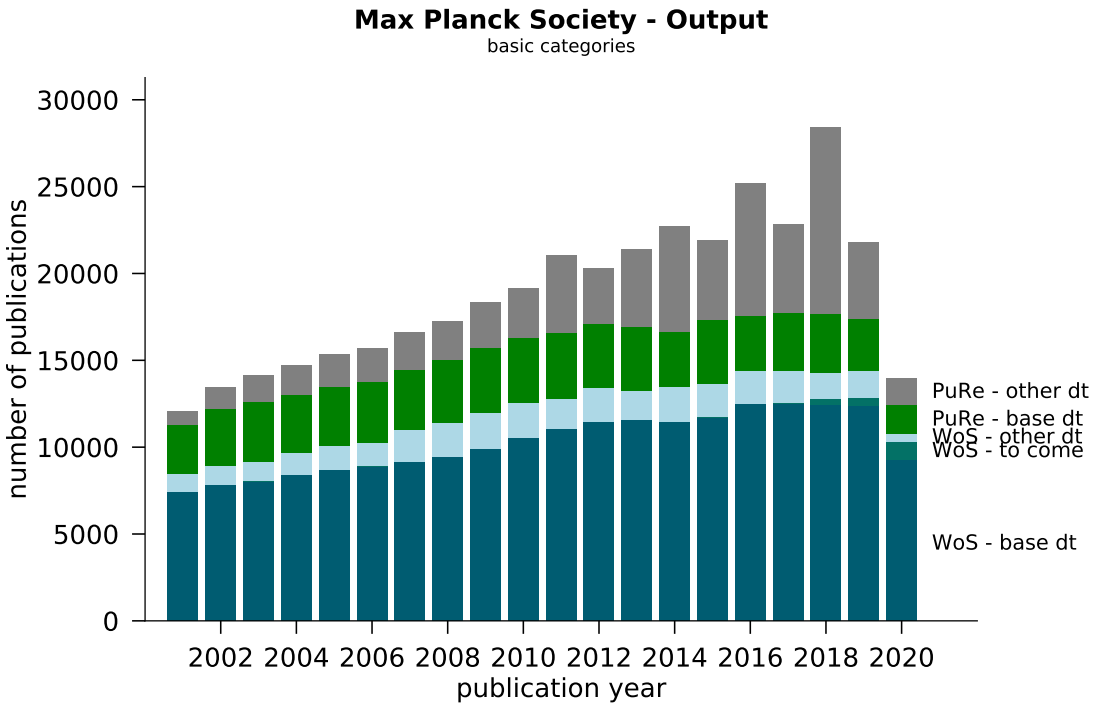

Figure 1 MPG output for the number of publications during the selected time span. Publications found in WoS raw data are compared to those found in MPG.PuRe. Data found in Wos are shown in dark blue for document type **base** (i.e. 'article', 'review', 'letter' and 'editorial'), and in light blue for other document types. 'WoS to come' in dark green are items that are found only in PuRe but are expected to appear in WoS. Additional data from MPG.PuRe, not found in WoS, are shown in green for base document types and in gray for other document types.

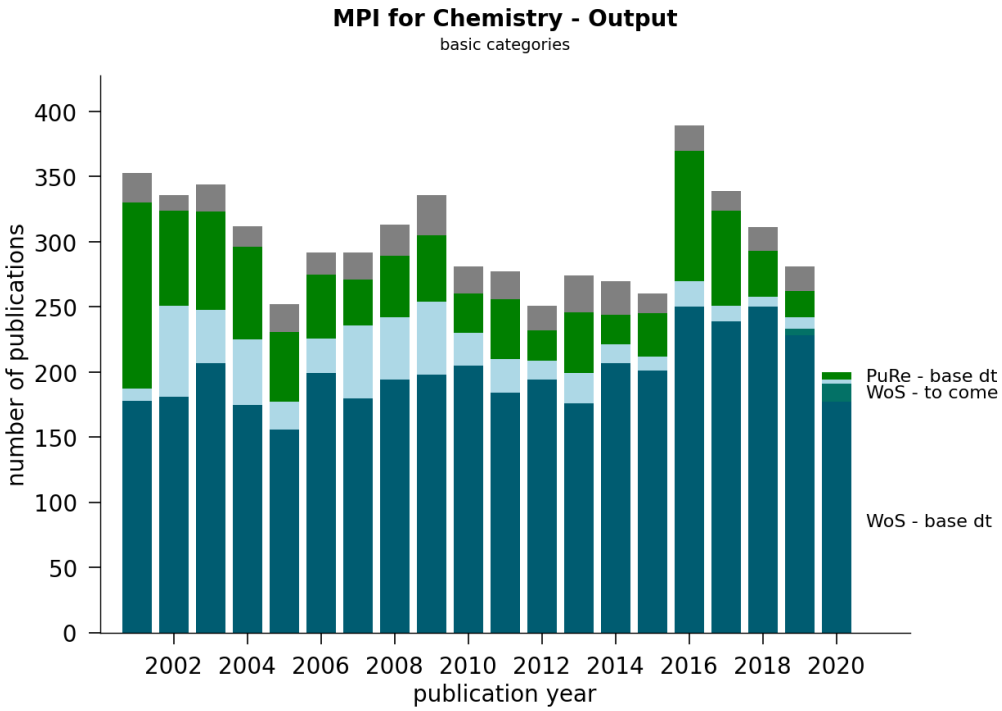

Figure 2 Number of publications from the MPI for Chemistry found in WoS raw data are compared to those found in MPG.PuRe during the selected time span. Colors are coded with the same annotations as above figure.

3.2 Output – Journals from WoS and MPG.PuRe

Figure 3 shows the most important peer-reviewed journals for the institute. Journals are color coded by access type and are ranked with respect to the number of publications with the document type **base** that appeared in the selected time period for the report.

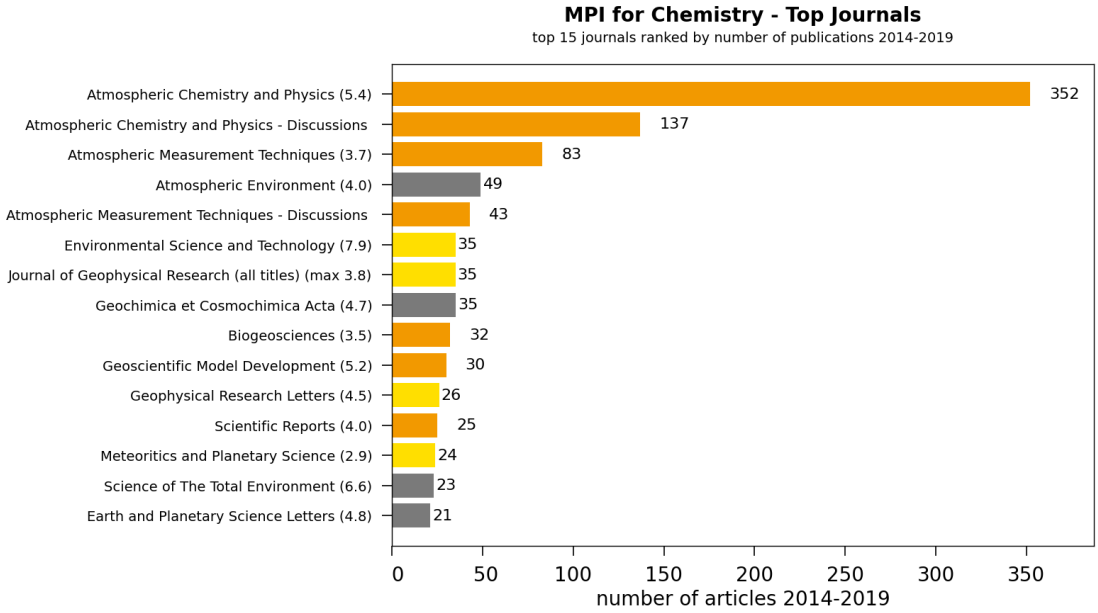

Figure 3 Journals in which the MPI for Chemistry published most frequently during the selected time span. The impact factor (JIF) of each journal is shown alongside the Journal's title and the number of publication in each journal is displayed alongside the bars. Orange bars represent gold open access journals. Yellow bars show toll access journals, where papers from MPG are made open access via a publish-and-read contract. Gray bars are for the journals which are toll access.

3.3 Output – WoS Journals and Journal Subject Categories

Figure 4 shows the distribution of publications from the MPI for Chemistry which appeared in high impact journals within the selected time period.
The top 15 journals in the field are selected based on the Journal Citation Reports (JCR) journal impact factor, from journals in Web of Science.

Furthermore, a subject-based analysis of the published articles is provided. The subjects are derived from the **Web of Science journal subject categories**. The result for the MPI for Chemistry on publications that appeared in the respective journal subject categories is shown in figure 5. Note that one journal can be assigned to multiple subject categories.

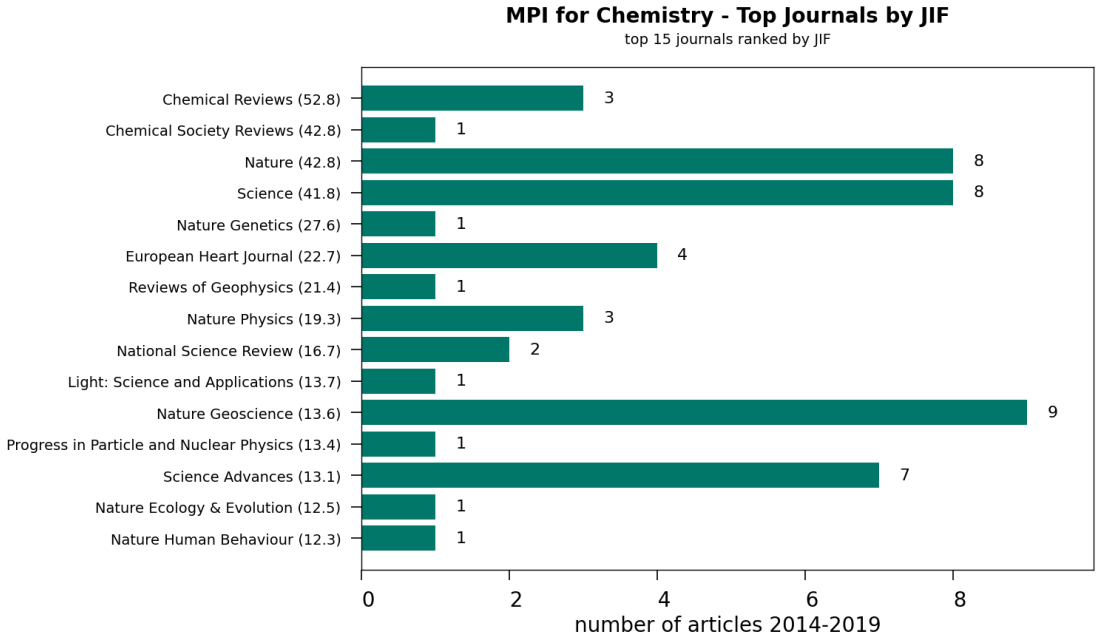

Figure 4 Journals with the highest journal impact factors in which the institute published at least one article in the selected time span.

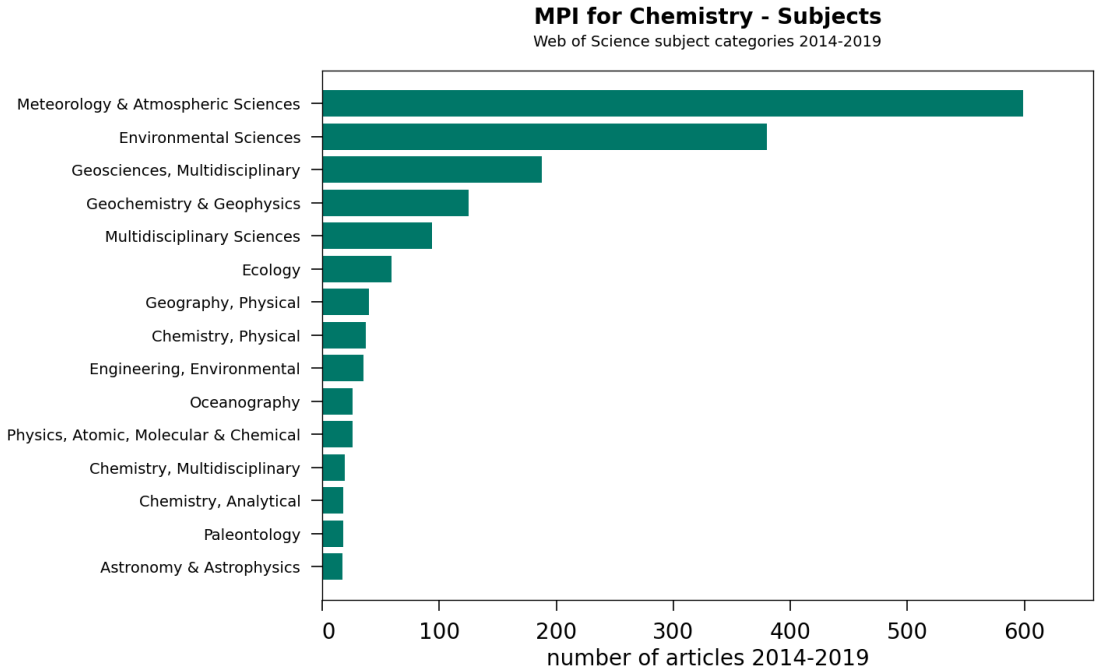

Figure 5 Most frequent WoS subject categories of the journals in which the MPI for Chemistry published during the selected time span.

3.4 Output – Open Access from WoS

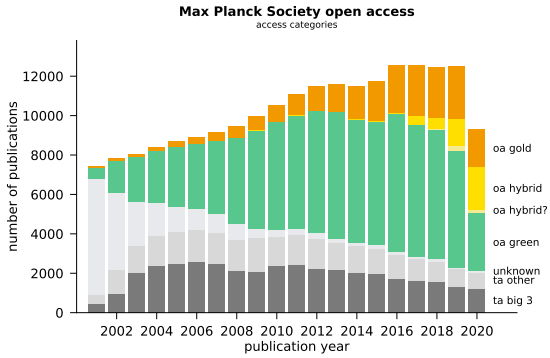

Figure 6 MPG output by open access categories

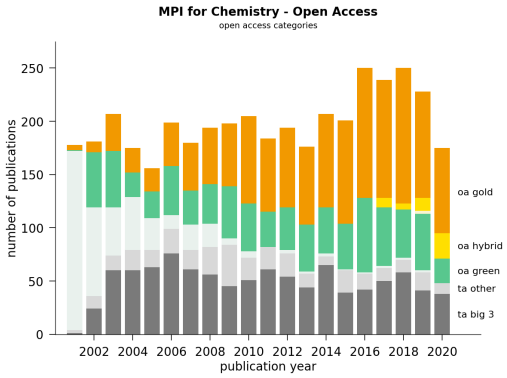

Figure 7 MPI output by open access categories

Figures 6 and 7 give an overview of open access categories for the MPG and the MPI for Chemistry. The data were taken from **Web of Science**. The MPG follows the global trend with increasing article numbers over the last 15 years. In both plots major open access categories are color-coded and labeled. Gold open access is depicted in orange, as opposed to various types of yellow and green open access below it. For the grey colored share of the articles there is either no information available (often due to missing DOI, especially in earlier years) or they are not open access.

The following acronyms are introduced for different open access categories:

- oa gold: free access – the journal of an article is found in the DOAJ.
- oa green: the journal is not found in the DOAJ, but the article can be accessed in other open repositories.
- oa hybrid: free access article in a toll access journal (either paid by MPG in a publish-and-read-contract or individually by the institute).
- ta big 3: toll access journal which belong to the top 3 publishers.
- ta other: toll access journal which belong to other publishers.

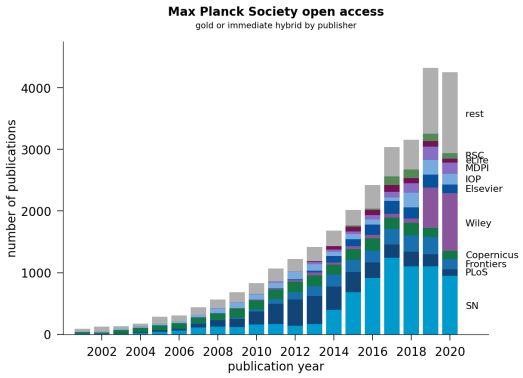

Figure 8 MPG gold open access output by publishers

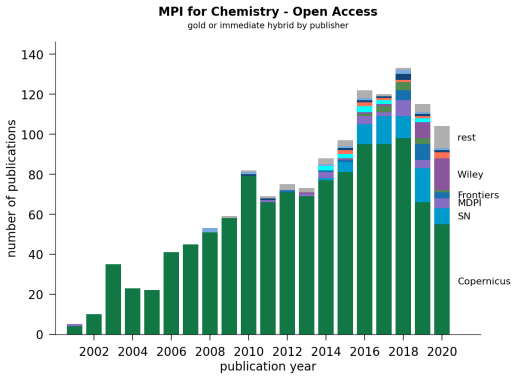

Figure 9 MPI gold open access output by publishers

Figures 8 and 9 focus on the open access gold category (orange part of figures 6 and 7). Numbers are split by publishers or major imprints that have been assigned to the journals via MPDL in-house processing.

Top publishers are color coded and labeled. The top 10 publishers typically account for the major share of open access articles in an institution.

3.5 Impact – WoS citations

The analysis of the distribution of publications and number of articles from an institution is an important benchmark for quantifying the scientific output. However, it may not address the level of interest or attention that the publications have gained in their field. In order to measure the impact of a publication, the citation score of the publication is an important value.

Figure 10 compares the number of citations per publication produced by the MPI for Chemistry to the global average of citations for a given subject. The result is shown for the citation scores per subject within the selected time period of the publications.

Due to the fact that citation scores vary from one subject to another and from year to year, the citation distribution can be skewed. To correct for these influences and achieve a less biased overview, normalization procedures are considered. Normalization is applied with respect to **subject category, publication year and document type**.

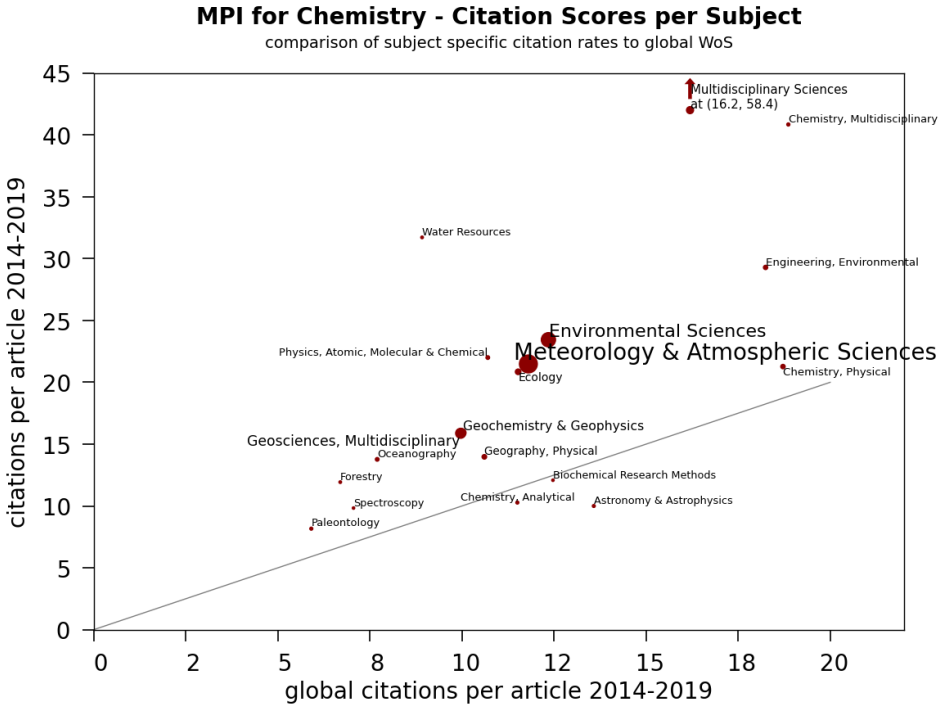

Figure 10 Citation scores per subject within the selected time span; The number of citations per publication produced by the MPI for Chemistry, in 3 year time window, is compared to the global average of citations for a given subject. The proportion of the dots represents the number of publications in each subject.

Besides the skewness discussed above, another type of bias can occur even within normalized subject categories in the same field. This is due to a few highly cited articles in the same subject category. One way to correct for this skewness is to consider indicators which make a distinction between those highly cited publications and the rest by looking at the position of publications in the citation distribution. Therefore, in order to avoid the occurrence of this type of skewness in the citation distribution, we apply percentile-based methods. The percentile rank index (PRI) indicates the rank of a publication among all publications of the same subject, publication year and document type (please see the appendix for more details on the applied procedures). In the case of multiple assignments of a publication to several subjects, the arithmetic mean of the PRI for the related subjects is calculated.

Figure 11 shows the result of an impact analysis based on field normalized percentiles for different publication years. The plot consists of boxes with upper borders of 75% of the ranking position and lower borders of 25% of the ranking. The horizontal line drawn inside each box shows the median of the institute in each individual year. The blue line crossing the middle of the plot indicates the average rank of 50%, i.e. the global median. The red line indicates the arithmetic mean of the percentiles for different years.

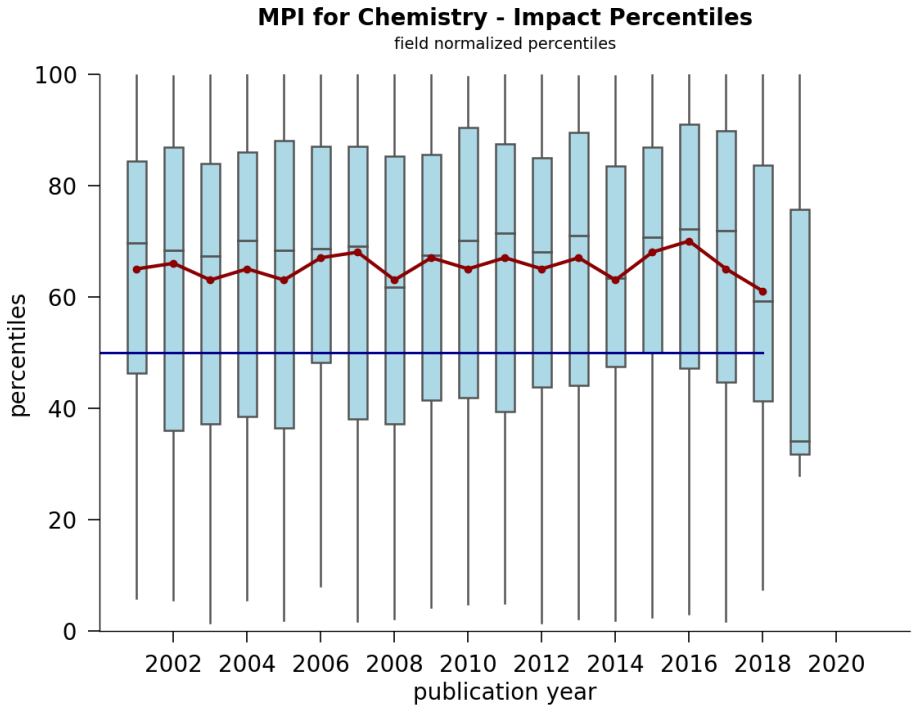

Figure 11 Impact analysis with respect to field normalized percentiles for different publication years

By applying percentile-based methods, one can determine the proportion of frequently cited publications as an indicator. The Top 1% (or 10%) rank indicates the percentage of publications that can be counted among the top 1% (or 10%) of all publications for a chosen subject.

For our assessment purposes, we have applied the averaged field normalized citation score based on the Karolinska Institute approach [1] as well as the percentile ranking approach according to Hazen [2, 3]. Top 1% and 10% percentile weights are calculated according to Waltman and Schreiber [4]. More details about the methods and calculations can be found in the appendix.

3.6 Impact – Altmetrics

Besides citation-based metrics, alternative metrics at the article level (the so-called Altmetrics) address the level of interest and attention that publications have received both among research communities and in the public media coverage. Altmetrics can include the data from media such as news and research blogs, as well as social networks such as twitter.

These alternative metrics can specially showcase the impact of those recent publications which have already taken interest in the public, but have not gathered many citations yet. The validity of altmetrics as a complementary benchmark and their accuracy have been questioned by many recent studies. In [5], authors have investigated whether the altmetrics correlate with the quality of publications. The correlation between citation metrics and altmetrics has been examined by many other recent studies (see for example [6]). As a result, please note that altmetrics on their own are not sufficient for quantifying the scientific output and thus cannot replace the citation-based metrics. Nonetheless, they can provide qualitative data as a supplement alongside the citation indicators.

4 Appendix

4.1 Data source: Web of Science (by Clarivate)

The bibliographic data source Web of Science (WoS) is an abstract and citation database provided by Clarivate[1]. WoS covers a broad range of subjects and publishing countries but nevertheless has biases with respect to publication type, internationalization, pervasiveness, impact, and language of the journals in consideration. Table 1 gives an overview of some key characteristics for the database used for this report.

4.1.1 XML raw data

Whereas general usage of Web of Science is via a web interface on the providers platform, large scale bibliometric analyses need to be based on local "raw data" in XML format delivered by Clarivate. These raw data are licensed by the Competence Centre for Bibliometrics[2], a German project and consortium funded by the German Federal Ministry of Education and Research (BMBF)[3] under the grant 01PQ13001.

The XML raw data are ingested into an PostgreSQL relational database. Starting from there, MPDL conducts extensive data transformation, cleaning and standardization to make them suitable for further bibliometric analysis.

4.1.2 XML raw data versus web interface

Max Planck Society licenses several databases offered by Clarivate for the web interface. These include the Web of Science Core Collection and other domain specific resources as are PubMed, BIOSIS and Zoological Record.

Only a subset of the Web of Science Core Collection is licensed by the German Consortium for the XML raw data:

- Science Citation Index Expanded
- Social Science Citation Index
- Arts & Humanities Citation Index
- Conference Proceedings Citation Indexes (Science and Social Science & Humanities).

The subset chosen is reflected in output and impact, thus numbers of articles as well as citations will differ between the web interface and the XML data we use for analysis.

4.1.3 Time lags

WoS constantly adds new data to the database, but there is a time lag between articles being published, included in the WoS web interface and being added to the WoS raw data. Usually, articles are added to the raw data several months after publication date. As this time lag can span half a year (or even longer), recent data need to be interpreted with caution. As publication activities are generally increasing each year a decline in publication numbers in recent years may most likely be attributed to missing data.

4.1.4 Data quality

Several fields necessary for quantitative analytics are not finally standardized by Clarivate. Affiliation entries in the WoS raw data are extremely heterogeneous. For 50 mio articles we find more than 30 mio unique affiliation entries down to the department level. Journal titles are largely standardized but still include inconsistencies. Publisher entries are very deficient as no special care is taken to unify imprints and follow-up journal titles where the publisher has changed. To improve data quality, we harmonize affiliations, journal titles, and publishers by mapping the data to the MPDL in-house database on institutions (ANDES INST) and journals (ANDES JUNE) as described in sections 4.7 and 4.6 below.
For detailed analyses on institution level, special focus lies on the DOI of each item. However, for early publication years many records do not include a DOI. Their number declines from 90% in 2000 to 10% in 2008 and 1% in 2014.

4.1.5 MPG affiliation processing

In WoS we find ~ 40 K unique entries for Max Planck institutions (down to the department level) with an average of 400 per Max Planck Institute. For meaningful analysis the affiliation entries provided need to be mapped to the in-house database on institutions (ANDES INST). For this purpose, unique combinations of all address fields are scanned by a set of regular expressions optimized for the detection of MPG organizations predominantly at the institute level.

[1] http://clarivate.com/scientific-and-academic-research/research-discovery/web-of-science
[2] http://www.bibliometrie.info
[3] https://www.bmbf.de

delivery format	XML
products licensed products occasionally delivered	AHCI, ISSHP, ISTP, SCI, SSCI BHCI, BSCI, CCR, ESCI, IC
publication years licensed	1980 –
latest delivery by Clarivate	2020-11-01
number of items	> 84 000 000
number of references	> 2200 000 000
number of journal titles aligned with JUNE	26 347
number of affiliations aligned with INST	2 330

Table 1 WoS key characteristics

4.2 Data source: MPG.PuRe (PubMan) by Max Planck Digital Library

PuRe is the *pu*blication *re*pository of the Max Planck Society.[4]
The repository's content is generated by the participating Max Planck Institutes and affiliated institutions using the software PubMan. In comparison to other data sources PuRe contains the widest range of document/publication types (articles, books, movies, data sets, …) and thus represents the publication profile also for institutions that are traditionally not or only sparsely represented in commercial publication data bases like Web of Science.
PuRe entries are organized in 'collections'. Every institution can maintain multiple of these and thus can manage not only its own publications but e.g. also 'external' or 'non-mpi' collections containing publication data managed with PubMan, but the publications herein are not affiliated with the managing institution. Therefore, we restrict our evaluations only to those collections that are attributable with reasonable certainty as publications of the managing institution.

4.2.1 Raw data

We take into consideration only those data that are available also via the public web interface. We fetch the raw data as JSON (collection and institution information) and XML (publication information) using PuRe's REST API[5]. These raw data are subsequently imported into a PostgreSQL relational database and then processed further.

delivery format	JSON
publication years	open
last update date	2020-06-01
number of items	> 360 000

Table 2 MPDL PuRe key characteristics

[4] https://pure.mpg.de/
[5] https://pure.mpg.de/pubman/faces/SearchAndExportPage.jsp

4.3 Data source: Directory of Open Access Journals (DOAJ by IS4OA)

We use the Directory of Open Access Journals (DOAJ)[6] for identification of gold open access journals. The DOAJ provides a list of 10 K gold open access journal titles along with metadata including publisher information. The content is primarily maintained by the publishers with some extra input via a DOAJ quality assurance team. Completeness and accuracy are therefore heavily depending on the collaboration of the publishers.
For further processing, the journal titles are aligned with the in-house database ANDES JUNE using ISSN and title information. Derived data take into account the OA starting date as journal titles might have changed from subscription to open access during their lifetime. Some prominent examples are the journals transformed in 2014 to gold open access by the SCOAP[3] program.
DOAJ constantly adds and sometimes removes journals from its directory. MPDL computes the number of OA Gold articles based on the DOAJ, as a result small oscillations on the number of OA Gold articles should be expected between reports executed with different DOAJ versions. For reproducibility, the download date of the DOAJ is usually included in every report.

delivery format	CSV
download date	2020-06-01
number of journal titles	> 10 000
number of publishers	> 4 500
number of journal titles aligned to JUNE	> 8 000
number of unique JUNE titles	> 8 000

[6] https://doaj.org/about

4.4 Data source: Unpaywall (by Our Research)

Unpaywall is a database consisting of more than 22 mio entries of open access articles. While also using data from DOAJ and Crossref, the bulk of the license information comes from crawling over 50 000 sources[7] including gold open access journals, hybrid journals, institutional repositories (including MPG.PuRe), and disciplinary repositories.[8]. Sources with unclear or possibly dubious copyright status are excluded. Therefore, both ResearchGate and Sci-Hub are not included in the dataset.
Moreover, the database is constantly updated for changes, including: New published articles, new open access articles after embargo periods expire, new open access articles self-archived by authors to repositories, publisher-hosted "Bronze OA" articles (free-to-read but without an open license).
Individual papers can be accessed via a browser plugin. Additionally, the database is integrated into the Web of Science (since 2017) and Scopus (since 2018) web products (not yet in the XML raw data). However, for large number of articles or more systematic searches, the database can be accessed via an API. For this report we used the REST API.
Unpaywall data comes from different sources (DOAJ, Crossref, publisher websites, publication repositories, etc), hence, small differences are expected between Unpaywall data and data obtained independently from these sources at a given date.

4.4.1 Open access categories derived from Unpaywall

Unpaywall is an important source to determine open access categories. This source does not provide the “OA color” (Green, Gold, Bronze) of an article, instead it provides the data necessary to derive your own categories.
Unpaywall lists all the publicly available locations where the articles were found along with useful metadata about the location and the article. These fields provide information about whether an article belongs to an gold open access journal, whether the articles’ journal is in the DOAJ. It also provides the url, the type of location where the article was found (publishers web page, repository, etc.), and information about the access licenses found.

delivery format	JSON
data fetched on	2020-06-01
data sources	CrossRef, DOAJ, 50 K web locations
total number of free scholarly articles	> 22 000 000

[7] https://api.oadoi.org/data/sources.csv
[8] https://unpaywall.org/sources

4.5 Data source: Crossref (by PILA)

Another source of our identification of gold open access journals is Crossref, run by the Publishers International Linking Association (PILA). Crossref is a non profiting membership organization for scholarly publishing, in which publishers of electronic scholarly content can become members.
Besides providing digital object identifiers (DOIs) for journal content, Crossref provides methods to connect journal articles from different publishers, and so the use of DOIs to link references between articles. Each of 2000 voting member publishers are assigned a unique DOI prefix. For each registered item in the system, Crossref creates a DOI, incorporating the assigned prefix, and tags it to the article's metadata and the URL where the article resides. With registering and submitting the record to the Crossref database by the publisher, Crossref will register each article DOI and URL in a central DOI directory. This will allow for links to the publisher's content, such that other publishers can retrieve from Crossref the DOIs that link to that content.

Registered content records	> 96 000 000
Records with full-text links	> 67 000 000
Member organizations	> 10 000
Records with funding information	> 2 800 000
Records with a funder registry ID	> 2 000 000
Records with licenses	30 890 000

4.6 Data Source: in-house journal and publisher metadata (ANDES JUNE by MPDL RIO)

MPDL.RIO builds and maintains an in-house journal database[9]. This is necessary due to the lack of any resource with complete, accurate and current information on journal metadata, either free or commercial. Most of our data sources include journal information of notoriously bad quality. Even within a given data source many inconsistencies may be expected. Therefore it is not possible to use the primary data for any meaningful quantitative analysis related to journals and publishers.
After 10 years of working with JUNE it indexes more than 80 K unique journal titles. The metadata quality is maintained along the needs of MPG licensing and evaluation activities. Thus only a subset of some 20 K is checked and updated regularly. Special focus is given to journals listed in WoS basic indices or chosen by Max Planck Scientists for publication.
One of the prominent challenges of maintenance is the follow-up of publishers holding the journal titles. A subset of more than 30 K journal titles is assigned to over 200 explicitly identified publishers. However, only a selection of them is subjected to an in-depth data cleaning and quality assurance. This is usually triggered by MPDL and/or DEAL negotiation requirements.
We developed extensive procedures to harmonize journal titles and assign them to the current publisher. This is notoriously difficult as there is no single reference which provides this information. Constantly changing title names and titles moving from one publisher to another cause significant challenges for accuracy and topicality of the matching process. Within the bounds of our resources we try to consolidate information from as many sources as possible: title lists from big databases (Web of Science, Scopus, DOAJ) as well as individual title lists from a substantial number of publishers MPDL is interested in.

number of journals	> 90 000
number of identified publishers	> 200

Table 3 ANDES JUNE key characteristics

4.7 Data source: in-house institution metadata (ANDES INST by MPDL RIO)

To be able to analyze publication patterns for individual institutions, their affiliation strings are identified in the bibliographic raw data (e.g. Web of Science, Scopus) and aligned to corresponding entries in the in-house database for metadata on institutions. This database serves as a knowledge base on defined institution entities, their metadata and relationships. It is maintained by the MPDL Big Data Analytics Group and includes entries for MPG as well as further institutions included for individual projects of the group. All other German institutions are integrated from the project "Institutionenkodierung" conducted by the University of Bielefeld.

[9] ANDES stands for Authority & Norm Database Entry System, and JUNE is Journal Unique Entries.

4.8 Citation impact: Field Normalized Citation Score according to Karolinska Institute (KI)

As one method for calculating the citation impact, we apply field normalization on the basis of mean-based approaches according to [1].
The field normalized citation score indicates the number of citations compared to the global average of citations to publications in the same subject, document type and publication year. In the method used by KI, a field normalization has been considered per article, i.e. on the level of each individual publication. For instance, a publication with a score of 0.8 has been cited 20% less than the global average. For multiple assignments of a publication to multiple subjects, the arithmetic mean value of the score is calculated.
Let c_k denote the number of citations to publication k. Thus the average number of citations per publication, $\bar{c}$ is

$$\bar{c} = \frac{1}{N}\sum_{k=1}^{N} c_k, \tag{1}$$

where N denotes the number of publications.
The number of citations to each publication can be normalized compared to the global average of citations to publications of the same subject, document type and publication year. The field normalized citation score, $\bar{c_f}$, is therefore calculated according to KI as follows:

$$\bar{c_f} = \frac{1}{N}\sum_{k=1}^{N}\frac{1}{S_k}\sum_{j=1}^{S_k}\frac{c_k}{[\bar{\mu_f}]_{kj}}, \tag{2}$$

where S_k denotes the number of subjects for the publication k. μ_f is called the field reference value and $[\bar{\mu_f}]_{kj}$ denotes the global average of citations to publications in the same subject, document type and publication year.
For the calculations, we consider citations until the last full year from the data source.
Among other normalization methods, citation scores can be normalized differently, for example by cited references [8] or by source [9].

4.9 Citation impact: percentile-based indicators

The percentile rank index (PRI) looks at the position of a publication within the citation distribution of its subject and publication year and thus indicates the rank of the publication among the rest. A publication is assigned to the 90th percentile, if 90% of all publications in the same subject receive fewer citations. The percentile of 50 is the median, indicating the average impact. PRI can be used for ranking the articles also at the journal level (see for example [7]).
For the calculations, we consider the citations until the last full year from the datasource as well as the document types 'article' and 'review'. Note that the percentiles are calculated separately according to the document type.

4.9.1 Percentile Rank Index according to Hazen

It is possible that several publications in the same subject have identical number of citations and thus same percentiles. The difficulty arises more serious, when we consider more than one subject category.
The procedure proposed by Hazen deals with these difficulties and focuses mainly on the problem in which identical values should be assigned to the same proportion or percentage. The procedure is known under the idea of plotting position in the presence of such ties.
Let r_k denote the rank of the publication k with respect to its number of citations and N denote the number of publications. Determining the position of a publication as r_k/N would result in calculating the quantiles with a median slightly above 50% and thus an asymmetrical position in the presence of ties. Instead, determining the position as $(r_k - 1)/N$ results in a median slightly below 50% which is again not handling the ties in a symmetric way. A compromise proposed by Hazen [2] uses the following formula for calculating percentiles

$$p_k = (r_k - a)/N, \tag{3}$$

where p_k denotes the percentile and $a = 0.5$ yields Hazen's rule, see also [3]. Thus in the case of ties, the mean percentile of the corresponding ties can be calculated.

4.9.2 Percentile weight for Top 1% and Top 10% according to Waltman and Schreiber

The top 10% (or 1%) rank indicates the percentage of publications, which can be counted among the top 10% (or 1%) of all publications for a chosen subject. Here, we basically seek for the proportion of publications which belong to the top rank of the most frequently cited in their related subject.
To calculate the top 10% of cited publications, one needs an integer threshold t such that all publications k with a publication score $n_k > t$ are included in the top 10%. However, due to the discrete nature of citations it is not evident whether citations exactly at the threshold ($n_k = t$) should be included. Let c_t be the number publications with exactly t publications. For typical cases, c_t can be as large as a few percent of the total number of publications N.
To overcome this ambiguity, Waltman and Schreiber [4] propose to attribute the publications which are directly at the threshold with a certain fraction to the top 10%.

Let c_a and c_b be the number of publications with a citation score strictly above ($n_k > t$) and below ($n_k < t$) the threshold, respectively. From the discussion above it follows that including all c_t publications which are directly at the threshold, the fraction of publications attributed to the top 10%, $P_{\text{incl}} = (c_a + c_t)/N$, is *larger* than 10%. In a similar manner, $P_{\text{excl}} = c_a/N$ is smaller than 10%. The solution proposed by Waltman and Schreiber is to calculate a fraction

$$f = N(10\% - P_{\text{excl}})/c_t. \tag{4}$$

The publications which are exactly at the threshold t are then attributed to the top 10% with a fraction of f. The same approach is used to calculate the top 1%.
With this approach, the fraction of publications which is attributed to the top 10% is indeed exactly 10%, and can thus be calculated and compared for different fields or different points in time.

5 References

[1] Rehn, C., Kronman, U., Wadskog, D. Version 1.0. (2007). Rehn, C., Wadskog, D. Gornitzki, C., Larsson, A. Version 2.0. (2014). Bibliometric indicators - definitions and usage at Karolinska Institute. *Karolinska Institutet University Library Bibliometric Team*, https://kib.ki.se/sites/default/files/bildarkiv/Dokument/bibliometric_indicators_2014.pdf.

[2] Hazen, A. (1913). Storage to be Provided Impounding Reservoirs for Municipal Water Supply. *American Society of Civil Engineers (ASCE)*, 39(9), Pg. 1943-2044, https://cedb.asce.org/CEDBsearch/record.jsp?dockey=0354535.

[3] Bornmann, L., Leydesdorff, L., Mutz, R. (2012). The use of percentiles and percentile rank classes in the analysis of bibliometric data: Opportunities and limits. *The Computing Research Repository (CoRR)*, abs-1211-0381, http://arxiv.org/abs/1211.0381.

[4] Waltman, L., Schreiber, M. (2013). On the Calculation of Percentile-based Bibliometric Indicators. *J. Am. Soc. Inf. Sci. Technol.*, 64(2), Pg. 372-379, https://doi.org/10.1002/asi.22775.

[5] Bornmann, L., Haunschild, R., Adams, J. (2019) Do altmetrics assess societal impact in a comparable way to case studies? An empirical test of the convergent validity of altmetrics based on data from the UK research excellence framework (REF) *Journal of Informetrics* 13, 1, 325-340, https://doi.org/10.1016/j.joi.2019.01.008.

[6] Lamba, M. (2020). Research productivity of health care policy faculty: a cohort study of Harvard Medical School. *Scientometrics* 124, 107-130, https://doi.org/10.1007/s11192-020-03433-5.

[7] Pudovkin, I.A., Garfield, E. (2009). Percentile Rank and Author Superiority Indexes for Evaluating Individual Journal Articles and the Author's Overall Citation Performance, *CollNet Journal of Scientometrics and Information Management*, 3(2), Pg. 3-10, https://doi.org/10.1080/09737766.2009.10700871.

[8] Bornmann, L., Haunschild, R. (2016). Citation score normalized by cited references (CSNCR): The introduction of a new citation impact indicator *Journal of Informetrics*, 10(3), Pg. 875-887, https://doi.org/10.1016/j.joi.2016.07.002.

[9] Waltman, L., Jan Van Eck, N. (2013). A systematic empirical comparison of different approaches for normalizing citation impact indicators, *Journal of Informatics*, 7(4), Pg. 833-849, https://doi.org/10.1016/j.joi.2013.08.002.

5.1 Authors and Contact

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Margit Palzenberger (lead)

Rico Scheier

Jonas Schnaitmann

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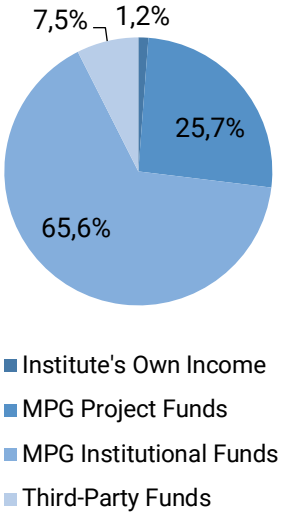
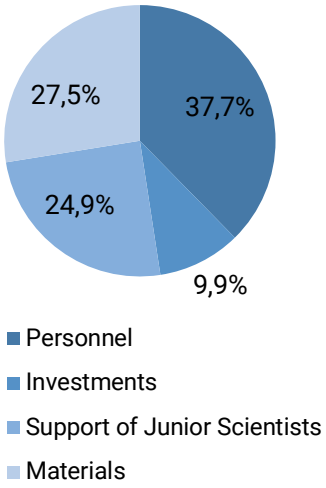
3. Finances Revenue and Expenditure 2019

Revenue	*(thousand Euro)*	**Expenditure**	*(thousand Euro)*
MPG Institutional Funds	16.980	Personnel	9.744
Third-Party Funds	1.930	Support of Junior Scientists	6.438
MPG Project Funds	6.657	Materials	7.128
Institute's Own Income	311	Investments	2.568
Total Income	**25.878**	**Total Expenditure**	**25.878**

Revenue 2019



Expenditure 2019

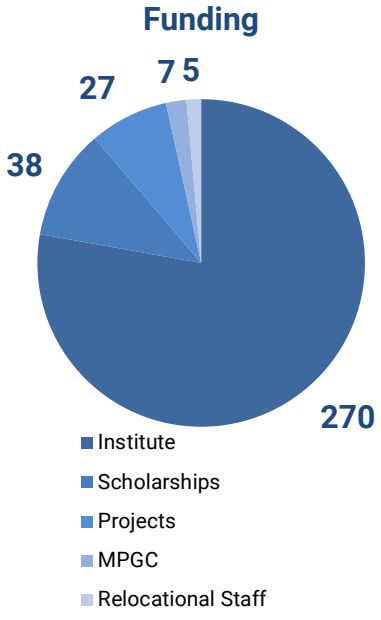


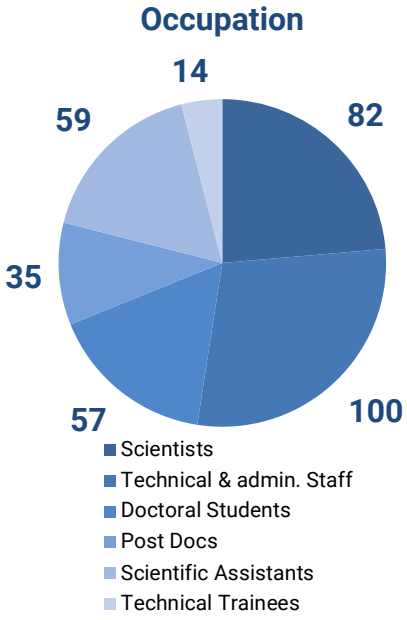
4. Personnel Distribution 2019

In December 2019, a total of about 350 persons were employed at the Institute, among them 117 scientists, 57 PhD students and 14 technical trainees. 37 % of the staff were female, 63 % male. 270 staff members were paid from institutional funds, 27 scientists received payment from third-party project funding, 38 from scholarships and 7 by graduate schools.

Funding and Occupation of the MPIC Personnel

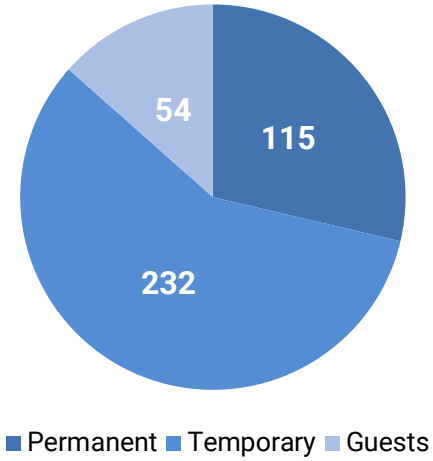
Funding	#	%	Occupation	#	%
Institute	270	78%	Scientists	82	24%
Scholarships	38	11%	Technical & Administrative Staff	100	29%
Projects	27	8%	Doctoral Students	57	16%
MPGC	7	2%	Post Docs	35	10%
Relocational Staff	5	1%	Scientific Assistants	59	17%
			Technical Trainees	14	4%
Total	347	100%	Total	347	100%



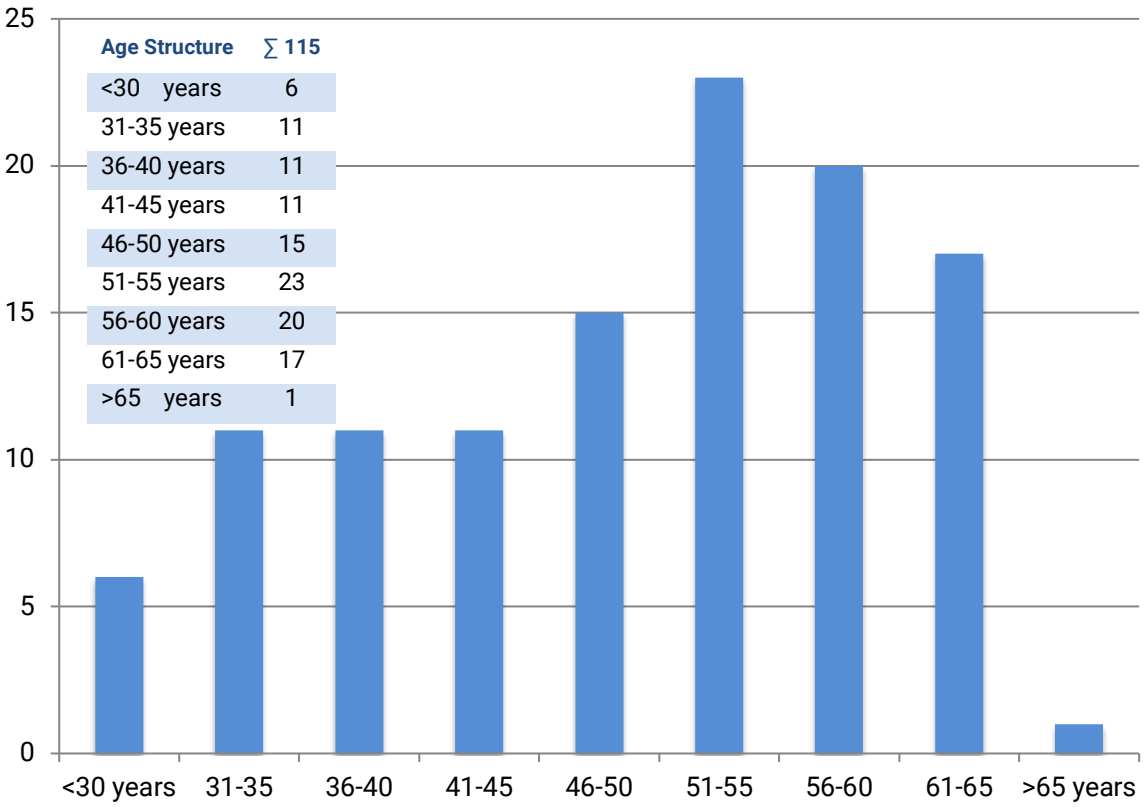


Kind of employment of the MPIC personnel

Employment	#	%
Permanent	115	29%
Temporary	232	58%
Guests	54	13%
Total incl. Guests	401	100%



Age distribution of the MPIC personnel with permanent contracts



5. Equal Opportunities 2018-2020[1]

The Max Planck Institute for Chemistry supports employees irrespective of their gender, nationality, religion, disabilities, age, cultural background or sexual identity. This is in accordance with the strategic goal of the Max Planck Society to provide equal opportunities for its employees. Equal opportunities officers at the Institute help to achieve it.

The main task of the equal opportunities officers is to advise colleagues regarding equality, child care and family support options. Support is mainly requested with regards to childcare options and reconciliation of family life and work.

The equal opportunities officers are involved in all personnel, organizational and social measures relating to equality between genders, the reconciliation of family life and work as well as protection from sexual harassment at the workplace. Thus, they take part in job interviews and the institute´s meetings with the board of directors. The officers are well integrated into the everyday life at the institute by participating in discussions and meetings.

They organize seminars and information events, also in cooperation with the neighboring Max Planck Institute for Polymer Research.

The revision of the equal opportunities plan is scheduled for early 2021.

The equal opportunities page on the Institute’s intranet offers information on gender equality topics by using circulars, general information and job offers.

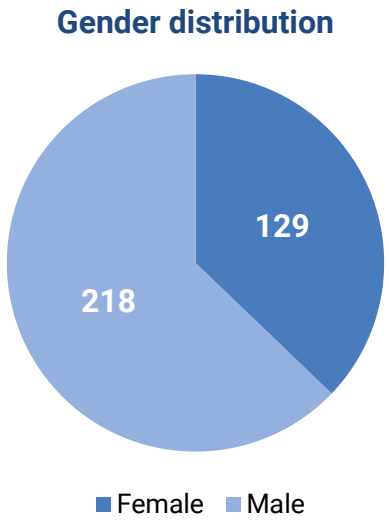
Support options for families and female researchers are prominently advertised on the Institute’s web pages (https://www.mpic.de/4161235/equal-opportunities).

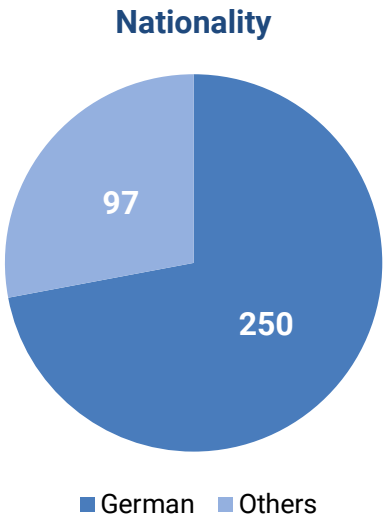
Comprehensive information on the equal opportunity program of the Max Planck Society is available at https://www.mpg.de/equal_opportunities.

[1] Status 4 August 2020

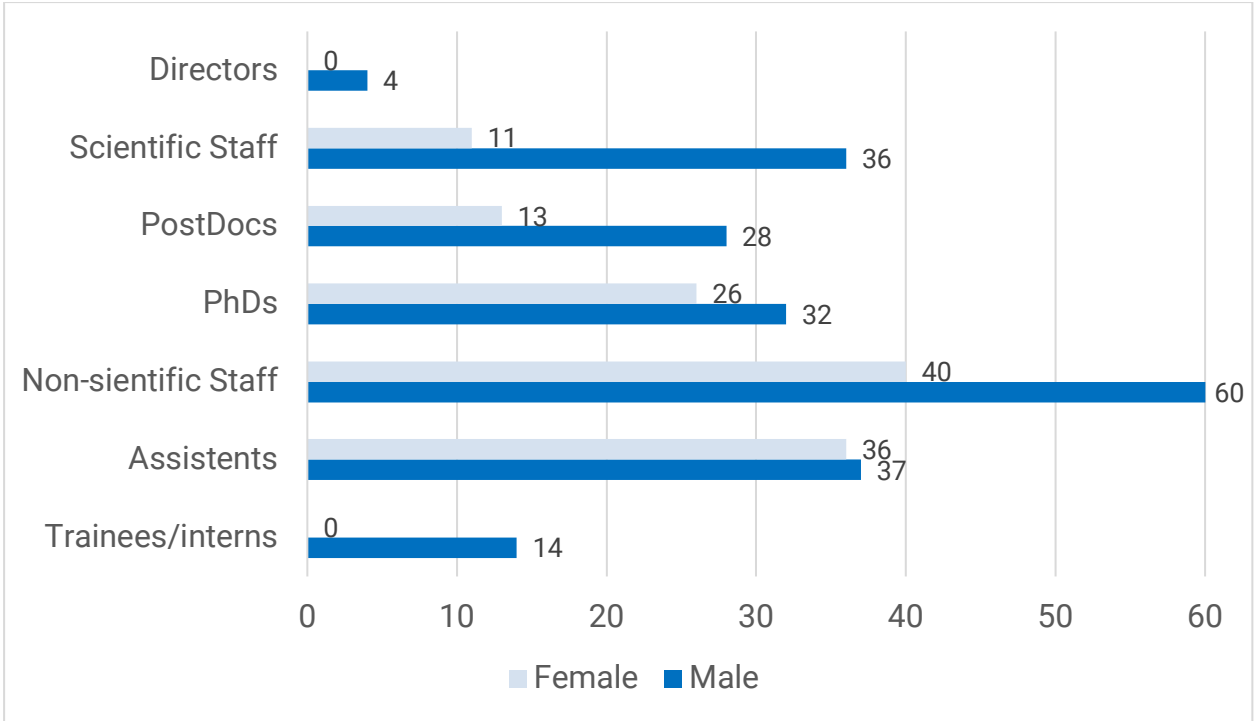
Gender distribution and origin of the MPIC personnel[2]

Gender	#	%	Nationality	#	%
Female	129	37%	German	250	72%
Male	218	63%	Others	97	28%
Total	347	100%	Total	347	100%



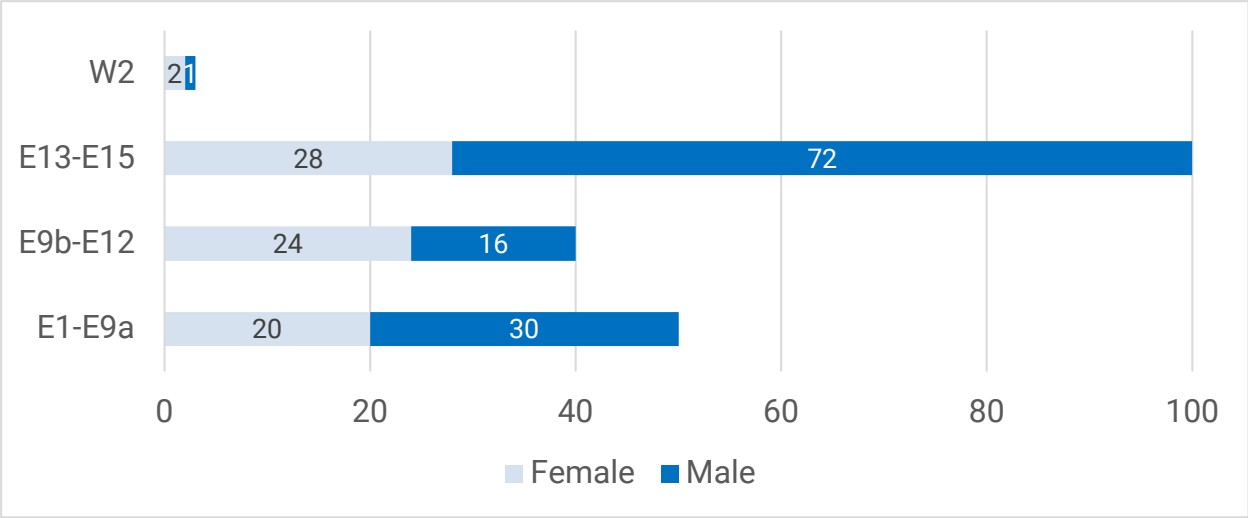


Number of employees according to occupation

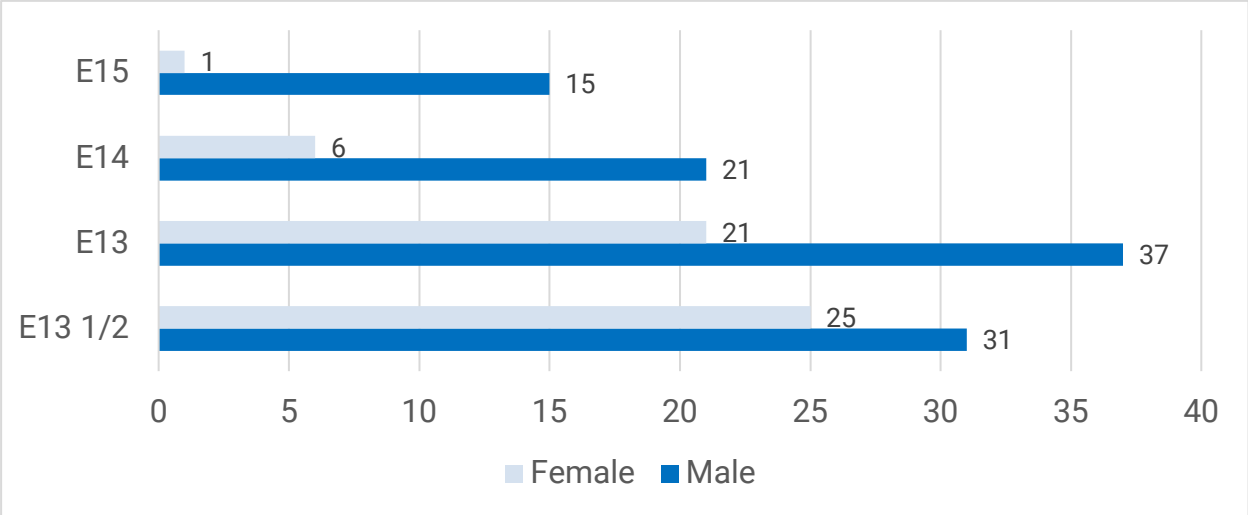


[2] Status December 2019

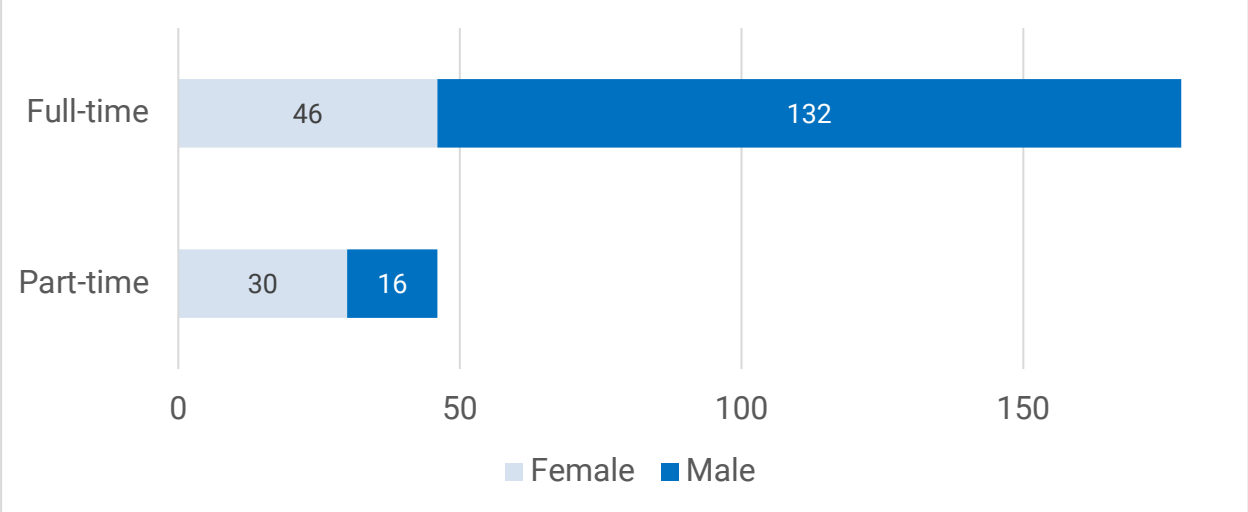
Number of employees according to payment (excluding trainees, interns)



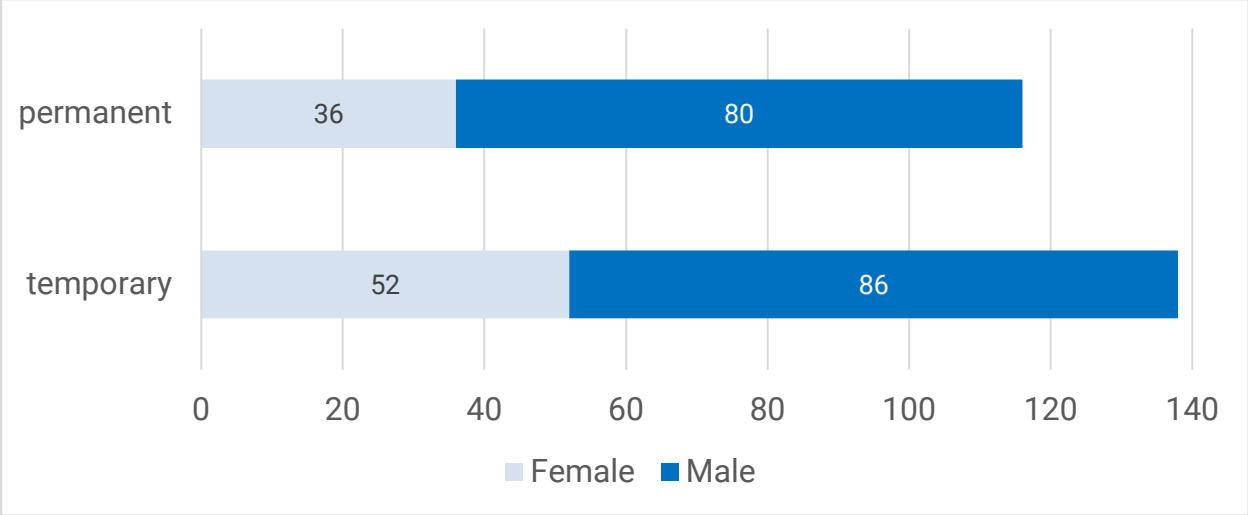
Number of employees according to payment, groups E13-E15 only



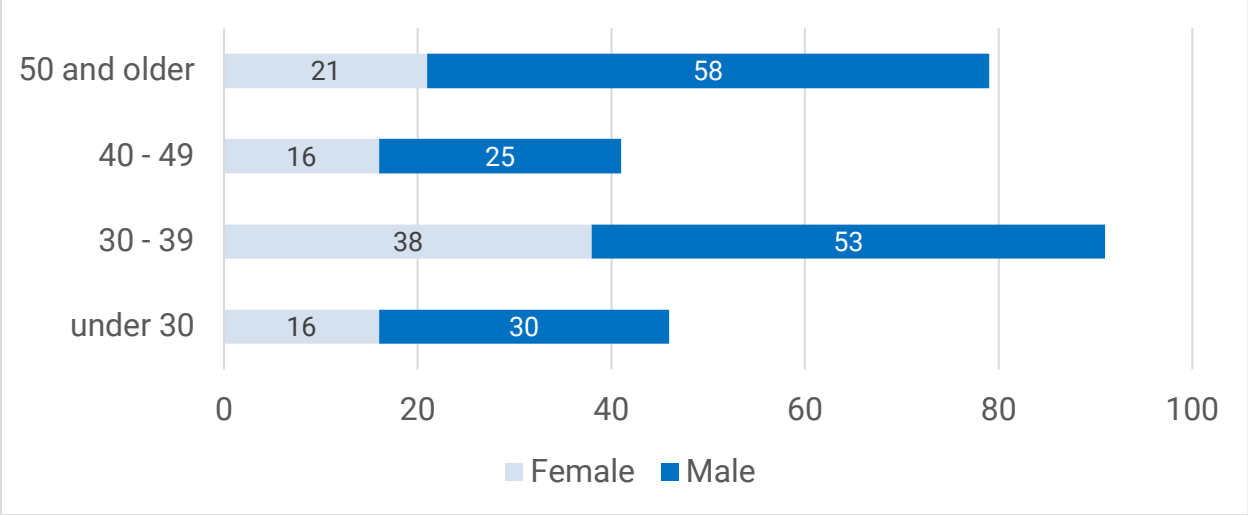
Number of employees (excluding assistants, trainees, interns, scholarship holders) according to full-time or part-time positions



Number of employees (excluding assistants, trainees, interns, scholarship holders) according to the contract type



Age structure of personnel



6. Memberships 2018-2020

Atmospheric Chemistry Department

Jos Lelieveld (Director)

- American Geophysical Union (AGU)
- American Meteorological Society (AMS)
- Center for Clouds, Chemistry and Climate, Scripps Institution of Oceanography, University of California, San Diego (since 1992)
- Advisory Board of Tellus B (since 1996)
- Editorial Board of Journal of Atmospheric Chemistry (since 1996)
- Professor in Atmospheric Physics, University of Mainz (since 2002)
- Professor at the Cyprus Institute, Cyprus (since 2010)
- Spokesman for the International Max Planck Graduate School for Atmospheric Physics and Chemistry – now Paul Crutzen Graduate School (since 2002)
- Scientific-Technical Committee of the Executive Board, Karlsruhe Institute of Technology (KIT), Chair Advisory Board of the Atmosphere and Climate Program (2006-2019)
- Steering Committee Max Planck Graduate Center Mainz (since 2008)
- Editorial Board of Earth System Dynamics (since 2010)
- Selection and Evaluation Committee, Institute for Basic Science, South Korea (since 2013)
- German National Academy of Sciences – Leopoldina (since 2015)
- European Geosciences Union (EGU), life member (since 2015)
- International Silk Road Academy of Sciences and kick-off committee, China (since 2016)
- Royal Society of Chemistry, UK (since 2017)
- Guest editor of the Proceedings of the National academy of sciences (since 2019)
- Scientific Council of the National Observatory Athens (since 2019)
- Advisory Board of the Ruisdael Observatory, the Netherlands (since 2019)
- Advisory Board of the Panhellenic infrastructure for atmospheric composition and climate change (since 2019)

John Crowley

- European Geosciences Union (EGU)
- International Union of Pure and Applied Chemistry (IUPAC): Task Group in Atmospheric Chemical Kinetic Data Evaluation

Horst Fischer

- American Geophysical Union (AGU)
- Deutsche Physikalische Gesellschaft (DPG)

Hartwig Harder

- Executive editor of *Atmospheric Measurement Techniques* (AMT)
- Section Representative of the Max Planck Institute for chemistry, Mainz
- European Geosciences Union (EGU)
- American Geophysical Union (AGU)

Johannes Kaiser (until July 2019)

- Service Level Board of EU Copernicus Atmosphere Monitoring Service (CAMS)
- Scientific Advisory Group – Applications of WMO Global Atmosphere Watch (GAW)
- Co-chair of Interdisciplinary Biomass Burning Initiative (IBBI) of WMO, IGAC and iLEAPS
- Scientific Steering Committee of Global Emissions InitiAtive (GEIA) of IGAC

Andrea Pozzer

- Editor of Atmospheric Chemistry and Physics (ACP)
- European Geosciences Union (EGU)

Jonathan Williams

- European Geosciences Union (EGU)
- American Geophysical Union (AGU)
- Fellow of the Royal Geophysical Society
- Adjunct Professor at the Cyprus Institute, Cyprus
- Editor of Atmospheric Chemistry and Physics (ACP)
- Editor for Environmental Chemistry, CSIRO publications
- Editor of Atmospheric Chemistry
- Faculty Member of the Max Planck Institute for Chemistry Graduate Center, Mainz

Climate Geochemistry Department

Gerald H. Haug (Director)
- German Academy of Science 'Leopoldina'
- Academia Europaea
- American Geophysical Union (AGU)
- Mainz Academy of Science and Literature

Stephen J. G. Galer
- European Association of Geochemistry
- Meteoritical Society
- European Geosciences Union (EGU)
- American Geophysical Union (AGU)
- European Association of Geochemistry (EAG)

Klaus Peter Jochum
- American Geophysical Union (AGU)
- International Association of Geoanalysts (IAG)
- Deutsche Mineralogische Gesellschaft
- Meteoritical Society
- Editorial Board of Geostandards and Geoanalytical Research
- Geochemical Society

Alfredo Martinez-Garcia
- American Geophysical Union (AGU)
- Geochemical Society

Bärbel Sarbas
- American Geophysical Union (AGU)
- International Association of Geoanalysts
- Deutsche Mineralogische Gesellschaft

Ralf Schiebel
- Fellow of the Higher Education Academy (FHEA), United Kingdom
- Marine Micropaleontology, Editorial Board Member, The Netherlands
- Comptes Rendus Palévol, Editorial Board Member, France
- Journal of Foraminiferal Reseach, Cushman Foundation, Editorial Board Member, USA
- Geological Society, Germany

Hubert Vonhof

- European Geosciences Union (EGU)
- Science Advisory Group of the International Scientific Drilling Programme (ICDP)
- External advisory and expert panel of the Earth Sciences Department of Vrije Universiteit Amsterdam

Multiphase Chemistry Department

Ulrich Pöschl (Director)

- European Geosciences Union (EGU)
- Gesellschaft Deutscher Chemiker (GDCh)
- Founder and Chief Executive Editor of Atmospheric Chemistry and Physics (ACP)
- EGU Publications Committee
- Initiator and Co-chair of Open Access 2020 (OA2020)
- Membership Assembly of the Institute for Advanced Sustainability Studies (IASS)
- American Geophysical Union (AGU)
- EGU Governance Review Panel
- Advisory Board of ChemRxiv (American Chemical Society, Chineses Chemical Society, Chemical Society of Japan, German Chemical Society, Royal Society of Chemistry)
- Advisory Board of the GMPG Science History Research Program
- Steering Committee and Joint Board of the Max Planck Graduate Center with the Johannes Gutenberg University Mainz (MPGC)
- Speaker of the Max Planck Graduate Center with the Johannes Gutenberg University Mainz (MPGC)

Thomas Berkemeier

- ProcessNet/GDCh/KRdL-Gemeinschaftsausschuss Feinstäube

Janine Fröhlich

- European Geosciences Union (EGU)
- Mainz Program for Chemical Allergology (MPCA)
- Mainz Bioaerosol Laboratory (MBAL)

Gerhard Lammel

- EuCheMS Division of chemistry and the Environment, Delegate
- American Geophysical Union (AGU)
- Member of Faculty (Privatdozent), Faculty of Chemistry, Pharmaceutical Sciences and Geosciences, University of Mainz
- Member of Faculty (Full Professor), Faculty of Sciences, Masaryk University, Brno, Czech Republic
- Member of Faculty, Max Planck Graduate Center (MPGC), Mainz
- Associate Editor for Environmental Science and Pollution Research, Springer Nature
- German Chemical Society (GDCh)
- ProcessNet/GDCh/KRdL-Gemeinschaftsausschuss Feinstäube
- ProcessNet/GDCh/Bunsengesellschaft-Geimeinschaftsausschuss Chemie-Luftqualität-Klima
- UNEP Stockholm Convention, Global Monitoring Plan, Central and Eastern Europe

Regional Organization Group

Kurt Lucas

- Mainz Program for Chemical Allergology (MPCA)
- Laboratory of Inflammation & Microscopy (LIM)
- Mainz Bioaerosol Laboratory (MBAL)

Christopher Pöhlker

- ATTO Scientific Steering Committee
- German Chemical Society (GDCh9
- European Geoscience Union (EGU)

Mira Pöhlker

- IGBP/WCRP Aerosol, Cloud, Precipitation, and Climate Working Group (ACPC)

Hang Su

- American Association for the Advancement of Science (AAAS)
- American Geophysical Union (AGU)
- European Geoscience Union (EGU)
- Gesellschaft für Aerosolforschung (Gaef)

Particle Chemistry Department

Stephan Borrmann (Director)
- Deutsche Meteorologische Gesellschaft (DMG)
- Deutsche Physikalische Gesellschaft (DPG)
- International Committee for Clouds and Precipitation (ICCP)
- European Geosciences Union (EGU)
- Member of the Board of Directors of the Görres Gesellschaft at the Institute of Interdisciplinary Research between Science, Philosophy and Theology
- Member of the Board of Trustees at Academia Sinica of the National University of Taiwan

Frank Drewnick
- Deutsche Physikalische Gesellschaft (DPG)

Peter Hoppe
- Meteoritical Society (Fellow since 2002)
- Swiss Physical Society (SPG)
- German Physical Society (DPG)

Johannes Schneider
- Deutsche Gesellschaft für Aerosolforschung (GAeF)
- Committee on Nucleation and Atmospheric Aerosols (CNAA)
- Deutsche Physikalische Gesellschaft (DPG)
- American Association for Aerosol Research (AAAR)

Miklós Szakáll
- Member of the Scientific Section of Earth Sciences (Committee on Meteorology) of the Hungarian Academy of Sciences
- European Geosciences Union (EGU)
- Hungarian Meteorological Society

Further Research Groups

Yafang Cheng

- European Geosciences Union (EGU)
- American Geophysical Union (AGU)
- Steering Committee Member of Exploratory Round Table Conference (ERTC) between Max Planck Society (MPG) and Chinese Academy of Science (CAS)
- American Association for the Advancement of Science (AAAS)
- Gesellschaft für Aerosolforschung (Gaef)

Mikhail Eremets

- Editorial Board, High Pressure Research Journal, Taylor and Francis
- Advisor committees: CIMTEC congress, Italy
- Member of Commission on Crystallography of Materials of the International Union of Crystallography
- American Physical Society (APS)
- American Association for the Advancement of Science (AAAS)
- Sigma Xi the Scientific Research Society
- American Geophysical Union (AGU)
- Max Planck Graduate Centre (MPGC)

Kathryn Fitzsimmons

- European Geosciences Union
- Verband der Geographen an Deutschen Hochschulen
- German Quaternary Association (DEUQUA)
- Arbeitskreis Geoarchäologie
- Arbeitskreis Geomorphologie
- Australasian Quaternary Association (AQUA)

Thomas Wagner

- DLR Programmausschuss Erdbeobachtung
- Chief Executive Editor of the Journal of Atmospheric Measurement Techniques (AMT)
- Associate Editor of the Journal Atmospheric Chemistry and Physics (ACP)
- Mission Advisory Group for the Sentinel 5 precursor satellite
- Science Advisory Group of the Korean GEMS satellite (Geostationary Environment Monitoring Spectrometer)
- Science Advisory Group for the satellite instruments GOME and GOME-2A/B
- European Geosciences Union (EGU)

Former Directors

Meinrat O. Andreae (Director of the Biogeochemistry Dept. until 2017)

- European Geosciences Union (EGU)
- American Chemical Society
- American Geophysical Union (AGU)
- American Association for the Advancement of Science (AAAS)
- The Geochemical Society
- Member, SCIENCE Board of Reviewing Editors
- Brazilian Academy of Science
- American Academy of Arts and Science
- Fellow of the American Geophysical Union (since 2014)
- Advisory Board Atmospheric Chemistry and Physics
- Scientific Steering Committee for the Large-Scale Biosphere/Atmosphere Project in Amazonia (LBA)
- Scientific Steering Committee for the German HALO Research Aircraft
- Past Chair, Core Project “Integrated Land-Ecosystem Atmospheric Processes Study (ILEAPS)” of IGBP II
- Vice-Chairman, German National Committee for Global Change Research
- Advisory Board of the International Institute for Applied Systems Analysis (IIASA)

Paul J. Crutzen (Director of the Atmospheric Chemistry Dept. until 2000)

- Fellow of the American Geophysical Union (AGU) (since 1986), member since 1973
- Foreign Honorary Member (IHM) of the American Academy of Arts and Sciences, Cambridge, USA (since 1986)
- Member of the Science Foundation (DFG) and Ministry of Research and Technology (BMFT) of the Federal Republic of Germany
- Founding member of The Academy of Europe (Academia Europaea), London (since 1988)
- Corresponding Member of The Royal Netherlands Academy of Science (since 1990)
- Member of the Leopoldina National Academy of Science, Halle, Germany (1992-2014), now Honorary Member
- Member of the Royal Swedish Academy of Science (Kungl. Vetenskapsakademie KVA) (since 1992)
- Editorial Advisory Board Issue in Environmental Science and Technology, British Royal Society of Chemistry, Britain (since 1993)
- Advisory Board Journal Tellus. B: Chemical and Phycial Meteorology (since 1993)
- Foreign Association of the National Academy of Science of the USA, Washington (since 1994)
- Member of the Institut Mondial des Sciences (World Institute of Science) Brussels, Belgium (since 1994)

- Honorary Member of the International Ozone Commission of IAMAS (international Association of Meteorology and atmospheric Science (since 1996)
- Honorary Member of the International Ozone Commission (IO3C) (International Union of Geodesy and Geophysics) (since 1996)
- Titular Member of the European Academy of Arts, Science and Humanities, Paris (since 1996)
- Member of the Pontificial Academy of Science (since 1996)
- Honorary Fellow of the Physical Research Laboratory (PRL), Ahmedabad, India (since 1997)
- Honorary Member of the American Meteorological Society (since 1997)
- Honorary Member of the European Geophysical Society (EGS) (since 1997)
- Member of the Vereinigung der Deutschen Wissenschafter (VDW) (Association of German Scientists) (since 1997)
- Foreign Member of Accademia Nazionale dei Lincei (Italian Academy of Science, Roma, Italy) (since 1997)
- Board of Consulting Editors of European Review (Interdisciplinary Journal of the Academia Europaea) (since 1997)
- Editorial Advisory Board of Current Topics in Meteorology (since 1997)
- Editorial Board Rendiconti Lincei (Accademia Nazionale dei Lincei, Rome) (since 1997)
- Member of the Board of Directors of the Mariolopoulos-Kanaguinis Foundation for Environmental Science, Athens, Greece (since 1997)
- Honorary Fellow of St. Cross College, Oxford, England (since 1998)
- Member of the Deutsche Physikalische Gesellschaft (DPG), Bad Honnef, Germany (since 1998)
- Member oft he Fachverband Umweltphysik (Association of Environmental Physics) of the DPG (Deutsche Physikalische Gesellschaft) (since 1998)
- Honorary Member of the Committee of EuroScience (European Association for the Promotion of Science and Technology), Strasbourg (since 1999)
- Foreign Member of the Russian academy of Science (since 1999)
- Advisory Committee Jahrbuch Ökologie, Berlin (since 1999)
- Honorary Member of the Swedish Meteorological Society (Svenska Meteorologiska Sällskapet) (since 2000)
- Ambassador for the Environment of the European Commission for the Environment (since 2001)
- Member of the Council of Chancellors of The Global Foundation of the Consejo Cultural Mundial, Mexico (since 2001)
- Honorary Member of the The World Innovation Foundation (since 2002)
- ABC (Atmospheric Brown Clouds) International Science Team (since 2002)
- Board of the General Advisors (BGA) of the UNESCO-EOLSS (since 2002)

- Honorary Member of the The International Raoul Wallenberg Foundation and the Angelo Roncalli International Committee, Jerusalem, Israel (since 2003)
- Member of the Founders´ Assembly, Foundation Lindau Nobel Laureates Meetings at Lake Constance, Lindau (since 2003)
- Honorary Member of the International Polar Foundation, Brussels, Belgium (since 2003)
- Honorary Member of the European Geosciences Union (EGU) (since 2004)
- Fellow of the Literary & Historical Society, University College of Dublin (since 2004)
- Advisory Board of the Atmospheric Chemistry and Physics, EGU Journal (since 2004)
- Fellow of the American Association for the Advancement of Science (AAAS), Washington, USA (since 2004)
- Associated Fellow of TWAS (Third World Academy of Sciences), Trieste (since 2004)
- Institute Scholar, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria (since 2004)
- Member of the ABC science team (since 2005)
- International Advisory Board of the Mahatma Gandhi Center for Global Nonviolence, James Madison University, Harrisonburg, USA (since 2005)
- Fellow of the World of Art and Science, San Francisco, USA (2005-2016); Emeritus Fellow (since 2016)
- Advisory Board of the Ernst Strüngmann Forum, Frankfurt, Germany (since 2006)
- Foreign Member of The British Royal Society, London, UK (since 2006)
- Honorary Member of the European Academy of Sciences and Arts (Academia Scientiarum et Artium Europaea), Salzburg, Austria (since 2007)
- Honorary Fellow of the Institute of Green Professionals, Weston, Florida, USA (since 2007)
- International Member of the American Philosophical Society, Class 1, USA (since 2007)
- Member of the International Scientific Advisory Council of the CREF Cyprus Institute (since 2008)
- Founder Member of the Anthropocene Working Group (AWG) of the Subcommission on Quaternary Stratigraphy (part of the International Commission on Stratigraphy) (since 2009); now Honorary Member
- Honorary Member of the Commission on Atmospheric Chemistry and Global Pollution (iCACGP/CACGP) (since 2010)
- Honorary Member of the „Naturforschende Gesellschaft zu Emden von 1814“, Emden, Germany (since 2011)
- Honorary Member of the “Nationale Akademie der Wissenschaften Leopoldina”, Halle, Germany (since 2014)
- Honorary Member of the Institute for Earth System Preservation (IESP), Garchingen, Germany (since 2015)
- Honorary Member of the Royal Netherlands Chemical Society (KNCV), The Hague, The Netherlands (since 2017)

- Honorary Member of the Anthropocene Working Group (AWG) of the Subcommission on Quaternary Stratigraphy (part of the International Commission on Stratigraphy) (since 2019), (Founder Member since 2009)

Albrecht W. Hofmann (Director of the Geochemistry Dept. until 2007)

- American Geophysical Union (AGU), member
- Geological Society of America (GSA)
- Geochemical Society
- European Association of Geochemistry
- Deutsche Mineralogische Gesellschaft
- Geologische Vereinigung

7. Scientific Awards and Honors 2018-2020

Jos Lelieveld

- Fellow of the American Geophysical Union, 2018
- Vilhelm Bjerknes Medal of the European Union, 2019

Ulrich Pöschl

- Highly Cited Researcher 2018, 2019, 2020 (Web of Science)

Paul J. Crutzen (Director of the Atmospheric Chemistry Dept. until 2000)

- Recipient of the Haagen-Smit Clean Air Award, California Air Resource Board, Sacramento, USA, 2018
- Recipient of the Lomonosov Gold Medal, Russian Academy of Science (RAS), 2019

Meinrat O. Andreae (Director of the Biogeochemistry Dept. until 2017)

- Alfred Wegener Medal, 2018

Alfred W. Hofmann (Director of the Geochemistry Dept. until 2007)

- Merle A. Tuve Senior Fellowship, Carnegie Institution of Science, 2018
- Foreign Member of the Royal Society of London for Improving Natural Knowledge, 2018

Kathryn Fitzsimmons (Max Planck Research Group Leadership (W2; 2017-2021))

- Hans-Bobek Dissertation Prize in Geography (for Habilitation thesis), Österreichische Geografische Gesellschaft, 2018

Yafang Cheng (Minerva Group Leader Position since 2014)

- Schmauss Award of the German Association for Aerosol Research (GAef), 2020
- AGU Atmospheric Sciences Ascent Award, 2020

Mikhail Eremets (Leader of the High pressure chemistry and physics group)

- James C. McGroddy Prize for New Materials of the American Physical Society's, 2020
- The Bragg Lecture at University College London, 2020
- The Falling Walls Science Breakthroughs of the Year 2020 in Physical Sciences, 2020

Mira Pöhlker (Team leader in the Multiphase Chemistry Department)

- Minerva Fast Track Position, 2018

Hang Su (Group leader in the Multiphase Chemistry Department)

- CAS-MPG ERTC Fellow

Franziska Köllner (Member of the Schneider Research group)

- Doctoral award by the Dres. Elke and Rainer Göbel Foundation of the Johannes Gutenberg University Mainz (JGU), 2020

Vinod Kumar (Member of the Satellite Remote Sensing group)

- Humboldt Research Fellowship by the Alexander von Humboldt foundation, 2019

Zhibin Wang (former member of the Hang Su Research group)

- grant from the Chinese 1000 Talents Program, 2018

Nan Ma (former member of the Cheng Research group)

- grant from the Chinese 1000 Talents Program, 2018

Johann Georg Goldammer (Group leader in the Biogeochemistry Department until 2017)

- Award of the gold Professor Niklas Medal of the Federal Ministry of Food and Agriculture, 2020

8. Events 2018-2020[1]

Scientific Meetings[2]

2018

- 15+17 January: CAFE Brazil planning meeting (Dorf)
- 22 January: ICON Chemistry meeting (Lelieveld)
- 6-8 February: Scientific Advisory Board meeting
- 5+9 March: trainees in geo science (Selzle)
- 6 March: CAFE Africa science meeting (Lelieveld/Dorf)
- 17+18 April: StorNext workshop (Disper)
- 11 May: Inauguration of the S/Y Eugen Seibold in Kiel, Germany
- 11+12 July: TROPOMI meeting (Wagner)
- 18+19 July: ATTO Ozone meeting (Sörgel)
- 6-8 September: Anthropocene Working Group (AWG) meeting (Crutzen, Pöschl)
- 13 September: Otto Hahn & Lise Meitner Symposium
- 8 November: S4-L0 working group (Wagner)
- 19+20 November: Barbados science meeting (M. Pöhlker)
- 21+22 November: AQABA meeting (Harder)
- 21+22 November: ACP meeting (Pöschl)
- 19+20 December: CAFE Africa science meeting (Lelieveld)

2019

- 23 January: Max Planck Digital Library (MPDL) Open Access seminar (Pöschl)
- 4 February: Gaia Anthropocene workshop (Haug/Pöschl)
- 4-6 June: Earth and Solar System Research Partnership (ESRP) meeting
- 6+7 June: Exploratory Round Table Conferences (ERTC) meeting (Pöschl)
- 18 June: CAFE Brazil planning meeting (Dorf)
- 1+2 July: Anthropocene workshop (Lelieveld)
- 14+15 October: VOIP meeting (Disper)
- 24 October: FRM4DOAS CCN=O2 progress meeting (Wagner)

[1] Scientific meetings, seminars and other events organized by the MPIC

[2] with external participants

- 28 October: CAFE Afrika science meeting (Dorf)
- 11+12 November: Ökoworld meeting (Haug)
- 14+15 November: ATTO Workshop
- 16 December: IMPACT meeting (Lelieveld/Williams)

2020

- 22+23 January: CAFE Brazil planning meeting (Dorf)

From March 2020 onwards, all meeting such as CAFE Brazil/BLUESKY science meetings were organized as online meetings.

Graduate Program Events

- Lecture Cycle of the Max Planck Graduate Center (MPGC), every semester

2018

- 3 July: The German and European Funding System and successful proposal writing
- 4 July: Horizon 2020: Information and general consulting on research funding in Europe
- 8-11 October: MPGC Retreat Dresden
- 11+12 July: Faculty Recruiting at German Universities
- 16+17 October: Exploring job opportunities on the non-academic job market
- 22+23 October: Thesis defense training
- 29+30 March; 29+30 October: Making a lasting impression in Science through Communication
- 19 October: Good Scientific Practice

2019

- 24 January; 28 November: Rhetoric and debating workshop
- 25+26 February: Successfully master your doctoral project
- 29+30 May: Heading for new horizons
- 30 April: Steps into academic teaching
- 13 May: Project management
- 20+21 May: Improved Reading
- 6 June: Career fair: Career steps for Postdocs in Academia & Industry
- 17+18 June: Effective proposal writing
- 10 July: Paul Crutzen Graduate School Day – A Conference organized by PhD students for PhD students with an international keynote speaker
- 21+22 October: Thesis defense training
- 6+7 November: Career-Orientation for researchers: The academic career path or are there other options?

- 14+15 November: Finish it! How to finalise your dissertation
- 2+3 December: Improved reading
- 17 December: Good Scientific Practice

2020

- 22 January: Career talks: Professorship at a University for Applied Science
    - Excellence@work
    - 18 February: Project Management in R & D
    - 3 March: Self-employment and Work-Life-Balance
- 5+6 February: Application training
- 30 November; 14 December: Good Scientific Practice for PhD students and Postdocs
- Every second semester: lecture course Atmospheric Chemistry I, Every second semester (upon demand): lecture course Atmospheric Chemistry II
- Permanently English for the Natural Sciences for PhD students

Institute Visits and Guided Tours

2018

- 5 March: Student group Geo Sciences, div. Universities
- 14 March: Student group from Wageningen University
- 20 March: Environment Public Authority EPA Kuwait delegation
- 26 April: Girl´s Day
- 30 April: Ursula Groden Kranich, Member of the German Parliament
- 22 June: Meeting with German Centre for Research and Innovation São Paulo
- 23 June: Alumni meeting Science Management, Speyer University
- 13 August: MINT Aktionstag[3]
- 16 October: Delegation Jinan University
- 3 December: Korean National Research Safety Institute (KNRS) delegation

[3] Jobs in STEM (Science, Technology, Engineering, and Mathematics)

2019

- 23 January: Visit of trainees from local newspaper
- 28 March: Girl´s Day
- 30 August: MINT Aktionstag
- 26 September: Chemie-Olympiade (practical course for young awardees in chemistry)
- 8 November: Student group Geo Sciences, Heidelberg University
- 20 November: Visit of the job center Mainz

2020

- 18 September: Ambassadors in Dialogue (Visit of ambassadors from Asian countries)

Other Events

- Institute Seminar: each Wednesday
- Joint Colloquium of the Institute for Atmospheric Physics (IPA) and the Max Planck Institute for Chemistry: each Thursday
- Physical Colloquium Mainz, a joint activity of the University Department of Physics, Mathematics and Informatics, the Max Planck Institute for Polymer Research and the Max Planck Institute for Chemistry
- MPIC Posterday: last Wednesday in June
- MPIC Works assembly: May or June
- MPIC Newcomer Event: twice a year
- Regular German and English classes
- Colloquium Doppelbindung: October 2018 – February 2019
- PR-Stammtisch (an informal public relations exchange in Mainz and the surrounding areas)

2018

- 23 January: MPIC Health Day
- 25 April: MPDL seminar
- 8+9 September: Mainz Science fair
- 14 September: Max Planck Day (Munich and Mainz)
- 22 October: Family Day of the Mainz University
- 29 October: Award ceremony of the Max Planck day photo competition

2019

- 8 March: Annual meeting of the Research Alliance Mainz
- 18 August: Open Day at the MPI for Chemistry + MPI for Polymer Research
- 14+15 September: Mainz Science fair
- 2 September: Exchange with University of Applied Sciences Rhein-Main
- 9 October: MPIC Health Day
- 10 October: Annual Meeting “Klimanavigator”