Bernd KÃ¤rcher

List of Publications by Year
in descending order

127 papers	11,337 citations	53660 45 h-index	31759 101 g-index
139 all docs	139 docs citations	139 times ranked	8037 citing authors

#	Article	IF	Citations
1	Bounding the role of black carbon in the climate system: A scientific assessment. Journal of Geophysical Research D: Atmospheres, 2013, 118, 5380-5552.	1.2	4,319
2	Single-particle measurements of midlatitude black carbon and light-scattering aerosols from the boundary layer to the lower stratosphere. Journal of Geophysical Research, 2006, 111, .	3.3	594
3	Heterogeneous nucleation of ice particles on glassy aerosols under cirrus conditions. Nature Geoscience, 2010, 3, 233-237.	5.4	302
4	Global radiative forcing from contrail cirrus. Nature Climate Change, 2011, 1, 54-58.	8.1	274
5	A parameterization of cirrus cloud formation: Heterogeneous freezing. Journal of Geophysical Research, 2003, 108, .	3.3	236
6	A parameterization of cirrus cloud formation: Homogeneous freezing of supercooled aerosols. Journal of Geophysical Research, 2002, 107, AAC 4-1.	3.3	223
7	Experimental investigation of homogeneous freezing of sulphuric acid particles in the aerosol chamber AIDA. Atmospheric Chemistry and Physics, 2003, 3, 211-223.	1.9	178
8	The roles of dynamical variability and aerosols in cirrus cloud formation. Atmospheric Chemistry and Physics, 2003, 3, 823-838.	1.9	167
9	The Initial Composition of Jet Condensation Trails. Journals of the Atmospheric Sciences, 1996, 53, 3066-3083.	0.6	165
10	Physically based parameterization of cirrus cloud formation for use in global atmospheric models. Journal of Geophysical Research, 2006, 111, .	3.3	159
11	Formation and radiative forcing of contrail cirrus. Nature Communications, 2018, 9, 1824.	5.8	155
12	On the Transition of Contrails into Cirrus Clouds. Journals of the Atmospheric Sciences, 2000, 57, 464-480.	0.6	153
13	Freezing thresholds and cirrus cloud formation mechanisms inferred from in situ measurements of relative humidity. Atmospheric Chemistry and Physics, 2003, 3, 1791-1806.	1.9	148
14	Insights into the role of soot aerosols in cirrus cloud formation. Atmospheric Chemistry and Physics, 2007, 7, 4203-4227.	1.9	144
15	Ultrafine particle size distributions measured in aircraft exhaust plumes. Journal of Geophysical Research, 2000, 105, 26555-26567.	3.3	122
16	A Parameterization of cirrus cloud formation: Homogeneous freezing including effects of aerosol size. Journal of Geophysical Research, 2002, 107, AAC 9-1-AAC 9-10.	3.3	118
17	First interactive simulations of cirrus clouds formed by homogeneous freezing in the ECHAM general circulation model. Journal of Geophysical Research, 2002, 107, AAC 8-1-AAC 8-13.	3.3	114
18	Evidence That Nitric Acid Increases Relative Humidity in Low-Temperature Cirrus Clouds. Science, 2004, 303, 516-520.	6.0	110

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19	Influence of fuel sulfur on the composition of aircraft exhaust plumes: The experiments SULFUR 1â€“7. Journal of Geophysical Research, 2002, 107, AAC 2-1.	3.3	108
20	Role of aircraft soot emissions in contrail formation. Geophysical Research Letters, 2009, 36, .	1.5	99
21	A largeâ€eddy model for cirrus clouds with explicit aerosol and ice microphysics and Lagrangian ice particle tracking. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 2074-2093.	1.0	95
22	The impact of aerosols and gravity waves on cirrus clouds at midlatitudes. Journal of Geophysical Research, 2004, 109, .	3.3	94
23	Cirrus Parcel Model Comparison Project. Phase 1: The Critical Components to Simulate Cirrus Initiation Explicitly. Journals of the Atmospheric Sciences, 2002, 59, 2305-2329.	0.6	91
24	Effects of ice nuclei on cirrus clouds in a global climate model. Journal of Geophysical Research, 2011, 116, .	3.3	83
25	Dust ice nuclei effects on cirrus clouds. Atmospheric Chemistry and Physics, 2014, 14, 3027-3046.	1.9	77
26	Simulating the global atmospheric black carbon cycle: a revisit to the contribution of aircraft emissions. Atmospheric Chemistry and Physics, 2004, 4, 2521-2541.	1.9	76
27	Cirrus cloud occurrence as function of ambient relative humidity: a comparison of observations obtained during the INCA experiment. Atmospheric Chemistry and Physics, 2003, 3, 1807-1816.	1.9	74
28	Ultrafine aerosol particles in aircraft plumes: In situ observations. Geophysical Research Letters, 1998, 25, 2789-2792.	1.5	72
29	Processâ€based simulation of contrail cirrus in a global climate model. Journal of Geophysical Research, 2009, 114, .	3.3	72
30	Contrail formation: Homogeneous nucleation of H2SO4/H2O droplets. Geophysical Research Letters, 1995, 22, 1501-1504.	1.5	68
31	Physicochemistry of aircraft-generated liquid aerosols, soot, and ice particles: 2. Comparison with observations and sensitivity studies. Journal of Geophysical Research, 1998, 103, 17129-17147.	3.3	66
32	The role of organic aerosols in homogeneous ice formation. Atmospheric Chemistry and Physics, 2005, 5, 703-714.	1.9	64
33	Nitric acid uptake on subtropical cirrus cloud particles. Journal of Geophysical Research, 2004, 109, n/a-n/a.	3.3	62
34	Contrail Microphysics. Bulletin of the American Meteorological Society, 2010, 91, 465-472.	1.7	62
35	Do aircraft black carbon emissions affect cirrus clouds on the global scale?. Geophysical Research Letters, 2005, 32, n/a-n/a.	1.5	61
36	A cirrus cloud scheme for general circulation models. Quarterly Journal of the Royal Meteorological Society, 2008, 134, 1439-1461.	1.0	61

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37	Global Modeling of the Contrail and Contrail Cirrus Climate Impact. Bulletin of the American Meteorological Society, 2010, 91, 479-484.	1.7	61
38	Small-scale chemical evolution of aircraft exhaust species at cruising altitudes. Journal of Geophysical Research, 1996, 101, 15169-15190.	3.3	60
39	The possible role of organics in the formation and evolution of ultrafine aircraft particles. Journal of Geophysical Research, 1999, 104, 4079-4087.	3.3	59
40	Aerosol states in the free troposphere at northern midlatitudes. Journal of Geophysical Research, 2002, 107, LAC 8-1-LAC 8-8.	3.3	59
41	Ultrafine aerosol particles in aircraft plumes: Analysis of growth mechanisms. Geophysical Research Letters, 1998, 25, 2793-2796.	1.5	57
42	Sensitivity studies of cirrus clouds formed by heterogeneous freezing in the ECHAM GCM. Journal of Geophysical Research, 2004, 109, .	3.3	56
43	Carbonaceous aerosol in jet engine exhaust: emission characteristics and implications for heterogeneous chemical reactions. Atmospheric Environment, 1999, 33, 2689-2698.	1.9	54
44	Nitric acid in cirrus clouds. Geophysical Research Letters, 2006, 33, .	1.5	54
45	Factors controlling contrail cirrus optical depth. Atmospheric Chemistry and Physics, 2009, 9, 6229-6254.	1.9	54
46	On optical and microphysical characteristics of contrails and cirrus. Journal of Geophysical Research, 2009, 114, .	3.3	53
47	Cirrus Clouds and Their Response to Anthropogenic Activities. Current Climate Change Reports, 2017, 3, 45-57.	2.8	53
48	Aviation-Produced Aerosols and Contrails. , 1999, 20, 113-167.		51
49	Physicochemistry of aircraft-generated liquid aerosols, soot, and ice particles: 1. Model description. Journal of Geophysical Research, 1998, 103, 17111-17128.	3.3	50
50	Aircraft-generated aerosols and visible contrails. Geophysical Research Letters, 1996, 23, 1933-1936.	1.5	49
51	Aviation fuel tracer simulation: Model intercomparison and implications. Geophysical Research Letters, 1998, 25, 3947-3950.	1.5	48
52	Numerical simulations of homogeneous freezing processes in the aerosol chamber AIDA. Atmospheric Chemistry and Physics, 2003, 3, 195-210.	1.9	48
53	Contrail cirrus supporting areas in model and observations. Geophysical Research Letters, 2008, 35, .	1.5	45
54	The microphysical pathway to contrail formation. Journal of Geophysical Research D: Atmospheres, 2015, 120, 7893-7927.	1.2	45

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55	On the composition and optical extinction of particles in the tropopause region. Journal of Geophysical Research, 1999, 104, 27441-27459.	3.3	44
56	In-situ observations and modeling of small nitric acid-containing ice crystals. Atmospheric Chemistry and Physics, 2007, 7, 3373-3383.	1.9	41
57	Formation of nitric acid/water ice particles in cirrus clouds. Geophysical Research Letters, 2006, 33, .	1.5	40
58	On the mechanisms controlling the formation and properties of volatile particles in aircraft wakes. Geophysical Research Letters, 1998, 25, 3839-3842.	1.5	38
59	Impact of the Mount Pinatubo eruption on cirrus clouds formed by homogeneous freezing in the ECHAM4 GCM. Journal of Geophysical Research, 2003, 108, .	3.3	38
60	Simulating gas-aerosol-cirrus interactions: Process-oriented microphysical model and applications. Atmospheric Chemistry and Physics, 2003, 3, 1645-1664.	1.9	38
61	The role of sulfur emission in volatile particle formation in jet aircraft exhaust plumes. Geophysical Research Letters, 1997, 24, 389-392.	1.5	37
62	Properties of subvisible cirrus clouds formed by homogeneous freezing. Atmospheric Chemistry and Physics, 2002, 2, 161-170.	1.9	35
63	Trapping of trace gases in growing ice crystals. Journal of Geophysical Research, 2004, 109, n/a-n/a.	3.3	35
64	Microphysics and heterogeneous chemistry in aircraft plumes - high sensitivity on local meteorology and atmospheric composition. Atmospheric Chemistry and Physics, 2005, 5, 533-545.	1.9	35
65	In Situ Observations of Ice Particle Losses in a Young Persistent Contrail. Geophysical Research Letters, 2018, 45, 13,553.	1.5	35
66	A trajectory box model for aircraft exhaust plumes. Journal of Geophysical Research, 1995, 100, 18835.	3.3	34
67	Processâ€oriented largeâ€eddy simulations of a midlatitude cirrus cloud system based on observations. Quarterly Journal of the Royal Meteorological Society, 2011, 137, 374-393.	1.0	32
68	A unified model for ultrafine aircraft particle emissions. Journal of Geophysical Research, 2000, 105, 29379-29386.	3.3	30
69	Aircraft-based operation of an aerosol mass spectrometer: Measurements of tropospheric aerosol composition. Journal of Aerosol Science, 2006, 37, 839-857.	1.8	30
70	The observation of nitric acid-containing particles in the tropical lower stratosphere. Atmospheric Chemistry and Physics, 2006, 6, 601-611.	1.9	30
71	Heterogeneous chemistry in aircraft wakes: Constraints for uptake coefficients. Journal of Geophysical Research, 1997, 102, 19119-19135.	3.3	29
72	Aerodynamic Contrails: Microphysics and Optical Properties. Journals of the Atmospheric Sciences, 2009, 66, 227-243.	0.6	29

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73	Transport of exhaust products in the near trail of a jet engine under atmospheric conditions. Journal of Geophysical Research, 1994, 99, 14509.	3.3	28
74	Aerodynamic Contrails: Phenomenology and Flow Physics. Journals of the Atmospheric Sciences, 2009, 66, 217-226.	0.6	28
75	Supersaturation Variability and Cirrus Ice Crystal Size Distributions. Journals of the Atmospheric Sciences, 2014, 71, 2905-2926.	0.6	28
76	Cirrus clouds in the tropical tropopause layer: Role of heterogeneous ice nuclei. Geophysical Research Letters, 2004, 31, n/a-n/a.	1.5	27
77	On the potential importance of sulfur-induced activation of soot particles in nascent jet aircraft exhaust plumes. Atmospheric Research, 1998, 46, 293-305.	1.8	26
78	Factors controlling upper tropospheric relative humidity. Annales Geophysicae, 2004, 22, 705-715.	0.6	26
79	On the impact of heterogeneous chemistry on ozone in the tropopause region. Geophysical Research Letters, 2001, 28, 515-518.	1.5	25
80	Importance of representing optical depth variability for estimates of global line-shaped contrail radiative forcing. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 19181-19184.	3.3	25
81	The importance of contrail ice formation for mitigating the climate impact of aviation. Journal of Geophysical Research D: Atmospheres, 2016, 121, 3497-3505.	1.2	24
82	Small-Scale Wind Fluctuations in the Tropical Tropopause Layer from Aircraft Measurements: Occurrence, Nature, and Impact on Vertical Mixing. Journals of the Atmospheric Sciences, 2017, 74, 3847-3869.	0.6	23
83	Constraining the heterogeneous loss of O3on soot particles with observations in jet engine exhaust plumes. Geophysical Research Letters, 1998, 25, 3323-3326.	1.5	22
84	Soot PCF: pore condensation and freezing framework for soot aggregates. Atmospheric Chemistry and Physics, 2021, 21, 7791-7843.	1.9	22
85	Condensedâ€phase nitric acid in a tropical subvisible cirrus cloud. Geophysical Research Letters, 2007, 34, .	1.5	21
86	Supersaturation, dehydration, and denitrification in Arctic cirrus. Atmospheric Chemistry and Physics, 2005, 5, 1757-1772.	1.9	20
87	Trapping of trace gases by growing ice surfaces including surfaceâ€saturated adsorption. Journal of Geophysical Research, 2009, 114, .	3.3	19
88	On homogeneous ice formation in liquid clouds. Quarterly Journal of the Royal Meteorological Society, 2016, 142, 1320-1334.	1.0	19
89	Airborne measurements of the nitric acid partitioning in persistent contrails. Atmospheric Chemistry and Physics, 2009, 9, 8189-8197.	1.9	18
90	Dynamics of aircraft exhaust plumes in the jet-regime. Annales Geophysicae, 1994, 12, 911-919.	0.6	17

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91	Process-oriented analysis of aircraft soot-cirrus interactions constrains the climate impact of aviation. Communications Earth & Environment, 2021, 2, .	2.6	17
92	Cloud-controlling Factors of Cirrus. , 2009, , 235-268.		17
93	Susceptibility of contrail ice crystal numbers to aircraft soot particle emissions. Geophysical Research Letters, 2017, 44, 8037-8046.	1.5	16
94	Heterogeneous Ice Nucleation in the Tropical Tropopause Layer. Journal of Geophysical Research D: Atmospheres, 2018, 123, 12,210.	1.2	16
95	A Stochastic Representation of Temperature Fluctuations Induced by Mesoscale Gravity Waves. Journal of Geophysical Research D: Atmospheres, 2019, 124, 11506-11529.	1.2	16
96	Perturbation of the aerosol layer by aviation-produced aerosols: A parametrization of plume processes. Geophysical Research Letters, 1998, 25, 4465-4468.	1.5	15
97	The Impact of Mesoscale Gravity Waves on Homogeneous Ice Nucleation in Cirrus Clouds. Geophysical Research Letters, 2019, 46, 5556-5565.	1.5	15
98	Studies on the Competition Between Homogeneous and Heterogeneous Ice Nucleation in Cirrus Formation. Journal of Geophysical Research D: Atmospheres, 2022, 127, .	1.2	15
99	Supersaturation Fluctuations in Cirrus Clouds Driven by Colored Noise. Journals of the Atmospheric Sciences, 2012, 69, 435-443.	0.6	12
100	Aerosols in the Atmosphere. Research Topics in Aerospace, 2012, , 37-53.	0.6	11
101	Suppression of chlorine activation on aviation-produced volatile particles. Atmospheric Chemistry and Physics, 2002, 2, 307-312.	1.9	10
102	Microscale characteristics of homogeneous freezing events in cirrus clouds. Geophysical Research Letters, 2017, 44, 2027-2034.	1.5	10
103	Contrail Formation: Analysis of Sublimation Mechanisms. Geophysical Research Letters, 2018, 45, 13,547.	1.5	9
104	Influence of partial ionization on the energy loss of fast ions in highâ€Zmaterial. Journal of Applied Physics, 1991, 69, 3835-3841.	1.1	8
105	Impact of aircraft emissions on stratospheric ozone: A research strategy. Physics and Chemistry of the Earth, 1995, 20, 123-131.	0.3	7
106	In situ observations of aerosol properties above ice saturation in the polar tropopause region. Journal of Geophysical Research, 2000, 105, 29387-29395.	3.3	7
107	Effects of optical depth variability on contrail radiative forcing. Quarterly Journal of the Royal Meteorological Society, 2013, 139, 1658-1664.	1.0	6
108	Toward practical stratospheric aerosol albedo modification: Solar-powered lofting. Science Advances, 2021, 7, .	4.7	6

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109	Atmospheric Ice Formation Processes. Research Topics in Aerospace, 2012, , 151-167.	0.6	6
110	Homogeneous ice formation in convective cloud outflow regions. Quarterly Journal of the Royal Meteorological Society, 2017, 143, 2093-2103.	1.0	5
111	Aerosolâ€“cloud interactions: the representation of heterogeneous ice activation in cloud models. Atmospheric Chemistry and Physics, 2021, 21, 15213-15220.	1.9	5
112	Ion-beam-driven plasma described by rate equations. Laser and Particle Beams, 1990, 8, 679-695.	0.4	3
113	Selfâ€similar solutions of ionâ€beamâ€driven plasma expansion. Physics of Fluids B, 1989, 1, 654-662.	1.7	2
114	Influence of excited states on the energy loss of fast ions in a hydrogen plasma. Journal of Applied Physics, 1991, 69, 3842-3848.	1.1	2
115	On inner-shell X-rays from ion-beam-driven plasma. Journal of Quantitative Spectroscopy and Radiative Transfer, 1992, 48, 255-272.	1.1	2
116	Correction to â€œNitric acid uptake on subtropical cirrus cloud particlesâ€. Journal of Geophysical Research, 2004, 109, .	3.3	2
117	On the Statistical Distribution of Total Water in Cirrus Clouds. Geophysical Research Letters, 2018, 45, 9963-9971.	1.5	2
118	Processâ€Based Simulation of Aerosolâ€Cloud Interactions in a Oneâ€Dimensional Cirrus Model. Journal of Geophysical Research D: Atmospheres, 2020, 125, e2019JD031847.	1.2	2
119	Dynamics of aircraft exhaust plumes in the jet-regime. Annales Geophysicae, 1994, 12, 911.	0.6	2
120	Evolution of entropy in the Gay-Lussac experiment. Physics Letters, Section A: General, Atomic and Solid State Physics, 1988, 126, 383-388.	0.9	1
121	New particle formation in aircraft exhaust plumes. Journal of Aerosol Science, 2000, 31, 170-171.	1.8	1
122	Climate Impact Evaluation as Part of Aircraft Pre-Design. , 2009, , .		1
123	Aerosol production caused by civil air traffic. , 1996, , 292-295.		1
124	Limitation of heterogeneous chemistry on aviation-produced aerosols. Journal of Aerosol Science, 2000, 31, 356-357.	1.8	0
125	Properties of particles in the tropopause region. Journal of Aerosol Science, 2000, 31, 594-595.	1.8	0
126	PARTICLES FROM AIRCRAFT EXHAUST: IN-SITU MASS SPECTROMETRIC ANALYSIS. Journal of Aerosol Science, 2004, 35, S1227-S1228.	1.8	0

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127	Dust ice nuclei effects on cirrus clouds in ECHAM5-HAM. , 2013, , .		0