

Michael J Prather

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109
papers

10,047
citations

49
h-index

100
g-index

144
ext. papers

11,348
ext. citations

13.7
avg, IF

6.07
L-index

#	Paper	IF	Citations
109	Tropospheric chemistry: A global perspective. <i>Journal of Geophysical Research</i> , 1981 , 86, 7210		1533
108	Towards robust regional estimates of CO ₂ sources and sinks using atmospheric transport models. <i>Nature</i> , 2002 , 415, 626-30	50.4	998
107	Numerical advection by conservation of second-order moments. <i>Journal of Geophysical Research</i> , 1986 , 91, 6671		657
106	Fast-J: Accurate Simulation of In- and Below-Cloud Photolysis in Tropospheric Chemical Models. <i>Journal of Atmospheric Chemistry</i> , 2000 , 37, 245-282	3.2	450
105	Global air quality and climate. <i>Chemical Society Reviews</i> , 2012 , 41, 6663-83	58.5	334
104	Reactive greenhouse gas scenarios: Systematic exploration of uncertainties and the role of atmospheric chemistry. <i>Geophysical Research Letters</i> , 2012 , 39, n/a-n/a	4.9	313
103	A comprehensive quantification of global nitrous oxide sources and sinks. <i>Nature</i> , 2020 , 586, 248-256	50.4	270
102	Chemistry of the global troposphere: Fluorocarbons as tracers of air motion. <i>Journal of Geophysical Research</i> , 1987 , 92, 6579		265
101	Preindustrial to present-day changes in tropospheric hydroxyl radical and methane lifetime from the Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP). <i>Atmospheric Chemistry and Physics</i> , 2013 , 13, 5277-5298	6.8	234
100	Analysis of present day and future OH and methane lifetime in the ACCMIP simulations. <i>Atmospheric Chemistry and Physics</i> , 2013 , 13, 2563-2587	6.8	209
99	TransCom 3 CO ₂ inversion intercomparison: 1. Annual mean control results and sensitivity to transport and prior flux information. <i>Tellus, Series B: Chemical and Physical Meteorology</i> , 2003 , 55, 555-579	2.3	205
98	Fast-J2: Accurate Simulation of Stratospheric Photolysis in Global Chemical Models. <i>Journal of Atmospheric Chemistry</i> , 2002 , 41, 281-296	3.2	173
97	Fresh air in the 21st century?. <i>Geophysical Research Letters</i> , 2003 , 30,	4.9	152
96	Indirect long-term global radiative cooling from NO _x Emissions. <i>Geophysical Research Letters</i> , 2001 , 28, 1719-1722	4.9	151
95	A persistent imbalance in HO _x and NO _x photochemistry of the upper troposphere driven by deep tropical convection. <i>Geophysical Research Letters</i> , 1997 , 24, 3189-3192	4.9	146
94	Stratospheric ozone depletion and future levels of atmospheric chlorine and bromine. <i>Nature</i> , 1990 , 344, 729-734	50.4	143
93	Reductions in ozone at high concentrations of stratospheric halogens. <i>Nature</i> , 1984 , 312, 227-31	50.4	143

92	Recent decreases in fossil-fuel emissions of ethane and methane derived from firn air. <i>Nature</i> , 2011 , 476, 198-201	50.4	140
91	Future methane, hydroxyl, and their uncertainties: key climate and emission parameters for future predictions. <i>Atmospheric Chemistry and Physics</i> , 2013 , 13, 285-302	6.8	132
90	Young people's burden: requirement of negative CO ₂ emissions. <i>Earth System Dynamics</i> , 2017 , 8, 577-616	4.8	127
89	Time scales in atmospheric chemistry: Theory, GWPs for CH ₄ and CO, and runaway growth. <i>Geophysical Research Letters</i> , 1996 , 23, 2597-2600	4.9	124
88	AerChemMIP: quantifying the effects of chemistry and aerosols in CMIP6. <i>Geoscientific Model Development</i> , 2017 , 10, 585-607	6.3	119
87	Global tropospheric ozone modeling: Quantifying errors due to grid resolution. <i>Journal of Geophysical Research</i> , 2006 , 111,		116
86	Intercontinental impacts of ozone pollution on human mortality. <i>Environmental Science & Technology</i> , 2009 , 43, 6482-7	10.3	109
85	Tropospheric OH and the lifetimes of hydrochlorofluorocarbons. <i>Journal of Geophysical Research</i> , 1990 , 95, 18723		103
84	Global impact of the Antarctic ozone hole: Chemical propagation. <i>Journal of Geophysical Research</i> , 1990 , 95, 3473		97
83	Measuring and modeling the lifetime of nitrous oxide including its variability. <i>Journal of Geophysical Research D: Atmospheres</i> , 2015 , 120, 5693-5705	4.4	90
82	Stratospheric variability and tropospheric ozone. <i>Journal of Geophysical Research</i> , 2009 , 114,		89
81	Lifetimes and eigenstates in atmospheric chemistry. <i>Geophysical Research Letters</i> , 1994 , 21, 801-804	4.9	88
80	Time scales in atmospheric chemistry: coupled perturbations to N ₂ O, NO _y , and O ₃ . <i>Science</i> , 1998 , 279, 1339-41	33.3	87
79	Co-occurrence of extremes in surface ozone, particulate matter, and temperature over eastern North America. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2017 , 114, 2854-2859	11.5	83
78	Diagnosing the stratosphere-to-troposphere flux of ozone in a chemistry transport model. <i>Journal of Geophysical Research</i> , 2005 , 110,		82
77	Excitation of the primary tropospheric chemical mode in a global three-dimensional model. <i>Journal of Geophysical Research</i> , 2000 , 105, 24647-24660		81
76	. <i>Tellus, Series B: Chemical and Physical Meteorology</i> , 1990 , 42, 118-134	3.3	77
75	An atmospheric chemist in search of the tropopause. <i>Journal of Geophysical Research</i> , 2011 , 116,		70

74	TransCom 3 CO ₂ inversion intercomparison: 1. Annual mean control results and sensitivity to transport and prior flux information. <i>Tellus, Series B: Chemical and Physical Meteorology</i> , 2003 , 55, 555-579	3.3	68
73	Oxidation of CS ₂ and COS: sources for atmospheric SO ₂ . <i>Nature</i> , 1979 , 281, 185-188	50.4	65
72	Global atmospheric chemistry: Integrating over fractional cloud cover. <i>Journal of Geophysical Research</i> , 2007 , 112,		64
71	NF ₃ , the greenhouse gas missing from Kyoto. <i>Geophysical Research Letters</i> , 2008 , 35, n/a-n/a	4.9	60
70	Chemical transport model ozone simulations for spring 2001 over the western Pacific: Comparisons with TRACE-P lidar, ozonesondes, and Total Ozone Mapping Spectrometer columns. <i>Journal of Geophysical Research</i> , 2003 , 108,		60
69	More rapid polar ozone depletion through the reaction of HOCl with HCl on polar stratospheric clouds. <i>Nature</i> , 1992 , 355, 534-537	50.4	59
68	Coupling of nitrous oxide and methane by global atmospheric chemistry. <i>Science</i> , 2010 , 330, 952-4	33.3	58
67	Uncertainties in climate assessment for the case of aviation NO. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2011 , 108, 10997-1002	11.5	56
66	Multi-model simulations of aerosol and ozone radiative forcing due to anthropogenic emission changes during the period 1990-2015. <i>Atmospheric Chemistry and Physics</i> , 2017 , 17, 2709-2720	6.8	55
65	Results from the Intergovernmental Panel on Climatic Change Photochemical Model Intercomparison (PhotoComp). <i>Journal of Geophysical Research</i> , 1997 , 102, 5979-5991		53
64	Quantifying errors in trace species transport modeling. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2008 , 105, 19617-21	11.5	52
63	Atmospheric science. An environmental experiment with H ₂ ?. <i>Science</i> , 2003 , 302, 581-2	33.3	50
62	Noble gases in the terrestrial planets. <i>Nature</i> , 1981 , 293, 535-539	50.4	49
61	Tropospheric aerosol impacts on trace gas budgets through photolysis. <i>Journal of Geophysical Research</i> , 2003 , 108,		48
60	Simulations of the trend and annual cycle in stratospheric CO ₂ . <i>Journal of Geophysical Research</i> , 1993 , 98, 10573		47
59	Tracer-tracer correlations: Three-dimensional model simulations and comparisons to observations. <i>Journal of Geophysical Research</i> , 1997 , 102, 19233-19246		44
58	CO ₂ source inversions using satellite observations of the upper troposphere. <i>Geophysical Research Letters</i> , 2001 , 28, 4571-4574	4.9	39
57	Seasonal evolutions of N ₂ O, O ₃ , and CO ₂ : Three-dimensional simulations of stratospheric correlations. <i>Journal of Geophysical Research</i> , 1995 , 100, 16699		39

56	Lifetimes and time scales in atmospheric chemistry. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2007 , 365, 1705-26	3	38
55	Skill in forecasting extreme ozone pollution episodes with a global atmospheric chemistry model. <i>Atmospheric Chemistry and Physics</i> , 2014 , 14, 7721-7739	6.8	37
54	Use of North American and European air quality networks to evaluate global chemistry-climate modeling of surface ozone. <i>Atmospheric Chemistry and Physics</i> , 2015 , 15, 10581-10596	6.8	35
53	A standard test case suite for two-dimensional linear transport on the sphere: results from a collection of state-of-the-art schemes. <i>Geoscientific Model Development</i> , 2014 , 7, 105-145	6.3	35
52	Continental sources of halocarbons and nitrous oxide. <i>Nature</i> , 1985 , 317, 221-225	50.4	33
51	Effect of climate change on surface ozone over North America, Europe, and East Asia. <i>Geophysical Research Letters</i> , 2016 , 43, 3509-3518	4.9	31
50	The climate impact of ship NO _x emissions: an improved estimate accounting for plume chemistry. <i>Atmospheric Chemistry and Physics</i> , 2014 , 14, 6801-6812	6.8	30
49	Global long-lived chemical modes excited in a 3-D chemistry transport model: Stratospheric N ₂ O, NO _y , O ₃ and CH ₄ chemistry. <i>Geophysical Research Letters</i> , 2010 , 37, n/a-n/a	4.9	28
48	Antarctic ozone: Meteoric control of HNO ₃ . <i>Geophysical Research Letters</i> , 1988 , 15, 1-4	4.9	27
47	Bromine-chlorine coupling in the Antarctic Ozone Hole. <i>Geophysical Research Letters</i> , 1996 , 23, 153-156	4.9	26
46	Overexplaining or underexplaining methane's role in climate change. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2017 , 114, 5324-5326	11.5	25
45	Oceanic alkyl nitrates as a natural source of tropospheric ozone. <i>Geophysical Research Letters</i> , 2008 , 35,	4.9	23
44	Evaluating ozone depletion from very short-lived halocarbons. <i>Geophysical Research Letters</i> , 2000 , 27, 1475-1478	4.9	23
43	European sources of halocarbons and nitrous oxide: Update 1986. <i>Journal of Atmospheric Chemistry</i> , 1988 , 6, 375-406	3.2	23
42	Global atmospheric chemistry – which air matters. <i>Atmospheric Chemistry and Physics</i> , 2017 , 17, 9081-9106	6.8	22
41	Tracking uncertainties in the causal chain from human activities to climate. <i>Geophysical Research Letters</i> , 2009 , 36,	4.9	22
40	Are the TRACE-P measurements representative of the western Pacific during March 2001?. <i>Journal of Geophysical Research</i> , 2004 , 109,		19
39	Aerosol data assimilation in the chemical transport model MOCAGE during the TRAQA/ChArMEX campaign: aerosol optical depth. <i>Atmospheric Measurement Techniques</i> , 2016 , 9, 5535-5554	4	19

38	Cloud impacts on photochemistry: building a climatology of photolysis rates from the Atmospheric Tomography mission. <i>Atmospheric Chemistry and Physics</i> , 2018 , 18, 16809-16828	6.8	18
37	Photolysis rates in correlated overlapping cloud fields: Cloud-J 7.3c. <i>Geoscientific Model Development</i> , 2015 , 8, 2587-2595	6.3	16
36	Timescales in atmospheric chemistry: CH ₃ Br, the ocean, and ozone depletion potentials. <i>Global Biogeochemical Cycles</i> , 1997 , 11, 393-400	5.9	16
35	The seasonality and geographic dependence of ENSO impacts on U.S. surface ozone variability. <i>Geophysical Research Letters</i> , 2017 , 44, 3420-3428	4.9	15
34	Photoelectrons in the upper atmosphere: A formulation incorporating effects of transport. <i>Planetary and Space Science</i> , 1978 , 26, 131-138	2	15
33	Global warming from chlorofluorocarbons and their alternatives: Time scales of chemistry and climate. <i>Atmospheric Environment Part A General Topics</i> , 1993 , 27, 581-587		14
32	Large changes in biomass burning over the last millennium inferred from paleoatmospheric ethane in polar ice cores. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018 , 115, 12413-12418	11.5	14
31	Is the residual vertical velocity a good proxy for stratosphere-troposphere exchange of ozone?. <i>Geophysical Research Letters</i> , 2014 , 41, 9024-9032	4.9	13
30	Iconic CO ₂ time series at risk. <i>Science</i> , 2012 , 337, 1038-40	33.3	13
29	Future impact of traffic emissions on atmospheric ozone and OH based on two scenarios. <i>Atmospheric Chemistry and Physics</i> , 2012 , 12, 12211-12225	6.8	11
28	Effects of Chemical Feedbacks on Decadal Methane Emissions Estimates. <i>Geophysical Research Letters</i> , 2020 , 47, e2019GL085706	4.9	10
27	Tropospheric O ₃ from photolysis of O ₂ . <i>Geophysical Research Letters</i> , 2009 , 36, n/a-n/a	4.9	10
26	Young People's Burden: Requirement of Negative CO ₂ Emissions 2016 ,		10
25	Multi-model impacts of climate change on pollution transport from global emission source regions. <i>Atmospheric Chemistry and Physics</i> , 2017 , 17, 14219-14237	6.8	9
24	How well can global chemistry models calculate the reactivity of short-lived greenhouse gases in the remote troposphere, knowing the chemical composition. <i>Atmospheric Measurement Techniques</i> , 2018 , 11, 2653-2668	4	9
23	Lifetimes of atmospheric species: Integrating environmental impacts. <i>Geophysical Research Letters</i> , 2002 , 29, 20-1-20-3	4.9	7
22	Reply [to Comment on The space shuttle's impact on the stratosphere] by Michael J. Prather et al. <i>Journal of Geophysical Research</i> , 1991 , 96, 17379		7
21	AerChemMIP: Quantifying the effects of chemistry and aerosols in CMIP6		7

20	Correction to NF_3 , the greenhouse gas missing from Kyoto <i>Geophysical Research Letters</i> , 2010 , 37, n/a-n/a	4.9	6
19	THE NASA ATMOSPHERIC TOMOGRAPHY (ATom) MISSION: Imaging the Chemistry of the Global Atmosphere. <i>Bulletin of the American Meteorological Society</i> , 2021 , 1-53	6.1	6
18	Data-rate-aware FPGA-based acceleration framework for streaming applications 2016 ,		6
17	Reconstruction of Paleofire Emissions Over the Past Millennium From Measurements of Ice Core Acetylene. <i>Geophysical Research Letters</i> , 2020 , 47, e2019GL085101	4.9	5
16	How Atmospheric Chemistry and Transport Drive Surface Variability of N_2O and CFC-11. <i>Journal of Geophysical Research D: Atmospheres</i> , 2021 , 126, e2020JD033979	4.4	5
15	Forecasting carbon monoxide on a global scale for the ATom-1 aircraft mission: insights from airborne and satellite observations and modeling. <i>Atmospheric Chemistry and Physics</i> , 2018 , 18, 10955-10971	6.8	4
14	A radiative transfer module for calculating photolysis rates and solar heating in climate models: Solar-J v7.5. <i>Geoscientific Model Development</i> , 2017 , 10, 2525-2545	6.3	3
13	Stratospheric ozone, global warming, and the principle of unintended consequences--an ongoing science and policy story. <i>Journal of the Air and Waste Management Association</i> , 2013 , 63, 1235-44	2.4	3
12	Sensitivity of stratospheric dynamics to uncertainty in O_3 production. <i>Journal of Geophysical Research D: Atmospheres</i> , 2013 , 118, 8984-8999	4.4	3
11	A perspective on time: loss frequencies, time scales and lifetimes. <i>Environmental Chemistry</i> , 2013 , 10, 73	3.2	3
10	F. Sherwood Rowland (1927-2012). <i>Nature</i> , 2012 , 484, 168	50.4	2
9	Extracting a History of Global Fire Emissions for the Past Millennium From Ice Core Records of Acetylene, Ethane, and Methane. <i>Journal of Geophysical Research D: Atmospheres</i> , 2020 , 125, e2020JD032932	4.4	2
8	Evaluation of the interactive stratospheric ozone (O_3v_2) module in the E3SM version 1 Earth system model. <i>Geoscientific Model Development</i> , 2021 , 14, 1219-1236	6.3	2
7	A round Earth for climate models. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2019 , 116, 19330-19335	11.5	2
6	Multi-model simulations of aerosol and ozone radiative forcing for the period 1990-2015 2016 ,		1
5	Heterogeneity and chemical reactivity of the remote troposphere defined by aircraft measurements. <i>Atmospheric Chemistry and Physics</i> , 2021 , 21, 13729-13746	6.8	1
4	From the middle stratosphere to the surface, using nitrous oxide to constrain the stratosphere-troposphere exchange of ozone. <i>Atmospheric Chemistry and Physics</i> , 2022 , 22, 2079-2093	6.8	1
3	GEMS, goals, thanks, and farewell. <i>Geophysical Research Letters</i> , 2001 , 28, 4515-4516	4.9	

- 2 Assessing Uncertainties and Approximations in Solar Heating of the Climate System. *Journal of Advances in Modeling Earth Systems*, **2021**, 13, e2020MS002131 7.1
- 1 CO₂ surface variability: from the stratosphere or not?. *Earth System Dynamics*, **2022**, 13, 703-709 4.8