Stephen Lewis

List of Publications by Year
in descending order

134 papers	5,768 citations	81900 39 h-index	82547 72 g-index
162 all docs	162 docs citations	162 times ranked	2433 citing authors

#	Article	IF	Citations
1	Improved general circulation models of the Martian atmosphere from the surface to above 80 km. Journal of Geophysical Research, 1999, 104, 24155-24175.	3.3	955
2	Eight-year climatology of dust optical depth on Mars. Icarus, 2015, 251, 65-95.	2.5	316
3	A climate database for Mars. Journal of Geophysical Research, 1999, 104, 24177-24194.	3.3	299
4	Modeling the Martian dust cycle, 1. Representations of dust transport processes. Journal of Geophysical Research, 2002, 107, 6-1-6-18.	3.3	194
5	Structure and dynamics of the Martian lower and middle atmosphere as observed by the Mars Climate Sounder: Seasonal variations in zonal mean temperature, dust, and water ice aerosols. Journal of Geophysical Research, 2010, 115, .	3.3	183
6	The atmosphere of Mars as observed by InSight. Nature Geoscience, 2020, 13, 190-198.	12.9	161
7	Modeling the Martian dust cycle 2. Multiannual radiatively active dust transport simulations. Journal of Geophysical Research, 2002, 107, 7-1-7-15.	3.3	121
8	THE MARTIAN ATMOSPHERIC BOUNDARY LAYER. Reviews of Geophysics, 2011, 49, .	23.0	119
9	Martian dust storm impact on atmospheric H2O and D/H observed by ExoMars Trace Gas Orbiter. Nature, 2019, 568, 521-525.	27.8	107
10	NOMAD, an Integrated Suite of Three Spectrometers for the ExoMars Trace Gas Mission: Technical Description, Science Objectives and Expected Performance. Space Science Reviews, 2018, 214, 1.	8.1	95
11	Assimilation of thermal emission spectrometer atmospheric data during the Mars Global Surveyor aerobraking period. Icarus, 2007, 192, 327-347.	2.5	91
12	Influence of water ice clouds on Martian tropical atmospheric temperatures. Geophysical Research Letters, 2008, 35, .	4.0	84
13	Western boundary currents in the Martian atmosphere: Numerical simulations and observational evidence. Journal of Geophysical Research, 1995, 100, 5485.	3.3	81
14	The atmospheric circulation and dust activity in different orbital epochs on Mars. Icarus, 2005, 174, 135-160.	2.5	80
15	Baroclinic Wave Transitions in the Martian Atmosphere. Icarus, 1996, 120, 344-357.	2.5	77
16	Science objectives and performances of NOMAD, a spectrometer suite for the ExoMars TGO mission. Planetary and Space Science, 2015, 119, 233-249.	1.7	77
17	The solsticial pause on Mars: 1. A planetary wave reanalysis. Icarus, 2016, 264, 456-464.	2.5	74
18	Intense polar temperature inversion in the middle atmosphere on Mars. Nature Geoscience, 2008, 1, 745-749.	12.9	71

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19	Selection of the landing site in Isidis Planitia of Mars probe Beagle 2. Journal of Geophysical Research, 2003, 108, 1-1.	3.3	65
20	Atmospheric tides in a Mars general circulation model with data assimilation. Advances in Space Research, 2005, 36, 2162-2168.	2.6	65
21	Superrotation in a Venus general circulation model. Journal of Geophysical Research, 2007, 112, .	3.3	65
22	Validation of martian meteorological data assimilation for MGS/TES using radio occultation measurements. Icarus, 2006, 185, 113-132.	2.5	64
23	Dynamics of Convectively Driven Banded Jets in the Laboratory. Journals of the Atmospheric Sciences, 2007, 64, 4031-4052.	1.7	63
24	Upper atmosphere of Mars up to 120 km: Mars Global Surveyor accelerometer data analysis with the LMD general circulation model. Journal of Geophysical Research, 2004, 109, .	3.3	62
25	Explanation for the Increase in Highâ€Altitude Water on Mars Observed by NOMAD During the 2018 Global Dust Storm. Geophysical Research Letters, 2020, 47, e2019GL084354.	4.0	62
26	The Mars Analysis Correction Data Assimilation (<scp>MACDA</scp>) Dataset V1.0. Geoscience Data Journal, 2014, 1, 129-139.	4.4	61
27	Assessment of Environments for Mars Science Laboratory Entry, Descent, and Surface Operations. Space Science Reviews, 2012, 170, 793-835.	8.1	58
28	The physics of Martian weather and climate: a review. Reports on Progress in Physics, 2015, 78, 125901.	20.1	54
29	Interannual variability of Martian dust storms in assimilation of several years of Mars global surveyor observations. Advances in Space Research, 2005, 36, 2146-2155.	2.6	51
30	Field measurements of horizontal forward motion velocities of terrestrial dust devils: Towards a proxy for ambient winds on Mars and Earth. Icarus, 2012, 221, 632-645.	2.5	51
31	A numerical model of the atmosphere of Venus. Advances in Space Research, 2005, 36, 2142-2145.	2.6	49
32	Structure and dynamics of the convective boundary layer on Mars as inferred from largeâ€eddy simulations and remoteâ€sensing measurements. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 414-428.	2.7	49
33	The solsticial pause on Mars: 2 modelling and investigation of causes. Icarus, 2016, 264, 465-477.	2.5	48
34	The seasonal cycle of water vapour on Mars from assimilation of Thermal Emission Spectrometer data. Icarus, 2014, 237, 97-115.	2.5	47
35	Simulating the interannual variability of major dust storms on Mars using variable lifting thresholds. Icarus, 2013, 223, 344-358.	2.5	45
36	The impact of martian mesoscale winds on surface temperature and on the determination of thermal inertia. Icarus, 2011, 212, 504-519.	2.5	44

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37	Recent Basal Melting of a Midâ€Latitude Glacier on Mars. Journal of Geophysical Research E: Planets, 2017, 122, 2445-2468.	3.6	43
38	Jupiter's and Saturn's convectively driven banded jets in the laboratory. Geophysical Research Letters, 2004, 31, .	4.0	42
39	NOMAD spectrometer on the ExoMars trace gas orbiter mission: part 2â€"design, manufacturing, and testing of the ultraviolet and visible channel. Applied Optics, 2017, 56, 2771.	2.1	40
40	The effects of the martian regolith on GCM water cycle simulations. Icarus, 2005, 177, 174-189.	2.5	39
41	An operational data assimilation scheme for the martian atmosphere. Advances in Space Research, 1995, 16, 9-13.	2.6	37
42	OpenMARS: A global record of martian weather from 1999 to 2015. Planetary and Space Science, 2020, 188, 104962.	1.7	37
43	The radiative impact of water ice clouds from a reanalysis of Mars Climate Sounder data. Geophysical Research Letters, 2014, 41, 4471-4478.	4.0	36
44	Dust Devil Sediment Transport: From Lab to Field to Global Impact. Space Science Reviews, 2016, 203, 377-426.	8.1	35
45	Orbital Observations of Dust Lofted by Daytime Convective Turbulence. Space Science Reviews, 2016, 203, 89-142.	8.1	35
46	Multi-model Meteorological and Aeolian Predictions for Mars 2020 and the Jezero Crater Region. Space Science Reviews, 2021, 217, 20.	8.1	35
47	Equatorial jets in the dusty Martian atmosphere. Journal of Geophysical Research, 2003, 108, .	3.3	33
48	Benchmark experiments with global climate models applicable to extrasolar gas giant planets in the shallow atmosphere approximation. Monthly Notices of the Royal Astronomical Society, 2013, 428, 2874-2884.	4.4	33
49	The water cycle and regolithâ€"atmosphere interaction at Gale crater, Mars. Icarus, 2017, 289, 56-79.	2.5	33
50	Martian atmospheric data assimilation with a simplified general circulation model: orbiter and lander networks. Planetary and Space Science, 1996, 44, 1395-1409.	1.7	31
51	The Global Circulation. , 2017, , 229-294.		31
52	Wave interactions and baroclinic chaos: a paradigm for long timescale variability in planetary atmospheres. Chaos, Solitons and Fractals, 1998, 9, 231-249.	5.1	30
53	Initial results from radio occultation measurements with the Mars Reconnaissance Orbiter: A nocturnal mixed layer in the tropics and comparisons with polar profiles from the Mars Climate Sounder. Icarus, 2014, 243, 91-103.	2.5	28
54	Global energy budgets and â€˜Trenberth diagramsâ€™ for the climates of terrestrial and gas giant planets. Quarterly Journal of the Royal Meteorological Society, 2016, 142, 703-720.	2.7	28

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55	Gravity wave drag in a global circulation model of the Martian atmosphere: Parameterisation and validation. Advances in Space Research, 1997, 19, 1245-1254.	2.6	27
56	Evidence for thermal-stress-induced rockfalls on Mars impact crater slopes. Icarus, 2020, 342, 113503.	2.5	27
57	Data assimilation with a Martian atmospheric GCM: An example using thermal data. Advances in Space Research, 1997, 19, 1267-1270.	2.6	26
58	Optical and radiometric models of the NOMAD instrument part I: the UVIS channel. Optics Express, 2015, 23, 30028.	3.4	26
59	Sloping convection: A paradigm for largeâ€scale waves and eddies in planetary atmospheres?. Chaos, 1994, 4, 135-162.	2.5	25
60	Investigating atmospheric predictability on Mars using breeding vectors in a general-circulation model. Quarterly Journal of the Royal Meteorological Society, 2004, 130, 2971-2989.	2.7	25
61	Optical and radiometric models of the NOMAD instrument part II: the infrared channels - SO and LNO. Optics Express, 2016, 24, 3790.	3.4	25
62	Surface Warming During the 2018/Mars Year 34 Global Dust Storm. Geophysical Research Letters, 2020, 47, e2019GL083936.	4.0	25
63	Assessing atmospheric predictability on Mars using numerical weather prediction and data assimilation. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 1614-1635.	2.7	24
64	Western boundary currents in the atmosphere of Mars. Nature, 1994, 367, 548-551.	27.8	23
65	Models of Venus Atmosphere. , 2013, , 129-156.		23
66	Enhanced water loss from the martian atmosphere during a regional-scale dust storm and implications for long-term water loss. Earth and Planetary Science Letters, 2021, 571, 117109.	4.4	22
67	A GCM climate database for Mars: For mission planning and for scientific studies. Advances in Space Research, 1997, 19, 1213-1222.	2.6	21
68	Transient teleconnection event at the onset of a planet-encircling dust storm on Mars. Annales Geophysicae, 2009, 27, 3663-3676.	1.6	20
69	A reanalysis of ozone on Mars from assimilation of SPICAM observations. Icarus, 2018, 302, 308-318.	2.5	20
70	The Aeolian Environment of the Landing Site for the ExoMars Rosalind Franklin Rover in Oxia Planum, Mars. Journal of Geophysical Research E: Planets, 2021, 126, 2020JE006723.	3.6	20
71	Global analysis and forecasts of carbon monoxide on Mars. Icarus, 2019, 328, 232-245.	2.5	19
72	Sinuous ridges in Chukhung crater, Tempe Terra, Mars: Implications for fluvial, glacial, and glaciofluvial activity. Icarus, 2021, 357, 114131.	2.5	18

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73	ExoMars TGO/NOMADâ€ UVIS Vertical Profiles of Ozone: 1. Seasonal Variation and Comparison to Water. Journal of Geophysical Research E: Planets, 2021, 126, e2021JE006837.	3.6	18
74	Radiative transfer modelling of dust devils. Icarus, 2013, 223, 1-10.	2.5	17
75	Laboratory and numerical studies of baroclinic waves in an internally heated rotating fluid annulus: a case of wave/vortex duality?. Journal of Fluid Mechanics, 1997, 337, 155-191.	3.4	16
76	Modelling the martian atmosphere. Astronomy and Geophysics, 2003, 44, 4.06-4.14.	0.2	16
77	A bulk cloud parameterization in a Venus General Circulation Model. Icarus, 2010, 206, 662-668.	2.5	16
78	The retrieval of optical properties from terrestrial dust devil vortices. Icarus, 2014, 231, 385-393.	2.5	16
79	Numerical modelling of the transport of trace gases including methane in the subsurface of Mars. Icarus, 2015, 250, 587-594.	2.5	16
80	Asymmetric Impacts on Marsâ€™ Polar Vortices From an Equinoctial Global Dust Storm. Journal of Geophysical Research E: Planets, 2021, 126, e2020JE006774.	3.6	16
81	The effect of a global dust storm on simulations of the Martian water cycle. Geophysical Research Letters, 2004, 31, .	4.0	15
82	The martian daytime convective boundary layer: Results from radio occultation measurements and a mesoscale model. Icarus, 2019, 326, 105-122.	2.5	15
83	Atmospheric risk assessment for the Mars Science Laboratory Entry, Descent, and Landing system. , 2010, , .		14
84	The Martian Planetary Boundary Layer. , 2017, , 172-202.		14
85	ExoMars Atmospheric Mars Entry and Landing Investigations and Analysis (AMELIA). Space Science Reviews, 2019, 215, 1.	8.1	14
86	A Lorenz/Boer energy budget for the atmosphere of Mars from a â€œreanalysisâ€• of spacecraft observations. Geophysical Research Letters, 2015, 42, 8320-8327.	4.0	13
87	Analysing the consistency of martian methane observations by investigation of global methane transport. Icarus, 2015, 257, 23-32.	2.5	13
88	Diurnal variation in martian dust devil activity. Icarus, 2017, 292, 154-167.	2.5	12
89	Modelled isotopic fractionation and transient diffusive release of methane from potential subsurface sources on Mars. Icarus, 2017, 281, 240-247.	2.5	12
90	Morphometry of a glacier-linked esker in NW Tempe Terra, Mars, and implications for sediment-discharge dynamics of subglacial drainage. Earth and Planetary Science Letters, 2020, 542, 116325.	4.4	12

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91	First Detection and Thermal Characterization of Terminator CO₂Ice Clouds With ExoMars/NOMAD. Geophysical Research Letters, 2021, 48, .	4.0	12
92	Reconstructing the weather on Mars at the time of the MERs and Beagle 2 landings. Geophysical Research Letters, 2006, 33, .	4.0	11
93	On the link between martian total ozone and potential vorticity. Icarus, 2017, 282, 104-117.	2.5	11
94	Regolith-atmosphere exchange of water in Marsâ€™ recent past. Icarus, 2017, 284, 233-248.	2.5	11
95	The Penetration of Solar Radiation Into Carbon Dioxide Ice. Journal of Geophysical Research E: Planets, 2018, 123, 864-871.	3.6	11
96	A quasi-geostrophic numerical model of a rotating internally heated fluid. Geophysical and Astrophysical Fluid Dynamics, 1992, 65, 31-55.	1.2	9
97	The Mars Climate Database (version 4.3). , 0, , .		9
98	QUAGMIRE v1.3: a quasi-geostrophic model for investigating rotating fluids experiments. Geoscientific Model Development, 2009, 2, 13-32.	3.6	9
99	Zonal winds at high latitudes on Venus: An improved application of cyclostrophic balance to Venus Express observations. Icarus, 2012, 217, 629-639.	2.5	9
100	Regular and irregular baroclinic waves in a martian general circulation model: A role for diurnal forcing?. Advances in Space Research, 1995, 16, 3-7.	2.6	8
101	The vertical transport of methane from different potential emission types on Mars. Geophysical Research Letters, 2017, 44, 8611-8620.	4.0	8
102	Enhanced Superâ€Rotation Before and During the 2018 Martian Global Dust Storm. Geophysical Research Letters, 2021, 48, e2021GL094634.	4.0	8
103	The effect of spatial variations in unresolved topography on gravity wave drag in the Martian atmosphere. Geophysical Research Letters, 1996, 23, 2927-2930.	4.0	7
104	Mars environment and magnetic orbiter model payload. Experimental Astronomy, 2009, 23, 761-783.	3.7	7
105	Investigating the semiannual oscillation on Mars using data assimilation. Icarus, 2019, 333, 404-414.	2.5	7
106	Regional heat flow and subsurface temperature patterns at Elysium Planitia and Oxia Planum areas, Mars. Icarus, 2021, 353, 113379.	2.5	7
107	Atmospheric temperature sounding on Mars, and the climate sounder on the 2005 reconnaissance orbiter. Advances in Space Research, 2006, 38, 713-717.	2.6	6
108	The Penetration of Solar Radiation Into Granular Carbon Dioxide and Water Ices of Varying Grain Sizes on Mars. Journal of Geophysical Research E: Planets, 2020, 125, e2019JE006097.	3.6	6

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109	Martian Dust. , 2022, , 637-666.		6
110	Planetary polar explorer â€“ the case for a next-generation remote sensing mission to low Mars orbit. Experimental Astronomy, 2022, 54, 695-711.	3.7	6
111	Vertical Aerosol Distribution and Mesospheric Clouds From ExoMars UVIS. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	6
112	The Penetration of Solar Radiation Into Water and Carbon Dioxide Snow, With Reference to Mars. Journal of Geophysical Research E: Planets, 2019, 124, 337-348.	3.6	5
113	Modeling Efforts. , 2013, , 111-127.		5
114	A simplified model of the Martian atmosphere - Part 1: a diagnostic analysis. Nonlinear Processes in Geophysics, 2005, 12, 603-623.	1.3	4
115	Mars Environment and Magnetic Orbiter Scientific and Measurement Objectives. Astrobiology, 2009, 9, 71-89.	3.0	4
116	Ertel potential vorticity versus Bernoulli streamfunction on Mars. Quarterly Journal of the Royal Meteorological Society, 2017, 143, 37-52.	2.7	4
117	Assessment of Environments for Mars Science Laboratory Entry, Descent, and Surface Operations. , 2012, , 793-835.		4
118	Assimilation of Both Columnâ€•and Layerâ€Integrated Dust Opacity Observations in the Martian Atmosphere. Earth and Space Science, 2021, 8, .	2.6	4
119	Pre- and Post-entry, Descent and Landing Assessment of the Martian Atmosphere for the Mars 2020 Rover. Planetary Science Journal, 2022, 3, 147.	3.6	4
120	Atmospheric Dynamics of Terrestrial Planets. , 2018, , 1-31.		3
121	Martian Gullies and Their Connection With the Martian Climate. , 2018, , 87-119.		3
122	A simplified model of the Martian atmosphere - Part 2: a POD-Galerkin analysis. Nonlinear Processes in Geophysics, 2005, 12, 625-642.	1.3	2
123	Low-order dynamical behavior in the martian atmosphere: Diagnosis of general circulation model results. Icarus, 2009, 204, 48-62.	2.5	2
124	Atmospheric Dynamics of Terrestrial Planets. , 2018, , 285-315.		2
125	Quantifying the atmospheric impact of local dust storms using a martian global circulation model. Icarus, 2020, 336, 113470.	2.5	2
126	Data Assimilation for Other Planets. , 2010, , 681-699.		2

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127	THE VOYAGER ENCOUNTER WITH NEPTUNE. Weather, 1990, 45, 14-19.	0.7	1
128	Dust Devil Sediment Transport: From Lab to Field to Global Impact. Space Sciences Series of ISSI, 2017, , 377-426.	0.0	1
129	Evidence for Climate Change on Mars. , 2006, , 135-158.		1
130	Environmental predictions for the Beagle 2 lander, based on GCM climate simulations. Planetary and Space Science, 2004, 52, 259-269.	1.7	0
131	Assimilating and Modeling Dust Transport in the Martian Climate System. Proceedings of the International Astronomical Union, 2012, 8, 326-328.	0.0	0
132	Atmospheric Dynamics of Terrestrial Planets. , 2018, , 1-31.		0
133	Orbital Observations of Dust Lofted by Daytime Convective Turbulence. Space Sciences Series of ISSI, 2017, , 89-142.	0.0	0
134	The impact of a shadows scheme on a Mars mesoscale climate model. Icarus, 2022, 382, 115036.	2.5	0