Frank Daerden

List of Publications by Year
in descending order

71 papers	2,081 citations	218677 26 h-index	254184 43 g-index
91 all docs	91 docs citations	91 times ranked	1398 citing authors

#	Article	IF	Citations
1	Mars Water-Ice Clouds and Precipitation. Science, 2009, 325, 68-70.	12.6	173
2	No detection of methane on Mars from early ExoMars Trace Gas Orbiter observations. Nature, 2019, 568, 517-520.	27.8	111
3	Martian dust storm impact on atmospheric H2O and D/H observed by ExoMars Trace Gas Orbiter. Nature, 2019, 568, 521-525.	27.8	107
4	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
5	Water Vapor Vertical Profiles on Mars in Dust Storms Observed by TGO/NOMAD. Journal of Geophysical Research E: Planets, 2019, 124, 3482-3497.	3.6	88
6	4D-Var assimilation of MIPAS chemical observations: ozone and nitrogen dioxide analyses. Atmospheric Chemistry and Physics, 2008, 8, 6169-6187.	4.9	84
7	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
8	The climatology of carbon monoxide and water vapor on Mars as observed by CRISM and modeled by the GEM-Mars general circulation model. Icarus, 2018, 301, 117-131.	2.5	74
9	A global stratospheric bromine monoxide climatology based on the BASCOE chemical transport model. Atmospheric Chemistry and Physics, 2009, 9, 831-848.	4.9	65
10	Independent confirmation of a methane spike on Mars and a source region east of Gale Crater. Nature Geoscience, 2019, 12, 326-332.	12.9	63
11	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
12	NOMAD spectrometer on the ExoMars trace gas orbiter mission: part 1â€"design, manufacturing and testing of the infrared channels. Applied Optics, 2015, 54, 8494.	2.1	58
13	Mars atmospheric chemistry simulations with the GEM-Mars general circulation model. Icarus, 2019, 326, 197-224.	2.5	52
14	Assessment of a 2016 mission concept: The search for trace gases in the atmosphere of Mars. Planetary and Space Science, 2011, 59, 284-291.	1.7	49
15	The GEM-Mars general circulation model for Mars: Description and evaluation. Icarus, 2018, 300, 458-476.	2.5	46
16	The distribution, composition, and particle properties of Mars mesospheric aerosols: An analysis of CRISM visible/near-IR limb spectra with context from near-coincident MCS and MARCI observations. Icarus, 2019, 328, 246-273.	2.5	40
17	Martian water loss to space enhanced by regional dust storms. Nature Astronomy, 2021, 5, 1036-1042.	10.1	40
18	Strong Variability of Martian Water Ice Clouds During Dust Storms Revealed From ExoMars Trace Gas Orbiter/NOMAD. Journal of Geophysical Research E: Planets, 2020, 125, e2019JE006250.	3.6	39

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19	A solar escalator on Mars: Selfâ€lifting of dust layers by radiative heating. Geophysical Research Letters, 2015, 42, 7319-7326.	4.0	38
20	Transient HCl in the atmosphere of Mars. Science Advances, 2021, 7, .	10.3	37
21	Simulating observed boundary layer clouds on Mars. Geophysical Research Letters, 2010, 37, .	4.0	36
22	Multi-model Meteorological and Aeolian Predictions for Mars 2020 and the Jezero Crater Region. Space Science Reviews, 2021, 217, 20.	8.1	35
23	A 3D-CTM with detailed online PSC-microphysics: analysis of the Antarctic winter 2003 by comparison with satellite observations. Atmospheric Chemistry and Physics, 2007, 7, 1755-1772.	4.9	33
24	Saltation under Martian gravity and its influence on the global dust distribution. Icarus, 2018, 306, 25-31.	2.5	33
25	Methane on Mars: New insights into the sensitivity of CH4 with the NOMAD/ExoMars spectrometer through its first in-flight calibration. Icarus, 2019, 321, 671-690.	2.5	32
26	Expected performances of the NOMAD/ExoMars instrument. Planetary and Space Science, 2016, 124, 94-104.	1.7	31
27	Water heavily fractionated as it ascends on Mars as revealed by ExoMars/NOMAD. Science Advances, 2021, 7, .	10.3	31
28	Comprehensive investigation of Mars methane and organics with ExoMars/NOMAD. Icarus, 2021, 357, 114266.	2.5	27
29	Optical and radiometric models of the NOMAD instrument part I: the UVIS channel. Optics Express, 2015, 23, 30028.	3.4	26
30	Optical and radiometric models of the NOMAD instrument part II: the infrared channels - SO and LNO. Optics Express, 2016, 24, 3790.	3.4	25
31	Mars Clouds. , 2017, , 76-105.		24
32	Sandpiles on a Sierpinski gasket. Physica A: Statistical Mechanics and Its Applications, 1998, 256, 533-546.	2.6	20
33	Observations of near-surface fog at the Phoenix Mars landing site. Geophysical Research Letters, 2011, 38, n/a-n/a.	4.0	20
34	Formation of layers of methane in the atmosphere of Mars after surface release. Geophysical Research Letters, 2016, 43, 1868-1875.	4.0	20
35	Studying methane and other trace species in the Mars atmosphere using a SOIR instrument. Planetary and Space Science, 2011, 59, 292-298.	1.7	19
36	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

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37	A global OClO stratospheric layer discovered in GOMOS stellar occultation measurements. Geophysical Research Letters, 2006, 33, .	4.0	17
38	Annual Appearance of Hydrogen Chloride on Mars and a Striking Similarity With the Water Vapor Vertical Distribution Observed by TGO/NOMAD. Geophysical Research Letters, 2021, 48, e2021GL092506.	4.0	15
39	The Deuterium Isotopic Ratio of Water Released From the Martian Caps as Measured With TGO/NOMAD. Geophysical Research Letters, 2022, 49, .	4.0	15
40	ExoMars TGO/NOMADâ€UVIS Vertical Profiles of Ozone: 2. The Highâ€Altitude Layers of Atmospheric Ozone. Journal of Geophysical Research E: Planets, 2021, 126, e2021JE006834.	3.6	14
41	Detection of green line emission in the dayside atmosphere of Mars from NOMAD-TGO observations. Nature Astronomy, 2020, 4, 1049-1052.	10.1	13
42	First Detection and Thermal Characterization of Terminator CO₂Ice Clouds With ExoMars/NOMAD. Geophysical Research Letters, 2021, 48, .	4.0	12
43	The climatology of carbon monoxide on Mars as observed by NOMAD nadir-geometry observations. Icarus, 2021, 362, 114404.	2.5	11
44	Explaining NOMAD D/H Observations by Cloudâ€Induced Fractionation of Water Vapor on Mars. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	11
45	Waves in the sandpile model on fractal lattices. Physica A: Statistical Mechanics and Its Applications, 2001, 292, 43-54.	2.6	8
46	Ground-based infrared mapping of H₂O₂ on Mars near opposition. Astronomy and Astrophysics, 2019, 627, A60.	5.1	8
47	Impact of gradients at the martian terminator on the retrieval of ozone from SPICAM/MEx. Icarus, 2021, 353, 113598.	2.5	8
48	First Observation of the Oxygen 630Ânm Emission in the Martian Dayglow. Geophysical Research Letters, 2021, 48, e2020GL092334.	4.0	8
49	A Global and Seasonal Perspective of Martian Water Vapor From ExoMars/NOMAD. Journal of Geophysical Research E: Planets, 2021, 126, .	3.6	8
50	Calibration of NOMAD on ESA's ExoMars Trace Gas Orbiter: Part 1 â€“ The Solar Occultation channel. Planetary and Space Science, 2022, 218, 105411.	1.7	8
51	1fnoise in the Bak-Sneppen model. Physical Review E, 1996, 53, 4723-4728.	2.1	7
52	Two test-cases for synergistic detections in the Martian atmosphere: Carbon monoxide and methane. Journal of Quantitative Spectroscopy and Radiative Transfer, 2017, 189, 86-104.	2.3	7
53	Probing the Atmospheric Cl Isotopic Ratio on Mars: Implications for Planetary Evolution and Atmospheric Chemistry. Geophysical Research Letters, 2021, 48, e2021GL092650.	4.0	7
54	Variations in Vertical CO/CO₂ Profiles in the Martian Mesosphere and Lower Thermosphere Measured by the ExoMars TGO/NOMAD: Implications of Variations in Eddy Diffusion Coefficient. Geophysical Research Letters, 2022, 49, .	4.0	7

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55	Planetâ€Wide Ozone Destruction in the Middle Atmosphere on Mars During Global Dust Storm. Geophysical Research Letters, 2022, 49, .	4.0	7
56	Dissipative Abelian sandpiles and random walks. Physical Review E, 2001, 63, 030301.	2.1	6
57	Retrieval and characterization of carbon monoxide (CO) vertical profiles in the Martian atmosphere from observations of PFS/MEX. Journal of Quantitative Spectroscopy and Radiative Transfer, 2019, 238, 106498.	2.3	6
58	Seasonal and Spatial Variability of Carbon Monoxide (CO) in the Martian Atmosphere From PFS/MEX Observations. Journal of Geophysical Research E: Planets, 2021, 126, e2020JE006480.	3.6	6
59	Vertical Aerosol Distribution and Mesospheric Clouds From ExoMars UVIS. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	6
60	Density and Temperature of the Upper Mesosphere and Lower Thermosphere of Mars Retrieved From the OI 557.7Ânm Dayglow Measured by TGO/NOMAD. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	6
61	Martian CO₂ Ice Observation at High Spectral Resolution With ExoMars/TGO NOMAD. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	5
62	Calibration of the NOMAD-UVIS data. Planetary and Space Science, 2022, 218, 105504.	1.7	5
63	Calibration of NOMAD on ExoMars Trace Gas Orbiter: Part 3 - LNO validation and instrument stability. Planetary and Space Science, 2022, 218, 105399.	1.7	4
64	Removal of straylight from ExoMars NOMAD-UVIS observations. Planetary and Space Science, 2022, 218, 105432.	1.7	3
65	Calibration of NOMAD on ESA's ExoMars Trace Gas Orbiter: Part 2 â€“ The Limb, Nadir and Occultation (LNO) channel. Planetary and Space Science, 2021, , 105410.	1.7	3
66	Renormalization of the anisotropic XY model. Journal of Magnetism and Magnetic Materials, 1995, 140-144, 1621-1622.	2.3	2
67	Machine learning for automatic identification of new minor species. Journal of Quantitative Spectroscopy and Radiative Transfer, 2021, 259, 107361.	2.3	2
68	The Mars Oxygen Visible Dayglow: A Martian Year of NOMAD/UVIS Observations. Journal of Geophysical Research E: Planets, 2022, 127, .	3.6	2
69	Observation Capability of a Ground-Based Terahertz Radiometer for Vertical Profiles of Oxygen and Water Abundances in Martian Atmosphere. IEEE Transactions on Geoscience and Remote Sensing, 2022, 60, 1-11.	6.3	1
70	Exploiting night-time averaged spectra from PFS/MEX shortwave channel. Part 1: Temperature retrieval from the CO2 Î½3 band. Planetary and Space Science, 2021, 198, 105186.	1.7	0
71	Exploiting night-time averaged spectra from PFS/MEX shortwave channel. Part 2: Near-surface CO retrievals. Planetary and Space Science, 2021, 199, 105188.	1.7	0