Axel Kleidon

List of Publications by Year
in descending order

114 papers	5,623 citations	81900 39 h-index	102487 66 g-index
202 all docs	202 docs citations	202 times ranked	6718 citing authors

#	Article	IF	Citations
1	Morphological controls on surface runoff: an interpretation of steady-state energy patterns, maximum power states and dissipation regimes within a thermodynamic framework. Hydrology and Earth System Sciences, 2022, 26, 3125-3150.	4.9	4
2	What limits photosynthesis? Identifying the thermodynamic constraints of the terrestrial biosphere within the Earth system. Biochimica Et Biophysica Acta - Bioenergetics, 2021, 1862, 148303.	1.0	10
3	Triggering a Climate Change Dominated â€œAnthropoceneâ€: Is It Common among Exocivilizations?. Astronomical Journal, 2021, 162, 196.	4.7	4
4	Quantifying available energy and anthropogenic energy use in the Mississippi River Basin. Infrastructure Asset Management, 2021, 8, 280-303.	1.6	0
5	Stronger Global Warming on Nonrainy Days in Observations From China. Journal of Geophysical Research D: Atmospheres, 2020, 125, e2019JD031792.	3.3	3
6	Imprints of evaporative conditions and vegetation type in diurnal temperature variations. Hydrology and Earth System Sciences, 2020, 24, 4923-4942.	4.9	12
7	The Kinetic Energy Budget of the Atmosphere (KEBA) model 1.0: a simple yet physical approach for estimating regional wind energy resource potentials that includes the kinetic energy removal effect by wind turbines. Geoscientific Model Development, 2020, 13, 4993-5005.	3.6	5
8	Estimating Shortwave Clearâ€Sky Fluxes From Hourly Global Radiation Records by Quantile Regression. Earth and Space Science, 2019, 6, 1532-1546.	2.6	7
9	A topographic index explaining hydrological similarity by accounting for the joint controls of runoff formation. Hydrology and Earth System Sciences, 2019, 23, 3807-3821.	4.9	29
10	Global NO and HONO emissions of biological soil crusts estimated by a process-based non-vascular vegetation model. Biogeosciences, 2019, 16, 2003-2031.	3.3	14
11	Using phase lags to evaluate model biases in simulating the diurnal cycle of evapotranspiration: a case study in Luxembourg. Hydrology and Earth System Sciences, 2019, 23, 515-535.	4.9	21
12	Do Surface and Air Temperatures Contain Similar Imprints of Evaporative Conditions?. Geophysical Research Letters, 2019, 46, 3802-3809.	4.0	23
13	Have wind turbines in Germany generated electricity as would be expected from the prevailing wind conditions in 2000-2014?. PLoS ONE, 2019, 14, e0211028.	2.5	28
14	Energy states of soil water â€" a thermodynamic perspective on soil water dynamics and storage-controlled streamflow generation in different landscapes. Hydrology and Earth System Sciences, 2019, 23, 971-987.	4.9	9
15	Effects of Tropical Deforestation on Surface Energy Balance Partitioning in Southeastern Amazonia Estimated From Maximum Convective Power. Geophysical Research Letters, 2019, 46, 4396-4403.	4.0	14
16	Energy Balance. , 2019, , 50-63.		4
17	The Effect of Elevation Bias in Interpolated Air Temperature Data Sets on Surface Warming in China During 1951â€"2015. Journal of Geophysical Research D: Atmospheres, 2018, 123, 2141-2151.	3.3	3
18	Diurnal land surface energy balance partitioning estimated from the thermodynamic limit of a cold heat engine. Earth System Dynamics, 2018, 9, 1127-1140.	7.1	11

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19	The Anthropocene Generalized: Evolution of Exo-Civilizations and Their Planetary Feedback. Astrobiology, 2018, 18, 503-518.	3.0	19
20	Evaluating the effect of nutrient redistribution by animals on the phosphorus cycle of lowland Amazonia. Biogeosciences, 2018, 15, 279-295.	3.3	9
21	Significant contribution of non-vascular vegetation to global rainfall interception. Nature Geoscience, 2018, 11, 563-567.	12.9	77
22	On the dynamic nature of hydrological similarity. Hydrology and Earth System Sciences, 2018, 22, 3663-3684.	4.9	42
23	Evaluation of climateâ€related carbon turnover processes in global vegetation models for boreal and temperate forests. Global Change Biology, 2017, 23, 3076-3091.	9.5	52
24	Reply to Badger and Volker: Correctly estimating wind resources at large scales requires more than simple extrapolation. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E8946-E8946.	7.1	0
25	Earth as a Hybrid Planet: The Anthropocene in an Evolutionary Astrobiological Context. Anthropocene, 2017, 19, 13-21.	3.3	27
26	Estimating global nitrous oxide emissions by lichens and bryophytes with a process-based productivity model. Biogeosciences, 2017, 14, 1593-1602.	3.3	23
27	An explanation for the different climate sensitivities of land and ocean surfaces based on the diurnal cycle. Earth System Dynamics, 2017, 8, 849-864.	7.1	22
28	Dominant controls of transpiration along a hillslope transect inferred from ecohydrological measurements and thermodynamic limits. Hydrology and Earth System Sciences, 2016, 20, 2063-2083.	4.9	33
29	A thermodynamic formulation of root water uptake. Hydrology and Earth System Sciences, 2016, 20, 3441-3454.	4.9	9
30	Wind speed reductions by large-scale wind turbine deployments lower turbine efficiencies and set low generation limits. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 13570-13575.	7.1	41
31	High potential for weathering and climate effects of non-vascular vegetation in the Late Ordovician. Nature Communications, 2016, 7, 12113.	12.8	72
32	Broad climatological variation of surface energy balance partitioning across land and ocean predicted from the maximum power limit. Geophysical Research Letters, 2016, 43, 7686-7693.	4.0	8
33	Geoengineering ist keine LÃ¶sung. Physik in Unserer Zeit, 2015, 46, 27-31.	0.0	2
34	Thermodynamics of Random Reaction Networks. PLoS ONE, 2015, 10, e0117312.	2.5	7
35	Physical Limits of Solar Energy Conversion in the Earth System. Topics in Current Chemistry, 2015, 371, 1-22.	4.0	9
36	The hydrological sensitivity to global warming and solar geoengineering derived from thermodynamic constraints. Geophysical Research Letters, 2015, 42, 138-144.	4.0	35

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37	Two methods for estimating limits to large-scale wind power generation. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 11169-11174.	7.1	57
38	The Strengths of r- and K-Selection Shape Diversity-Disturbance Relationships. PLoS ONE, 2014, 9, e95659.	2.5	28
39	Advancing catchment hydrology to deal with predictions under change. Hydrology and Earth System Sciences, 2014, 18, 649-671.	4.9	83
40	HESS Opinions: From response units to functional units: a thermodynamic reinterpretation of the HRU concept to link spatial organization and functioning of intermediate scale catchments. Hydrology and Earth System Sciences, 2014, 18, 4635-4655.	4.9	78
41	On the potential vegetation feedbacks that enhance phosphorus availability â€“ insights from a process-based model linking geological and ecological timescales. Biogeosciences, 2014, 11, 3661-3683.	3.3	29
42	Estimates of the climatological land surface energy and water balance derived from maximum convective power. Hydrology and Earth System Sciences, 2014, 18, 2201-2218.	4.9	40
43	Applying the concept of "energy return on investment" to desert greening of the Sahara/Sahel using a global climate model. Earth System Dynamics, 2014, 5, 43-53.	7.1	10
44	Carbon residence time dominates uncertainty in terrestrial vegetation responses to future climate and atmospheric CO ₂. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 3280-3285.	7.1	458
45	Estimating impacts of lichens and bryophytes on global biogeochemical cycles. Global Biogeochemical Cycles, 2014, 28, 71-85.	4.9	102
46	Future noâ€analogue vegetation produced by noâ€analogue combinations of temperature and insolation. Global Ecology and Biogeography, 2014, 23, 156-167.	5.8	34
47	Earth System Dynamics Beyond the Second Law: Maximum Power Limits, Dissipative Structures, and Planetary Interactions. Understanding Complex Systems, 2014, , 163-182.	0.6	0
48	A multi-model analysis of risk of ecosystem shifts under climate change. Environmental Research Letters, 2013, 8, 044018.	5.2	69
49	A simple explanation for the sensitivity of the hydrologic cycle to surface temperature and solar radiation and its implications for global climate change. Earth System Dynamics, 2013, 4, 455-465.	7.1	66
50	Quantifying drivers of chemical disequilibrium: theory and application to methane in the Earth's atmosphere. Earth System Dynamics, 2013, 4, 317-331.	7.1	26
51	A thermodynamic approach to link self-organization, preferential flow and rainfallâ€“runoff behaviour. Hydrology and Earth System Sciences, 2013, 17, 4297-4322.	4.9	46
52	Estimating global carbon uptake by lichens and bryophytes with a process-based model. Biogeosciences, 2013, 10, 6989-7033.	3.3	102
53	Thermodynamic limits of hydrologic cycling within the Earth system: concepts, estimates and implications. Hydrology and Earth System Sciences, 2013, 17, 2873-2892.	4.9	55
54	The Jena Diversity-Dynamic Global Vegetation Model (JeDi-DGVM): a diverse approach to representing terrestrial biogeography and biogeochemistry based on plant functional trade-offs. Biogeosciences, 2013, 10, 4137-4177.	3.3	162

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55	Thermodynamics, maximum power, and the dynamics of preferential river flow structures at the continental scale. Hydrology and Earth System Sciences, 2013, 17, 225-251.	4.9	66
56	Thermodynamic Limits ofÂtheÂCritical Zone and their Relevance to Hydropedology. , 2012, , 243-281.		7
57	Corrigendum to "Jet stream wind power as a renewable energy resource: little power, big impacts" published in Earth Syst. Dynam., 2, 201â€"212, 2011. Earth System Dynamics, 2012, 3, 137-137.	7.1	0
58	The problem of the second wind turbine â€" a note on a common but flawed wind power estimation method. Earth System Dynamics, 2012, 3, 79-86.	7.1	16
59	How does the Earth system generate and maintain thermodynamic disequilibrium and what does it imply for the future of the planet?. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2012, 370, 1012-1040.	3.4	64
60	Was leistet die Erde?. Physik in Unserer Zeit, 2012, 43, 136-144.	0.0	6
61	Eco-hydrological versus supply-limited weathering regimes and the potential for biotic enhancement of weathering at the global scale. Applied Geochemistry, 2011, 26, S274-S278.	3.0	8
62	The role of plant functional trade-offs for biodiversity changes and biome shifts under scenarios of global climatic change. Biogeosciences, 2011, 8, 1255-1266.	3.3	26
63	The role of climate and plant functional trade-offs in shaping global biome and biodiversity patterns. Global Ecology and Biogeography, 2011, 20, 570-581.	5.8	53
64	Modeling Free Energy Availability from Hadean Hydrothermal Systems to the First Metabolism. Origins of Life and Evolution of Biospheres, 2011, 41, 529-532.	1.9	16
65	Estimating maximum global land surface wind power extractability and associated climatic consequences. Earth System Dynamics, 2011, 2, 1-12.	7.1	93
66	Towards understanding how surface life can affect interior geological processes: a non-equilibrium thermodynamics approach. Earth System Dynamics, 2011, 2, 139-160.	7.1	20
67	Entropy production of soil hydrological processes and its maximisation. Earth System Dynamics, 2011, 2, 179-190.	7.1	28
68	Jet stream wind power as a renewable energy resource: little power, big impacts. Earth System Dynamics, 2011, 2, 201-212.	7.1	16
69	Quantifying the thermodynamic entropy budget of the land surface: is this useful?. Earth System Dynamics, 2011, 2, 87-103.	7.1	39
70	The relative importance of seed competition, resource competition and perturbations on community structure. Biogeosciences, 2011, 8, 1107-1120.	3.3	18
71	Life, hierarchy, and the thermodynamic machinery of planet Earth. Physics of Life Reviews, 2010, 7, 424-460.	2.8	128
72	Life as the major driver of planetary geochemical disequilibrium. Physics of Life Reviews, 2010, 7, 473-476.	2.8	5

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73	Late Quaternary glaciation in the Tianshan and implications for palaeoclimatic change: a review. Boreas, 2010, 39, 215-232.	2.4	72
74	The role of tectonic uplift, climate, and vegetation in the long-term terrestrial phosphorous cycle. Biogeosciences, 2010, 7, 2025-2038.	3.3	42
75	The Maximum Entropy Production Principle: Its Theoretical Foundations and Applications to the Earth System. Entropy, 2010, 12, 613-630.	2.2	59
76	A basic introduction to the thermodynamics of the Earth system far from equilibrium and maximum entropy production. Philosophical Transactions of the Royal Society B: Biological Sciences, 2010, 365, 1303-1315.	4.0	66
77	Maximum entropy production allows a simple representation of heterogeneity in semiarid ecosystems. Philosophical Transactions of the Royal Society B: Biological Sciences, 2010, 365, 1449-1455.	4.0	39
78	Non-equilibrium thermodynamics, maximum entropy production and Earth-system evolution. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 181-196.	3.4	54
79	Maximum entropy production in environmental and ecological systems. Philosophical Transactions of the Royal Society B: Biological Sciences, 2010, 365, 1297-1302.	4.0	145
80	Simulated geographic variations of plant species richness, evenness and abundance using climatic constraints on plant functional diversity. Environmental Research Letters, 2009, 4, 014007.	5.2	30
81	Climatic constraints on maximum levels of human metabolic activity and their relation to human evolution and global change. Climatic Change, 2009, 95, 405-431.	3.6	5
82	Nonequilibrium thermodynamics and maximum entropy production in the Earth system. Die Naturwissenschaften, 2009, 96, 653-677.	1.6	134
83	Maximum entropy production and general trends in biospheric evolution. Paleontological Journal, 2009, 43, 980-985.	0.5	17
84	Thermodynamics, Irreversibility, and Optimality in Land Surface Hydrology. , 2009, , 107-118.		8
85	Thermodynamics and optimality of the water budget on land: A review. Geophysical Research Letters, 2008, 35, .	4.0	93
86	Energy Balance. , 2008, , 1276-1289.		3
87	Global sensitivity of weathering rates to atmospheric CO₂ under the assumption of saturated river discharge. Mineralogical Magazine, 2008, 72, 301-304.	1.4	3
88	Entropy production by evapotranspiration and its geographic variation. Soil and Water Research, 2008, 3, S89-S94.	1.7	15
89	Optimized stomatal conductance and the climate sensitivity to carbon dioxide. Geophysical Research Letters, 2007, 34, .	4.0	12
90	Multiple steady-states in the terrestrial atmosphere-biosphere system: a result of a discrete vegetation classification?. Biogeosciences, 2007, 4, 707-714.	3.3	30

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91	Thermodynamics and environmental constraints make the biosphere predictable â€“ a response to Volk. Climatic Change, 2007, 85, 259-266.	3.6	7
92	Maximum entropy production and the strength of boundary layer exchange in an atmospheric general circulation model. Geophysical Research Letters, 2006, 33, .	4.0	59
93	The climate sensitivity to human appropriation of vegetation productivity and its thermodynamic characterization. Global and Planetary Change, 2006, 54, 109-127.	3.5	44
94	Quantifying the biologically possible range of steady-state soil and surface climates with climate model simulations. Biologia (Poland), 2006, 61, S234-S239.	1.5	12
95	Reply to comment by V. Arora on â€œOptimized stomatal conductance of vegetated land surfaces and its effects on simulated productivity and climateâ€. Geophysical Research Letters, 2005, 32, .	4.0	2
96	Beyond Gaia: Thermodynamics of Life and Earth System Functioning. Climatic Change, 2004, 66, 271-319.	3.6	111
97	Optimized stomatal conductance of vegetated land surfaces and its effects on simulated productivity and climate. Geophysical Research Letters, 2004, 31, n/a-n/a.	4.0	24
98	Global Datasets of Rooting Zone Depth Inferred from Inverse Methods. Journal of Climate, 2004, 17, 2714-2722.	3.2	49
99	The atmospheric circulation and states of maximum entropy production. Geophysical Research Letters, 2003, 30, n/a-n/a.	4.0	83
100	Testing the Effect of Life on Earth's Functioning: How Gaian Is the Earth System?. Climatic Change, 2002, 52, 383-389.	3.6	48
101	Modeling Root Water Uptake in Hydrological and Climate Models. Bulletin of the American Meteorological Society, 2001, 82, 2797-2809.	3.3	330
102	Deep roots sustain amazonian rainforest in climate model simulations of the Last Ice Age. Geophysical Research Letters, 2001, 28, 2425-2428.	4.0	16
103	A global distribution of biodiversity inferred from climatic constraints: results from a process-based modelling study. Global Change Biology, 2000, 6, 507-523.	9.5	147
104	Title is missing!. Climatic Change, 2000, 44, 471-493.	3.6	182
105	Assessing the role of deep rooted vegetation in the climate system with model simulations: mechanism, comparison to observations and implications for Amazonian deforestation. Climate Dynamics, 2000, 16, 183-199.	3.8	111
106	BELOWGROUND CONSEQUENCES OF VEGETATION CHANGE AND THEIR TREATMENT IN MODELS. , 2000, 10, 470-483.		295
107	Deep-rooted vegetation, Amazonian deforestation, and climate: results from a modelling study. Global Ecology and Biogeography, 1999, 8, 397-405.	5.8	27
108	The influence of rooting depth on the simulated hydrological cycle of a GCM. Physics and Chemistry of the Earth, 1999, 24, 775-779.	0.3	4

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109	A Green Planet versus a Desert World: Estimating the Effect of Vegetation Extremes on the Atmosphere. Journal of Climate, 1999, 12, 3156-3163.	3.2	69
110	A method of determining rooting depth from a terrestrial biosphere model and its impacts on the global water and carbon cycle. Global Change Biology, 1998, 4, 275-286.	9.5	138
111	Optimised rooting depth and its impacts on the simulated climate of an atmospheric general circulation model. Geophysical Research Letters, 1998, 25, 345-348.	4.0	62
112	Simulating root carbon storage with a coupled carbon â€" Water cycle root model. Physics and Chemistry of the Earth, 1996, 21, 499-502.	0.3	10
113	1 Entropy Production by Earth System Processes. , 0, , 1-20.		33
114	14 Biotic Entropy Production and Global Atmosphere-Biosphere Interactions. , 0, , 173-189.		14