

Steven A Banwart

List of Publications by Year in descending order

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Version: 2024-02-01

111
papers

7,279
citations

38742

50
h-index

58581

82
g-index

112
all docs

112
docs citations

112
times ranked

7851
citing authors

#	ARTICLE	IF	CITATIONS
1	Substantial carbon drawdown potential from enhanced rock weathering in the United Kingdom. <i>Nature Geoscience</i> , 2022, 15, 382-389.	12.9	48
2	Technologies to deliver food and climate security through agriculture. <i>Nature Plants</i> , 2021, 7, 250-255.	9.3	63
3	Recovery of technologically critical lanthanides from ion adsorption soils. <i>Minerals Engineering</i> , 2021, 168, 106921.	4.3	3
4	Economic valuation of Earth's critical zone: Framework, theory and methods. <i>Environmental Development</i> , 2021, 40, 100654.	4.1	3
5	The Role of Extracellular DNA in Microbial Attachment to Oxidized Silicon Surfaces in the Presence of Ca ²⁺ and Na ⁺ . <i>Langmuir</i> , 2021, 37, 9838-9850.	3.5	6
6	Effects of mineralogy, chemistry and physical properties of basalts on carbon capture potential and plant-nutrient element release via enhanced weathering. <i>Applied Geochemistry</i> , 2021, 132, 105023.	3.0	42
7	Increased yield and CO ₂ sequestration potential with the C ₄ cereal <i>Sorghum bicolor</i> cultivated in basaltic rock dust-amended agricultural soil. <i>Global Change Biology</i> , 2020, 26, 3658-3676.	9.5	102
8	Potential for large-scale CO ₂ removal via enhanced rock weathering with croplands. <i>Nature</i> , 2020, 583, 242-248.	27.8	263
9	Economic Valuation of Earth's Critical Zone: A Pilot Study of the Zhangxi Catchment, China. <i>Sustainability</i> , 2020, 12, 1699.	3.2	3
10	Pore system characteristics of soil aggregates and their relevance to aggregate stability. <i>Geoderma</i> , 2020, 366, 114259.	5.1	50
11	Soil Functions: Connecting Earth's Critical Zone. <i>Annual Review of Earth and Planetary Sciences</i> , 2019, 47, 333-359.	11.0	78
12	Human dissemination of genes and microorganisms in Earth's Critical Zone. <i>Global Change Biology</i> , 2018, 24, 1488-1499.	9.5	71
13	Soil Functions in Earth's Critical Zone. <i>Advances in Agronomy</i> , 2017, 142, 1-27.	5.2	26
14	Nature-based solutions: business. <i>Nature</i> , 2017, 543, 315-315.	27.8	11
15	Simulating carbon capture by enhanced weathering with croplands: an overview of key processes highlighting areas of future model development. <i>Biology Letters</i> , 2017, 13, 20160868.	2.3	32
16	Oxalate secretion by ectomycorrhizal <i>Paxillus involutus</i> is mineral-specific and controls calcium weathering from minerals. <i>Scientific Reports</i> , 2015, 5, 12187.	3.3	72
17	The role of forest trees and their mycorrhizal fungi in carbonate rock weathering and its significance for global carbon cycling. <i>Plant, Cell and Environment</i> , 2015, 38, 1947-1961.	5.7	60
18	Linkages between aggregate formation, porosity and soil chemical properties. <i>Geoderma</i> , 2015, 247-248, 24-37.	5.1	215

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19	Adsorption of poly acrylic acid onto the surface of calcite: an experimental and simulation study. <i>Physical Chemistry Chemical Physics</i> , 2015, 17, 27357-27365.	2.8	52
20	Effect of extracellular polymeric substances on the mechanical properties of <i>Rhodococcus</i> . <i>Biochimica Et Biophysica Acta - Biomembranes</i> , 2015, 1848, 518-526.	2.6	25
21	Soil carbon, multiple benefits. <i>Environmental Development</i> , 2015, 13, 33-38.	4.1	75
22	Sediment provenance, soil development, and carbon content in fluvial and manmade terraces at Koiliaris River Critical Zone Observatory. <i>Journal of Soils and Sediments</i> , 2015, 15, 347-364.	3.0	29
23	A spatial investigation of the environmental controls over cryoconite aggregation on Longyearbreen glacier, Svalbard. <i>Biogeosciences</i> , 2014, 11, 5365-5380.	3.3	25
24	Benefits of soil carbon: report on the outcomes of an international scientific committee on problems of the environment rapid assessment workshop. <i>Carbon Management</i> , 2014, 5, 185-192.	2.4	46
25	Ectomycorrhizal fungi and past high CO ₂ atmospheres enhance mineral weathering through increased below-ground carbon-energy fluxes. <i>Biology Letters</i> , 2014, 10, 20140375.	2.3	40
26	Weathering by tree-root-associating fungi diminishes under simulated Cenozoic atmospheric CO ₂ decline. <i>Biogeosciences</i> , 2014, 11, 321-331.	3.3	23
27	Coating a polystyrene well-plate surface with synthetic hematite, goethite and aluminium hydroxide for cell mineral adhesion studies in a controlled environment. <i>Applied Geochemistry</i> , 2014, 42, 60-68.	3.0	21
28	SoilTrEC: a global initiative on critical zone research and integration. <i>Environmental Science and Pollution Research</i> , 2014, 21, 3191-3195.	5.3	24
29	On the Value of Soil Resources in the Context of Natural Capital and Ecosystem Service Delivery. <i>Soil Science Society of America Journal</i> , 2014, 78, 685-700.	2.2	91
30	A coupled carbon, aggregation, and structure turnover (CAST) model for topsoils. <i>Geoderma</i> , 2013, 211-212, 51-64.	5.1	55
31	Diversity of Planktonic and Attached Bacterial Communities in a Phenol-Contaminated Sandstone Aquifer. <i>Microbial Ecology</i> , 2013, 66, 84-95.	2.8	21
32	Real-Time Gamma Imaging of Technetium Transport through Natural and Engineered Porous Materials for Radioactive Waste Disposal. <i>Environmental Science & Technology</i> , 2013, 47, 13857-13864.	10.0	21
33	Technetium-99m Transport and Immobilisation in Porous Media: Development of a Novel Nuclear Imaging Technique. <i>Materials Research Society Symposia Proceedings</i> , 2013, 1518, 123-129.	0.1	5
34	Nanoscale Observations of Extracellular Polymeric Substances Deposition on Phyllosilicates by an Ectomycorrhizal Fungus. <i>Geomicrobiology Journal</i> , 2013, 30, 721-730.	2.0	26
35	Evaluating the effects of terrestrial ecosystems, climate and carbon dioxide on weathering over geological time: a global-scale process-based approach. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , 2012, 367, 565-582.	4.0	83
36	Evolution of trees and mycorrhizal fungi intensifies silicate mineral weathering. <i>Biology Letters</i> , 2012, 8, 1006-1011.	2.3	110

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37	High resolution characterization of ectomycorrhizal fungal-mineral interactions in axenic microcosm experiments. <i>Biogeochemistry</i> , 2012, 111, 411-425.	3.5	35
38	Plant-driven weathering of apatite – the role of an ectomycorrhizal fungus. <i>Geobiology</i> , 2012, 10, 445-456.	2.4	96
39	Nanoscale channels on ectomycorrhizal-colonized chlorite: Evidence for plant-driven fungal dissolution. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	24
40	Soil processes and functions across an international network of Critical Zone Observatories: Introduction to experimental methods and initial results. <i>Comptes Rendus - Geoscience</i> , 2012, 344, 758-772.	1.2	68
41	Ecosystem CO ₂ starvation and terrestrial silicate weathering: mechanisms and global-scale quantification during the late Miocene. <i>Journal of Ecology</i> , 2012, 100, 31-41.	4.0	27
42	Single cell Raman spectroscopy for cell sorting and imaging. <i>Current Opinion in Biotechnology</i> , 2012, 23, 56-63.	6.6	180
43	Soil engineering <i>in vivo</i> : harnessing natural biogeochemical systems for sustainable, multi-functional engineering solutions. <i>Journal of the Royal Society Interface</i> , 2011, 8, 1-15.	3.4	156
44	Save our soils. <i>Nature</i> , 2011, 474, 151-152.	27.8	162
45	Plant and mycorrhizal driven silicate weathering: Quantifying carbon flux and mineral weathering processes at the laboratory mesocosm scale. <i>Applied Geochemistry</i> , 2011, 26, S314-S316.	3.0	8
46	Using FTIR spectroscopy to characterise the soil mineralogy and geochemistry of cryoconite from Aldegondabreen glacier, Svalbard. <i>Applied Geochemistry</i> , 2011, 26, S206-S209.	3.0	25
47	Tree-mycorrhiza symbiosis accelerate mineral weathering: Evidences from nanometer-scale elemental fluxes at the hypha-mineral interface. <i>Geochimica Et Cosmochimica Acta</i> , 2011, 75, 6988-7005.	3.9	110
48	In situ atomic force microscopy measurements of biotite basal plane reactivity in the presence of oxalic acid. <i>Geochimica Et Cosmochimica Acta</i> , 2011, 75, 6870-6881.	3.9	25
49	Modeling the evolutionary rise of ectomycorrhiza on sub-surface weathering environments and the geochemical carbon cycle. <i>Numerische Mathematik</i> , 2011, 311, 369-403.	1.4	37
50	Soil Processes and Functions in Critical Zone Observatories: Hypotheses and Experimental Design. <i>Vadose Zone Journal</i> , 2011, 10, 974-987.	2.2	81
51	Dynamic changes in microbial community structure and function in phenol-degrading microcosms inoculated with cells from a contaminated aquifer. <i>FEMS Microbiology Ecology</i> , 2010, 71, 247-259.	2.7	17
52	Biofilm formation in environmental bacteria is influenced by different macromolecules depending on genus and species. <i>Environmental Microbiology</i> , 2010, 12, 2496-2507.	3.8	84
53	Engaging with the water sector for public health benefits: waterborne pathogens and diseases in developed countries. <i>Bulletin of the World Health Organization</i> , 2010, 88, 873-875.	3.3	42
54	The microstructure and biogeochemistry of Arctic cryoconite granules. <i>Annals of Glaciology</i> , 2010, 51, 87-94.	1.4	111

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55	The structure, biological activity and biogeochemistry of cryoconite aggregates upon an Arctic valley glacier: Longyearbreen, Svalbard. <i>Journal of Glaciology</i> , 2010, 56, 349-362.	2.2	122
56	Shining Light on the Microbial World. <i>Advances in Applied Microbiology</i> , 2010, 70, 153-186.	2.4	185
57	Adhesive and conformational behaviour of mycolic acid monolayers. <i>Biochimica Et Biophysica Acta - Biomembranes</i> , 2010, 1798, 1829-1839.	2.6	14
58	Measurement of Colloid Mobilization and Redeposition during Drainage in Quartz Sand. <i>Environmental Science & Technology</i> , 2009, 43, 5769-5775.	10.0	11
59	Biological weathering and the long-term carbon cycle: integrating mycorrhizal evolution and function into the current paradigm. <i>Geobiology</i> , 2009, 7, 171-191.	2.4	263
60	Process-based modeling of silicate mineral weathering responses to increasing atmospheric CO ₂ and climate change. <i>Global Biogeochemical Cycles</i> , 2009, 23, .	4.9	30
61	Optimization of Bacterial Whole Cell Bioreporters for Toxicity Assay of Environmental Samples. <i>Environmental Science & Technology</i> , 2009, 43, 7931-7938.	10.0	84
62	Analysis of Bacteria on Steel Surfaces Using Reflectance Micro-Fourier Transform Infrared Spectroscopy. <i>Analytical Chemistry</i> , 2009, 81, 6467-6473.	6.5	56
63	Characterization of the Cell Surface and Cell Wall Chemistry of Drinking Water Bacteria by Combining XPS, FTIR Spectroscopy, Modeling, and Potentiometric Titrations. <i>Langmuir</i> , 2008, 24, 4032-4040.	3.5	178
64	The polymer physics and chemistry of microbial cell attachment and adhesion. <i>Faraday Discussions</i> , 2008, 139, 85.	3.2	59
65	<i>In situ</i> monitoring of the biofilm formation of <i>Pseudomonas putida</i> on hematite using flow-cell ATR-FTIR spectroscopy to investigate the formation of inner-sphere bonds between the bacteria and the mineral. <i>Mineralogical Magazine</i> , 2008, 72, 101-106.	1.4	79
66	Biological weathering in soil: the role of symbiotic root-associated fungi biosensing minerals and directing photosynthate-energy into grain-scale mineral weathering. <i>Mineralogical Magazine</i> , 2008, 72, 85-89.	1.4	83
67	Novel passive treatment for mine water discharges. <i>Water Management</i> , 2008, 161, 367-374.	1.2	0
68	High-resolution imaging of biotite dissolution and measurement of activation energy. <i>Mineralogical Magazine</i> , 2008, 72, 115-120.	1.4	16
69	Biodegradation Processes in a Laboratory-Scale Groundwater Contaminant Plume Assessed by Fluorescence Imaging and Microbial Analysis. <i>Applied and Environmental Microbiology</i> , 2007, 73, 3865-3876.	3.1	31
70	In Situ Bioremediation by Natural Attenuation: from Lab to Field Scale. <i>AIP Conference Proceedings</i> , 2007, . .	0.4	2
71	High-Resolution Measurement of Pore Saturation and Colloid Removal Efficiency in Quartz Sand Using Fluorescence Imaging. <i>Environmental Science & Technology</i> , 2007, 41, 8288-8294.	10.0	12
72	Noninvasive Quantitative Measurement of Colloid Transport in Mesoscale Porous Media Using Time Lapse Fluorescence Imaging. <i>Environmental Science & Technology</i> , 2006, 40, 5930-5936.	10.0	32

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73	Rate controls on the chemical weathering of natural polymineralic material. I. Dissolution behaviour of polymineralic assemblages determined using batch and unsaturated column experiments. Applied Geochemistry, 2006, 21, 352-376.	3.0	17
74	Rate controls on the chemical weathering of natural polymineralic material. II. Rate-controlling mechanisms and mineral sources and sinks for element release from four UK mine sites, and implications for comparison of laboratory and field scale weathering studies. Applied Geochemistry, 2006, 21, 377-403.	3.0	11
75	Persistence of Fermentative Process to Phenolic Toxicity in Groundwater. Journal of Environmental Quality, 2006, 35, 2021-2025.	2.0	21
76	Physicochemical and Biological Assessment and Characterization of Contaminated Sediments. , 2006, , 83-136.		3
77	The kinetics of O ₂ (aq) reduction by structural ferrous iron in naturally occurring ferrous silicate minerals. Applied Geochemistry, 2005, 20, 2003-2016.	3.0	13
78	Modeling the Dynamics of Fermentation and Respiratory Processes in a Groundwater Plume of Phenolic Contaminants Interpreted from Laboratory- to Field-Scale. Environmental Science & Technology, 2005, 39, 8829-8839.	10.0	40
79	Development of a novel in situ aquifer assessment tool: The dipole flow and reactive tracer test. , 2004, , 523-527.		0
80	Modeling Kinetic Processes Controlling Hydrogen and Acetate Concentrations in an Aquifer-Derived Microcosm. Environmental Science & Technology, 2003, 37, 3910-3919.	10.0	62
81	Mineralogical, numerical and analytical studies of the coupled oxidation of pyrite and coal. Mineralogical Magazine, 2003, 67, 381-398.	1.4	10
82	The kinetics of O ₂ (aq) reduction during oxidative weathering of naturally occurring fracture minerals in groundwater. Mineralogical Magazine, 2003, 67, 399-414.	1.4	4
83	Predicting mineral weathering rates at field scale for mine water risk assessment. Geological Society Special Publication, 2002, 198, 137-157.	1.3	10
84	Modelling natural attenuation processes of phenol degradation in groundwater. Developments in Water Science, 2002, , 827-834.	0.1	0
85	Mine Water. Environmental Pollution, 2002, , .	0.4	259
86	A geochemical model for removal of iron(II)(aq) from mine water discharges. Applied Geochemistry, 2002, 17, 431-443.	3.0	34
87	Hydrochemical modelling for preliminary assessment of minewater pollution. Journal of Geochemical Exploration, 2001, 74, 73-97.	3.2	78
88	Assessing the natural attenuation of organic contaminants in aquifers using plume-scale electron and carbon balances: model development with analysis of uncertainty and parameter sensitivity. Journal of Contaminant Hydrology, 2001, 53, 199-232.	3.3	65
89	Processes controlling the distribution and natural attenuation of dissolved phenolic compounds in a deep sandstone aquifer. Journal of Contaminant Hydrology, 2001, 53, 233-267.	3.3	111
90	Ineffective Natural Attenuation of Degradable Organic Compounds in a Phenol-Contaminated Aquifer. Ground Water, 2000, 38, 922-928.	1.3	53

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91	Characterization of redox conditions in groundwater contaminant plumes. <i>Journal of Contaminant Hydrology</i> , 2000, 45, 165-241.	3.3	413
92	Carbon dioxide mediated dissolution of Ca-feldspar: implications for silicate weathering. <i>Chemical Geology</i> , 2000, 163, 25-42.	3.3	98
93	Resolving the Scale-Dependence of Mineral Weathering Rates. <i>Environmental Science & Technology</i> , 2000, 34, 1375-1378.	10.0	142
94	Protecting the redox stability of a deep repository: concepts, results and experience from the Åspå Hard rock laboratory. <i>Geological Society Special Publication</i> , 1999, 157, 85-99.	1.3	2
95	Weathering kinetics of waste rock from the Aitik copper mine, Sweden: scale dependent rate factors and pH controls in large column experiments. <i>Journal of Contaminant Hydrology</i> , 1999, 39, 59-89.	3.3	73
96	Experimental study of acidity-consuming processes in mining waste rock: some influences of mineralogy and particle size. <i>Applied Geochemistry</i> , 1999, 14, 1-16.	3.0	99
97	Hydrological and reactive processes during rapid recharge to fracture zones. <i>Applied Geochemistry</i> , 1999, 14, 873-892.	3.0	22
98	Reduction of iron(III) minerals by natural organic matter in groundwater. <i>Geochimica Et Cosmochimica Acta</i> , 1999, 63, 2919-2928.	3.9	34
99	Peer Reviewed: A Testbed for Underground Nuclear Repository Design. <i>Environmental Science & Technology</i> , 1997, 31, 510A-514A.	10.0	23
100	Biotite dissolution at 25°C: The pH dependence of dissolution rate and stoichiometry. <i>Geochimica Et Cosmochimica Acta</i> , 1997, 61, 2779-2799.	3.9	183
101	Organic carbon oxidation induced by large-scale shallow water intrusion into a vertical fracture zone at the Åspå Hard Rock Laboratory (Sweden). <i>Journal of Contaminant Hydrology</i> , 1996, 21, 115-125.	3.3	39
102	Accumulation and remobilization of aqueous chromium(VI) at iron oxide surfaces: Application of a thin-film continuous flow-through reactor. <i>Journal of Contaminant Hydrology</i> , 1996, 21, 141-151.	3.3	26
103	The dissolution of biotite and chlorite at 25°C in the near-neutral pH region. <i>Journal of Contaminant Hydrology</i> , 1996, 21, 201-213.	3.3	83
104	Large-scale Intrusion of shallow water into a vertical fracture zone in crystalline bedrock: Initial hydrochemical perturbation during tunnel construction at the Åspå Hard Rock Laboratory, southeastern Sweden. <i>Water Resources Research</i> , 1994, 30, 1747-1763.	4.2	56
105	Kinetic modelling of geochemical processes at the Aitik mining waste rock site in northern Sweden. <i>Applied Geochemistry</i> , 1994, 9, 583-595.	3.0	100
106	Anorthite Surface Speciation and Weathering Reactivity in Bicarbonate Solutions at 25°C. , 1994, , 305-316.		3
107	Surface Processes in Water Technology. , 1994, , 307-335.		1
108	Dissolution of hydrous iron(III) oxides by reductive mechanisms. <i>Langmuir</i> , 1991, 7, 809-813.	3.5	224

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109	The reductive dissolution of iron oxides by ascorbate. Journal of Colloid and Interface Science, 1990, 138, 74-82.	9.4	120
110	Dissolution of Fe(III)(hydr)oxides in natural waters; laboratory assessment on the kinetics controlled by surface coordination. Marine Chemistry, 1989, 28, 127-144.	2.3	165
111	The role of oxalate in accelerating the reductive dissolution of hematite (α -Fe ₂ O ₃) by ascorbate. Colloids and Surfaces, 1989, 39, 303-309.	0.9	117