Susan L Brantley

List of Publications by Year
in descending order

91 papers	6,820 citations	53794 45 h-index	62596 80 g-index
105 all docs	105 docs citations	105 times ranked	5752 citing authors

#	Article	IF	Citations
1	The effect of time on the weathering of silicate minerals: why do weathering rates differ in the laboratory and field?. Chemical Geology, 2003, 202, 479-506.	3.3	940
2	Spatiotemporal Patterns of Water Stable Isotope Compositions at the Shale Hills Critical Zone Observatory: Linkages to Subsurface Hydrologic Processes. Vadose Zone Journal, 2013, 12, 1-16.	2.2	359
3	Water resource impacts during unconventional shale gas development: The Pennsylvania experience. International Journal of Coal Geology, 2014, 126, 140-156.	5.0	241
4	Evaluating a groundwater supply contamination incident attributed to Marcellus Shale gas development. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 6325-6330.	7.1	236
5	Basalt weathering across scales. Earth and Planetary Science Letters, 2007, 261, 321-334.	4.4	219
6	Controls on deep critical zone architecture: a historical review and four testable hypotheses. Earth Surface Processes and Landforms, 2017, 42, 128-156.	2.5	218
7	Mineral weathering and elemental transport during hillslope evolution at the Susquehanna/Shale Hills Critical Zone Observatory. Geochimica Et Cosmochimica Acta, 2010, 74, 3669-3691.	3.9	216
8	Expanding the role of reactive transport models in critical zone processes. Earth-Science Reviews, 2017, 165, 280-301.	9.1	207
9	Learning to Read the Chemistry of Regolith to Understand the Critical Zone. Annual Review of Earth and Planetary Sciences, 2011, 39, 387-416.	11.0	168
10	Kinetics of Mineral Dissolution. , 2008, , 151-210.		141
11	Probing deep weathering in the Shale Hills Critical Zone Observatory, Pennsylvania (USA): the hypothesis of nested chemical reaction fronts in the subsurface. Earth Surface Processes and Landforms, 2013, 38, 1280-1298.	2.5	131
12	Reviews and syntheses: on the roles trees play in building and plumbing the critical zone. Biogeosciences, 2017, 14, 5115-5142.	3.3	130
13	Regolith production rates calculated with uranium-series isotopes at Susquehanna/Shale Hills Critical Zone Observatory. Earth and Planetary Science Letters, 2010, 297, 211-225.	4.4	125
14	Evolution of porosity and diffusivity associated with chemical weathering of a basalt clast. Journal of Geophysical Research, 2009, 114, .	3.3	117
15	Landscape heterogeneity drives contrasting concentrationâ€"discharge relationships in shale headwater catchments. Hydrology and Earth System Sciences, 2015, 19, 3333-3347.	4.9	115
16	Toward a conceptual model relating chemical reaction fronts to water flow paths in hills. Geomorphology, 2017, 277, 100-117.	2.6	113
17	Magnesite dissolution rates at different spatial scales: The role of mineral spatial distribution and flow velocity. Geochimica Et Cosmochimica Acta, 2013, 108, 91-106.	3.9	103
18	Where fast weathering creates thin regolith and slow weathering creates thick regolith. Earth Surface Processes and Landforms, 2013, 38, 847-858.	2.5	99

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19	Characterization of deep weathering and nanoporosity development in shale--A neutron study. American Mineralogist, 2011, 96, 498-512.	1.9	97
20	Using a reactive transport model to elucidate differences between laboratory and field dissolution rates in regolith. Geochimica Et Cosmochimica Acta, 2012, 93, 235-261.	3.9	97
21	Exploring geochemical controls on weathering and erosion of convex hillslopes: beyond the empirical regolith production function. Earth Surface Processes and Landforms, 2013, 38, 1793-1807.	2.5	97
22	How mineralogy and slope aspect affect REE release and fractionation during shale weathering in the Susquehanna/Shale Hills Critical Zone Observatory. Chemical Geology, 2011, 290, 31-49.	3.3	93
23	Weathering of rock to regolith: The activity of deep roots in bedrock fractures. Geoderma, 2017, 300, 11-31.	5.1	93
24	Regolith production and transport at the Susquehanna Shale Hills Critical Zone Observatory, Part 2: Insights from meteoric ¹⁰Be. Journal of Geophysical Research F: Earth Surface, 2013, 118, 1877-1896.	2.8	92
25	Designing a network of critical zone observatories to explore the living skin of the terrestrial Earth. Earth Surface Dynamics, 2017, 5, 841-860.	2.4	92
26	Opening the â€œBlack Boxâ€ Water Chemistry Reveals Hydrological Controls on Weathering in the Susquehanna Shale Hills Critical Zone Observatory. Vadose Zone Journal, 2011, 10, 928-942.	2.2	79
27	Porosity and surface area evolution during weathering of two igneous rocks. Geochimica Et Cosmochimica Acta, 2013, 109, 400-413.	3.9	76
28	Understanding watershed hydrogeochemistry: 2. Synchronized hydrological and geochemical processes drive stream chemostatic behavior. Water Resources Research, 2017, 53, 2346-2367.	4.2	76
29	The effect of curvature on weathering rind formation: Evidence from Uranium-series isotopes in basaltic andesite weathering clasts in Guadeloupe. Geochimica Et Cosmochimica Acta, 2012, 80, 92-107.	3.9	75
30	Fe cycling in the Shale Hills Critical Zone Observatory, Pennsylvania: An analysis of biogeochemical weathering and Fe isotope fractionation. Geochimica Et Cosmochimica Acta, 2012, 99, 18-38.	3.9	75
31	Links between physical and chemical weathering inferred from a 65-m-deep borehole through Earthâ€™s critical zone. Scientific Reports, 2019, 9, 4495.	3.3	72
32	Regolith production and transport in the Susquehanna Shale Hills Critical Zone Observatory, Part 1: Insights from Uâ€series isotopes. Journal of Geophysical Research F: Earth Surface, 2013, 118, 722-740.	2.8	70
33	Chemical reactions, porosity, and microfracturing in shale during weathering: The effect of erosion rate. Geochimica Et Cosmochimica Acta, 2020, 269, 63-100.	3.9	68
34	Proposed initiative would study Earth's weathering engine. Eos, 2004, 85, 265.	0.1	67
35	Soils Reveal Widespread Manganese Enrichment from Industrial Inputs. Environmental Science & Technology, 2011, 45, 241-247.	10.0	67
36	Toward catchment hydroâ€biogeochemical theories. Wiley Interdisciplinary Reviews: Water, 2021, 8, e1495.	6.5	65

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37	Deep abiotic weathering of pyrite. Science, 2020, 370, .	12.6	63
38	Controls on rind thickness on basaltic andesite clasts weathering in Guadeloupe. Chemical Geology, 2010, 276, 129-143.	3.3	60
39	How Oxidation and Dissolution in Diabase and Granite Control Porosity during Weathering. Soil Science Society of America Journal, 2015, 79, 55-73.	2.2	59
40	The Role of Critical Zone Observatories in Critical Zone Science. Developments in Earth Surface Processes, 2015, , 15-78.	2.8	57
41	The CO 2 consumption potential during gray shale weathering: Insights from the evolution of carbon isotopes in the Susquehanna Shale Hills critical zone observatory. Geochimica Et Cosmochimica Acta, 2014, 142, 260-280.	3.9	55
42	Oxidative dissolution under the channel leads geomorphological evolution at the Shale Hills catchment. Numerische Mathematik, 2016, 316, 981-1026.	1.4	55
43	Detecting and explaining why aquifers occasionally become degraded near hydraulically fractured shale gas wells. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 12349-12358.	7.1	54
44	Big Groundwater Data Sets Reveal Possible Rare Contamination Amid Otherwise Improved Water Quality for Some Analytes in a Region of Marcellus Shale Development. Environmental Science & Technology, 2018, 52, 7149-7159.	10.0	53
45	Designing a suite of measurements to understand the critical zone. Earth Surface Dynamics, 2016, 4, 211-235.	2.4	49
46	Hyporheic zone influences on concentrationâ€discharge relationships in a headwater sandstone stream. Water Resources Research, 2017, 53, 4643-4667.	4.2	49
47	Stream Measurements Locate Thermogenic Methane Fluxes in Groundwater Discharge in an Area of Shale-Gas Development. Environmental Science & Technology, 2015, 49, 4057-4065.	10.0	45
48	Designing a Suite of Models to Explore Critical Zone Function. Procedia Earth and Planetary Science, 2014, 10, 7-15.	0.6	40
49	Topographic controls on the depth distribution of soil CO2 in a small temperate watershed. Applied Geochemistry, 2015, 63, 58-69.	3.0	39
50	Weathering and erosion of fractured bedrock systems. Earth Surface Processes and Landforms, 2017, 42, 2090-2108.	2.5	39
51	A reactive transport model for Marcellus shale weathering. Geochimica Et Cosmochimica Acta, 2017, 217, 421-440.	3.9	38
52	Rock to regolith. Nature Geoscience, 2010, 3, 305-306.	12.9	37
53	Susquehanna Shale Hills Critical Zone Observatory: Shale Hills in the Context of Shaver's Creek Watershed. Vadose Zone Journal, 2018, 17, 1-19.	2.2	36
54	Mineral dissolution in the Cape Cod aquifer, Massachusetts, USA: I . Reaction stoichiometry and impact of accessory feldspar and glauconite on strontium isotopes, solute concentrations, and REY distribution 1 1Associate Editor: L. M. Walter. Geochimica Et Cosmochimica Acta, 2004, 68, 1199-1216.	3.9	35

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55	Architecture of the deep critical zone in the RÃo Icacos watershed (Luquillo Critical Zone) Tj ETQq1 1 0.784314 rgBT /Overlock 10 Tf 50 Processes and Landforms, 2016, 41, 1826-1840.	2.5	34
56	Signatures of Hydrologic Function Across the Critical Zone Observatory Network. Water Resources Research, 2021, 57, e2019WR026635.	4.2	31
57	Seismic refraction tracks porosity generation and possible CO ₂ production at depth under a headwater catchment. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 18991-18997.	7.1	28
58	Feedbacks among O2 and CO2 in deep soil gas, oxidation of ferrous minerals, and fractures: A hypothesis for steady-state regolith thickness. Earth and Planetary Science Letters, 2017, 460, 29-40.	4.4	27
59	Streamflow Generation From Catchments of Contrasting Lithologies: The Role of Soil Properties, Topography, and Catchment Size. Water Resources Research, 2019, 55, 9234-9257.	4.2	26
60	Climate preconditions the Critical Zone: Elucidating the role of subsurface fractures in the evolution of asymmetric topography. Earth and Planetary Science Letters, 2019, 513, 197-205.	4.4	26
61	Soil chemistry and shale weathering on a hillslope influenced by convergent hydrologic flow regime at the Susquehanna/Shale Hills Critical Zone Observatory. Applied Geochemistry, 2011, 26, S51-S56.	3.0	25
62	Ideas and perspectives: Strengthening the biogeosciences in environmental research networks. Biogeosciences, 2018, 15, 4815-4832.	3.3	24
63	The Effect of Lithology and Agriculture at the Susquehanna Shale Hills Critical Zone Observatory. Vadose Zone Journal, 2018, 17, 1-15.	2.2	23
64	Earthcasting the future Critical Zone. Elementa, 2013, 1, .	3.2	23
65	Vertical Connectivity Regulates Water Transit Time and Chemical Weathering at the Hillslope Scale. Water Resources Research, 2021, 57, e2020WR029207.	4.2	21
66	Exploring How to Use Groundwater Chemistry to Identify Migration of Methane near Shale Gas Wells in the Appalachian Basin. Environmental Science & Technology, 2019, 53, 9317-9327.	10.0	20
67	Gas well integrity and methane migration: evaluation of published evidence during shale-gas development in the USA. Hydrogeology Journal, 2020, 28, 1481-1502.	2.1	19
68	Reactive Transport Models of Weathering. Elements, 2019, 15, 103-106.	0.5	17
69	Particle fluxes in groundwater change subsurface shale rock chemistry over geologic time. Earth and Planetary Science Letters, 2018, 500, 180-191.	4.4	16
70	Machine learning deciphers CO₂ sequestration and subsurface flowpaths from stream chemistry. Hydrology and Earth System Sciences, 2021, 25, 3397-3409.	4.9	15
71	Models of transport and reaction describing weathering of fractured rock with mobile and immobile water. Journal of Geophysical Research F: Earth Surface, 2017, 122, 735-757.	2.8	14
72	Methane concentrations in streams reveal gas leak discharges in regions of oil, gas, and coal development. Science of the Total Environment, 2020, 737, 140105.	8.0	14

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73	Soil CO₂ and O₂ Concentrations Illuminate the Relative Importance of Weathering and Respiration to Seasonal Soil Gas Fluctuations. Soil Science Society of America Journal, 2019, 83, 1167-1180.	2.2	13
74	The Limits of Homogenization: What Hydrological Dynamics can a Simple Model Represent at the Catchment Scale?. Water Resources Research, 2021, 57, e2020WR029528.	4.2	13
75	Detecting anomalous methane in groundwater within hydrocarbon production areas across the United States. Water Research, 2021, 200, 117236.	11.3	13
76	A numerical examination of the effect of sulfide dissolution on silicate weathering. Earth and Planetary Science Letters, 2020, 539, 116239.	4.4	12
77	Developing boron isotopes to elucidate shale weathering in the critical zone. Chemical Geology, 2021, 559, 119900.	3.3	12
78	The Effect of Fractures on Weathering of Igneous and Volcaniclastic Sedimentary Rocks in the Puerto Rican Tropical Rain Forest. Procedia Earth and Planetary Science, 2017, 17, 972-975.	0.6	11
79	The impact of depth-dependent water content on steady state weathering and eroding systems. Geochimica Et Cosmochimica Acta, 2019, 244, 40-55.	3.9	11
80	Relating land surface, water table, and weathering fronts with a conceptual valve model for headwater catchments. Hydrological Processes, 2021, 35, e14010.	2.6	11
81	Exploring an â€˜ideal hill': how lithology and transport mechanisms affect the possibility of a steady state during weathering and erosion. Earth Surface Processes and Landforms, 2020, 45, 652-665.	2.5	10
82	Relating soil gas to weathering using rock and regolith geochemistry. Numerische Mathematik, 2018, 318, 727-763.	1.4	9
83	Seismic Ambient Noise Analyses Reveal Changing Temperature and Water Signals to 10s of Meters Depth in the Critical Zone. Journal of Geophysical Research F: Earth Surface, 2021, 126, e2020JF005823.	2.8	9
84	3D Seismic Anatomy of a Watershed Reveals Climateâ€Topography Coupling That Drives Water Flowpaths and Bedrock Weathering. Journal of Geophysical Research F: Earth Surface, 2021, 126, e2021JF006281.	2.8	7
85	Geochemical Evidence of Potential Groundwater Contamination with Human Health Risks Where Hydraulic Fracturing Overlaps with Extensive Legacy Hydrocarbon Extraction. Environmental Science & Technology, 2022, 56, 10010-10019.	10.0	6
86	Soil Carbon Dioxide Flux Partitioning in a Calcareous Watershed With Agricultural Impacts. Journal of Geophysical Research G: Biogeosciences, 2021, 126, e2021JG006379.	3.0	5
87	Microbial chemolithotrophic oxidation of pyrite in a subsurface shale weathering environment: Geologic considerations and potential mechanisms. Geobiology, 2022, 20, 271-291.	2.4	4
88	How the capacity of bedrock to collect dust and produce soil affects phosphorus bioavailability in the northern Appalachian Mountains of Pennsylvania. Earth Surface Processes and Landforms, 2021, 46, 2807-2823.	2.5	3
89	The future low-temperature geochemical data-scape as envisioned by the U.S. geochemical community. Computers and Geosciences, 2021, 157, 104933.	4.2	3
90	Ideas and perspectives: Proposed best practices for collaboration at cross-disciplinary observatories. Biogeosciences, 2019, 16, 4661-4669.	3.3	1

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91	Measurements of Atmospheric Methane Emissions from Stray Gas Migration: A Case Study from the Marcellus Shale. ACS Earth and Space Chemistry, 2022, 6, 909-919.	2.7	0