John S Sperry

List of Publications by Citations

74 papers	18,681 citations	55 h-index	75 g-index
75 ext. papers	21,348 ext. citations	8.3 avg, IF	6.63 L-index

#	Paper	IF	Citations
74	Mechanisms of plant survival and mortality during drought: why do some plants survive while others succumb to drought?. *New Phytologist*, **2008**, 178, 719-739	9.8	2499
73	Global convergence in the vulnerability of forests to drought. *Nature*, **2012**, 491, 752-5	50.4	1446
72	Trends in wood density and structure are linked to prevention of xylem implosion by negative pressure. *Oecologia*, **2001**, 126, 457-461	2.9	1050
71	Survey and synthesis of intra- and interspecific variation in stomatal sensitivity to vapour pressure deficit. *Plant, Cell and Environment*, **1999**, 22, 1515-1526	8.4	773
70	A method for measuring hydraulic conductivity and embolism in xylem. *Plant, Cell and Environment*, **1988**, 11, 35-40	8.4	757
69	Water deficits and hydraulic limits to leaf water supply. *Plant, Cell and Environment*, **2002**, 25, 251-263	8.4	559
68	Limitation of plant water use by rhizosphere and xylem conductance: results from a model. *Plant, Cell and Environment*, **1998**, 21, 347-359	8.4	558
67	Mechanism of water stress-induced xylem embolism. *Plant Physiology*, **1988**, 88, 581-7	6.6	503
66	A multi-species synthesis of physiological mechanisms in drought-induced tree mortality. *Nature Ecology and Evolution*, **2017**, 1, 1285-1291	12.3	469
65	Vulnerability to xylem cavitation and the distribution of Sonoran Desert vegetation. *American Journal of Botany*, **2000**, 87, 1287-1299	2.7	442
64	The roles of hydraulic and carbon stress in a widespread climate-induced forest die-off. *Proceedings of the National Academy of Sciences of the United States of America*, **2012**, 109, 233-7	11.5	436
63	Size and function in conifer tracheids and angiosperm vessels. *American Journal of Botany*, **2006**, 93, 1490-500	2.7	431
62	Inter-vessel pitting and cavitation in woody Rosaceae and other vesselled plants: a basis for a safety versus efficiency trade-off in xylem transport. *Plant, Cell and Environment*, **2005**, 28, 800-812	8.4	428
61	Stomatal conductance and photosynthesis vary linearly with plant hydraulic conductance in ponderosa pine. *Plant, Cell and Environment*, **2001**, 24, 113-121	8.4	419
60	The relationship between xylem conduit diameter and cavitation caused by freezing. *American Journal of Botany*, **1999**, 86, 1367-1372	2.7	330
59	Intra- and inter-plant variation in xylem cavitation in Betula occidentalis. *Plant, Cell and Environment* , **1994**, 17, 1233-1241	8.4	329
58	Safety and efficiency conflicts in hydraulic architecture: scaling from tissues to trees. *Plant, Cell and Environment*, **2008**, 31, 632-45	8.4	316

57	Weak tradeoff between xylem safety and xylem-specific hydraulic efficiency across the world's woody plant species. *New Phytologist*, **2016**, 209, 123-36	9.8	307
56	Evaluating theories of drought-induced vegetation mortality using a multimodel-experiment framework. *New Phytologist*, **2013**, 200, 304-321	9.8	287
55	Water-stress-induced xylem embolism in three species of conifers. *Plant, Cell and Environment*, **1990**, 13, 427-436	8.4	276
54	Cavitation fatigue. Embolism and refilling cycles can weaken the cavitation resistance of xylem. *Plant Physiology*, **2001**, 125, 779-86	6.6	264
53	Limitation of transpiration by hydraulic conductance and xylem cavitation in Betula occidentalis. *Plant, Cell and Environment*, **1993**, 16, 279-287	8.4	261
52	Sustained and significant negative water pressure in xylem. *Nature*, **1995**, 378, 715-716	50.4	257
51	Plant responses to rising vapor pressure deficit. *New Phytologist*, **2020**, 226, 1550-1566	9.8	249
50	Tree mortality predicted from drought-induced vascular damage. *Nature Geoscience*, **2015**, 8, 367-371	18.3	245
49	Use of centrifugal force in the study of xylem cavitation. *Journal of Experimental Botany*, **1997**, 48, 665-674	7	237
48	Influence of nutrient versus water supply on hydraulic architecture and water balance in Pinus taeda. *Plant, Cell and Environment*, **2000**, 23, 1055-1066	8.4	227
47	Influence of soil porosity on water use in Pinus taeda. *Oecologia*, **2000**, 124, 495-505	2.9	223
46	Root and stem xylem embolism, stomatal conductance, and leaf turgor in Acer grandidentatum populations along a soil moisture gradient. *Oecologia*, **1996**, 105, 293-301	2.9	223
45	What plant hydraulics can tell us about responses to climate-change droughts. *New Phytologist*, **2015**, 207, 14-27	9.8	216
44	Desert shrub water relations with respect to soil characteristics and plant functional type. *Functional Ecology*, **2002**, 16, 367-378	5.6	216
43	Comparative analysis of end wall resistivity in xylem conduits. *Plant, Cell and Environment*, **2005**, 28, 456-465	8.4	195
42	Xylem cavitation in roots and stems of Douglas-fir and white fir. *Tree Physiology*, **1997**, 17, 275-80	4.2	177
41	Analysis of circular bordered pit function I. Angiosperm vessels with homogenous pit membranes. *American Journal of Botany*, **2004**, 91, 369-85	2.7	177
40	Plant xylem hydraulics: What we understand, current research, and future challenges. *Journal of Integrative Plant Biology*, **2017**, 59, 356-389	8.3	173

39	Predicting stomatal responses to the environment from the optimization of photosynthetic gain and hydraulic cost. *Plant, Cell and Environment*, **2017**, 40, 816-830	8.4	166
38	Limits to xylem refilling under negative pressure in Laurus nobilis and Acer negundo. *Plant, Cell and Environment*, **2003**, 26, 303-311	8.4	146
37	DIFFERENCES IN DROUGHT ADAPTATION BETWEEN SUBSPECIES OF SAGEBRUSH (ARTEMISIA TRIDENTATA). *Ecology*, **1999**, 80, 2373-2384	4.6	138
36	Rare pits, large vessels and extreme vulnerability to cavitation in a ring-porous tree species. *New Phytologist*, **2012**, 193, 713-720	9.8	136
35	Testing the Vare pitVhypothesis for xylem cavitation resistance in three species of Acer. *New Phytologist*, **2009**, 182, 664-674	9.8	131
34	Sensitivity of mean canopy stomatal conductance to vapor pressure deficit in a flooded Taxodium distichum L. forest: hydraulic and non-hydraulic effects. *Oecologia*, **2001**, 126, 21-29	2.9	131
33	Limits to water transport in Juniperus osteosperma and Pinus edulis: implications for drought tolerance and regulation of transpiration. *Functional Ecology*, **1998**, 12, 906-911	5.6	130
32	Freezing-induced xylem cavitation and the northern limit of Larrea tridentata. *Oecologia*, **1996**, 109, 19-27	2.9	126
31	SEASONAL OCCURRENCE OF XYLEM EMBOLISM IN SUGAR MAPLE (ACER SACCHARUM). *American Journal of Botany*, **1988**, 75, 1212-1218	2.7	111
30	Pragmatic hydraulic theory predicts stomatal responses to climatic water deficits. *New Phytologist*, **2016**, 212, 577-589	9.8	107
29	New evidence for large negative xylem pressures and their measurement by the pressure chamber method. *Plant, Cell and Environment*, **1996**, 19, 427-436	8.4	106
28	Transpiration and hydraulic strategies in a piñon-juniper woodland **2008**, 18, 911-27		96
27	Does leaf shedding protect stems from cavitation during seasonal droughts? A test of the hydraulic fuse hypothesis. *New Phytologist*, **2016**, 212, 1007-1018	9.8	92
26	Vulnerability curves by centrifugation: is there an open vessel artefact, and are VVshaped curves necessarily invalid?. *Plant, Cell and Environment*, **2012**, 35, 601-10	8.4	91
25	Evaluation of centrifugal methods for measuring xylem cavitation in conifers, diffuse- and ring-porous angiosperms. *New Phytologist*, **2008**, 177, 558-568	9.8	78
24	Interdependence of chronic hydraulic dysfunction and canopy processes can improve integrated models of tree response to drought. *Water Resources Research*, **2015**, 51, 6156-6176	5.4	70
23	Woody plants optimise stomatal behaviour relative to hydraulic risk. *Ecology Letters*, **2018**, 21, 968-977	10	65
22	LIFE HISTORY TYPE AND WATER STRESS TOLERANCE IN NINE CALIFORNIA CHAPARRAL SPECIES (RHAMNACEAE). *Ecological Monographs*, **2007**, 77, 239-253	9	65

21	Characterization and propagation of acoustic emission signals in woody plants: towards an improved acoustic emission counter. *Plant, Cell and Environment*, **1989**, 12, 371-382	8.4	64
20	Plant hydraulics improves and topography mediates prediction of aspen mortality in southwestern USA. *New Phytologist*, **2017**, 213, 113-127	9.8	60
19	Cutting-edge research or cutting-edge artefact? An overdue control experiment complicates the xylem refilling story. *Plant, Cell and Environment*, **2013**, 36, 1916-8	8.4	51
18	SEASONAL OCCURRENCE OF XYLEM EMBOLISM IN SUGAR MAPLE (ACER SACCHARUM) **1988**, 75, 1212		50
17	The impact of rising CO and acclimation on the response of US forests to global warming. *Proceedings of the National Academy of Sciences of the United States of America*, **2019**, 116, 25734-25744	11.5	48
16	A stomatal control model based on optimization of carbon gain versus hydraulic risk predicts aspen sapling responses to drought. *New Phytologist*, **2018**, 220, 836-850	9.8	47
15	Coordinating stomatal and xylem functioning - an evolutionary perspective. *New Phytologist*, **2004**, 162, 568-570	9.8	47
14	Deviation from symmetrically self-similar branching in trees predicts altered hydraulics, mechanics, light interception and metabolic scaling. *New Phytologist*, **2014**, 201, 217-229	9.8	44
13	A species-level model for metabolic scaling in trees I. Exploring boundaries to scaling space within and across species. *Functional Ecology*, **2012**, 26, 1054-1065	5.6	40
12	Canny\ compensating pressure theory fails a test. *American Journal of Botany*, **1999**, 86, 1082-1086	2.7	33
11	Plant water potential improves prediction of empirical stomatal models. *PLoS ONE*, **2017**, 12, e0185481	3.7	33
10	Conifers depend on established roots during drought: results from a coupled model of carbon allocation and hydraulics. *New Phytologist*, **2020**, 225, 679-692	9.8	32
9	Murray\ law, the \arrum\optimum, and the hydraulic architecture of compound leaves. *New Phytologist*, **2009**, 184, 234-244	9.8	30
8	Distributed Plant Hydraulic and Hydrological Modeling to Understand the Susceptibility of Riparian Woodland Trees to Drought-Induced Mortality. *Water Resources Research*, **2018**, 54, 4901-4915	5.4	29
7	A species-level model for metabolic scaling of trees II. Testing in a ring- and diffuse-porous species. *Functional Ecology*, **2012**, 26, 1066-1076	5.6	26
6	Dependence of Aspen Stands on a Subsurface Water Subsidy: Implications for Climate Change Impacts. *Water Resources Research*, **2019**, 55, 1833-1848	5.4	22
5	Convergence in leaf size versus twig leaf area scaling: do plants optimize leaf area partitioning?. *Annals of Botany*, **2017**, 119, 447-456	4.1	20
4	Contrasting whole-tree water use, hydraulics, and growth in a co-dominant diffuse-porous vs. ring-porous species pair. *Trees - Structure and Function*, **2015**, 29, 717-728	2.6	20

3	In situ embolism induction reveals vessel refilling in a natural aspen stand. *Tree Physiology*, **2018**, 38, 1006-1015	4.2	14
2	Hydraulic architecture of palms. *Giornale Botanico Italiano (Florence, Italy: 1962)*, **1995**, 129, 482-490		1
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