Michael G Worster

List of Publications by Citations

111 papers	4,991 citations	40 h-index	68 g-index
112 ext. papers	5,541 ext. citations	5.2 avg, IF	5.88 L-index

#	Paper	IF	Citations
111	Instabilities of the liquid and mushy regions during solidification of alloys. *Journal of Fluid Mechanics*, **1992**, 237, 649-669	3.7	245
110	CONVECTION IN MUSHY LAYERS. *Annual Review of Fluid Mechanics*, **1997**, 29, 91-122	22	222
109	Solidification of an alloy from a cooled boundary. *Journal of Fluid Mechanics*, **1986**, 167, 481	3.7	218
108	Interfacial conditions between a pure fluid and a porous medium: implications for binary alloy solidification. *Journal of Fluid Mechanics*, **2006**, 550, 149	3.7	213
107	PREMELTING DYNAMICS. *Annual Review of Fluid Mechanics*, **2006**, 38, 427-452	22	159
106	Premelting dynamics in a continuum model of frost heave. *Journal of Fluid Mechanics*, **2004**, 498, 227-244	3.7	156
105	Natural convection in a mushy layer. *Journal of Fluid Mechanics*, **1991**, 224, 335-359	3.7	156
104	Dynamic solidification of a binary melt. *Nature*, **1985**, 314, 703-707	50.4	156
103	Natural convection during solidification of an alloy from above with application to the evolution of sea ice. *Journal of Fluid Mechanics*, **1997**, 344, 291-316	3.7	137
102	Desalination processes of sea ice revisited. *Journal of Geophysical Research*, **2009**, 114,		136
101	Solidification of colloidal suspensions. *Journal of Fluid Mechanics*, **2006**, 554, 147	3.7	129
100	The interaction between a particle and an advancing solidification front. *Journal of Crystal Growth*, **1999**, 205, 427-440	1.6	118
99	Possible displacement of the climate signal in ancient ice by premelting and anomalous diffusion. *Nature*, **2001**, 411, 568-71	50.4	108
98	Convection and crystallization in magma cooled from above. *Earth and Planetary Science Letters*, **1990**, 101, 78-89	5.3	102
97	Weakly nonlinear analysis of convection in mushy layers during the solidification of binary alloys. *Journal of Fluid Mechanics*, **1995**, 302, 307-331	3.7	87
96	The case for a dynamic contact angle in containerless solidification. *Journal of Crystal Growth*, **1996**, 163, 329-338	1.6	87
95	Natural Convection, Solute Trapping, and Channel Formation during Solidification of Saltwater. *Journal of Physical Chemistry B*, **1997**, 101, 6132-6136	3.4	81

94	Impact of underwater-ice evolution on Arctic summer sea ice. *Journal of Geophysical Research*, **2003**, 108,		81
93	In situ measurements of the evolution of young sea ice. *Journal of Geophysical Research*, **2008**, 113,		75
92	Stability of ice-sheet grounding lines. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2010**, 466, 1597-1620	2.4	74
91	Two-dimensional viscous gravity currents flowing over a deep porous medium. *Journal of Fluid Mechanics*, **2001**, 440, 359-380	3.7	74
90	Solidification of an alloy cooled from above Part 1. Equilibrium growth. *Journal of Fluid Mechanics*, **1990**, 216, 323-342	3.7	73
89	Morphological instability in freezing colloidal suspensions. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2007**, 463, 723-733	2.4	71
88	Particle trapping at an advancing solidification front with interfacial-curvature effects. *Journal of Crystal Growth*, **2001**, 223, 420-432	1.6	68
87	Solidification using smoothed particle hydrodynamics. *Journal of Computational Physics*, **2005**, 206, 684-705	4.5	66
86	Time-dependent density profiles in a filling box. *Journal of Fluid Mechanics*, **1983**, 132, 457-466	3.7	64
85	Disequilibrium and macrosegregation during solidification of a binary melt. *Nature*, **1989**, 340, 357-362	50.4	63
84	A theory of premelting dynamics for all power law forces. *Physical Review Letters*, **1996**, 76, 3602-3605	7.4	61
83	A non-destructive method for measuring the salinity and solid fraction of growing sea ice in situ. *Journal of Glaciology*, **2005**, 51, 159-166	3.4	56
82	the phase evolution of Young Sea Ice. *Geophysical Research Letters*, **1997**, 24, 1251-1254	4.9	55
81	Weak convection, liquid inclusions and the formation of chimneys in mushy layers. *Journal of Fluid Mechanics*, **1999**, 388, 197-215	3.7	55
80	A new oscillatory instability in a mushy layer during the solidification of binary alloys. *Journal of Fluid Mechanics*, **1996**, 307, 245-267	3.7	53
79	Solidification of leads: Theory, experiment, and field observations. *Journal of Geophysical Research*, **2000**, 105, 1123-1134		49
78	Solidification of an alloy cooled from above Part 2. Non-equilibrium interfacial kinetics. *Journal of Fluid Mechanics*, **1990**, 217, 331-348	3.7	49
77	Steady-state solidification of aqueous ammonium chloride. *Journal of Fluid Mechanics*, **2008**, 599, 465-476	3.7	48

76	Simulation of directional solidification, thermochemical convection, and chimney formation in a Hele-Shaw cell. *Journal of Computational Physics*, **2008**, 227, 9823-9840	4.1	47
75	The crystallization of lava lakes. *Journal of Geophysical Research*, **1993**, 98, 15891		47
74	A geophysical-scale model of vertical natural convection boundary layers. *Journal of Fluid Mechanics*, **2008**, 609, 111-137	3.7	45
73	Periodic ice banding in freezing colloidal dispersions. *Langmuir*, **2012**, 28, 16512-23	4	43
72	Dynamics of premelted films: Frost heave in a capillary. *Physical Review E*, **1995**, 51, 4679-4689	2.4	42
71	Ice growth in a spherical cavity of a porous medium. *Journal of Glaciology*, **2010**, 56, 271-277	3.4	40
70	Frost flower formation on sea ice and lake ice. *Geophysical Research Letters*, **2009**, 36,	4.9	39
69	A numerical investigation of steady convection in mushy layers during the directional solidification of binary alloys. *Journal of Fluid Mechanics*, **1998**, 356, 199-220	3.7	39
68	Magnetic resonance imaging of structure and convection in solidifying mushy layers. *Journal of Fluid Mechanics*, **2006**, 552, 99	3.7	38
67	Steady-state chimneys in a mushy layer. *Journal of Fluid Mechanics*, **2002**, 455, 387-411	3.7	38
66	The transient behaviour of alloys solidified from below prior to the formation of chimneys. *Journal of Fluid Mechanics*, **1994**, 269, 23-44	3.7	38
65	Laminar free convection in confined regions. *Journal of Fluid Mechanics*, **1985**, 156, 301	3.7	37
64	Elastic dynamics and tidal migration of grounding lines modify subglacial lubrication and melting. *Geophysical Research Letters*, **2013**, 40, 5877-5881	4.9	34
63	Steady-state mushy layers: experiments and theory. *Journal of Fluid Mechanics*, **2007**, 570, 69-77	3.7	32
62	Diffusion-controlled solidification of a ternary melt from a cooled boundary. *Journal of Fluid Mechanics*, **2001**, 432, 201-217	3.7	30
61	Flow-induced morphological instability of a mushy layer. *Journal of Fluid Mechanics*, **1999**, 391, 337-357	3.7	29
60	Freezing colloidal suspensions: periodic ice lenses and compaction. *Journal of Fluid Mechanics*, **2014**, 758, 786-808	3.7	28
59	The influence of ocean flow on newly forming sea ice. *Journal of Geophysical Research*, **2002**, 107, 1-1		28

58	Solidification of an alloy cooled from above. Part 3. Compositional stratification within the solid. *Journal of Fluid Mechanics*, **1990**, 218, 337	3.7	28
57	The Axisymmetric Laminar Plume: Asymptotic Solution for Large Prandtl Number. *Studies in Applied Mathematics*, **1986**, 75, 139-152	2.1	27
56	Dynamics of viscous grounding lines. *Journal of Fluid Mechanics*, **2010**, 648, 363-380	3.7	26
55	Elastic response of a grounded ice sheet coupled to a floating ice shelf. *Physical Review E*, **2011**, 84, 036111	2.4	24
54	Solidification of a binary alloy: Finite-element, single-domain simulation and new benchmark solutions. *Journal of Computational Physics*, **2006**, 216, 247-263	4.1	23
53	Fluxes through steady chimneys in a mushy layer during binary alloy solidification. *Journal of Fluid Mechanics*, **2013**, 714, 127-151	3.7	22
52	Dynamics of a viscous layer flowing radially over an inviscid ocean. *Journal of Fluid Mechanics*, **2012**, 696, 152-174	3.7	22
51	Sea-ice thermodynamics and brine drainage. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2015**, 373,	3	20
50	Nonlinear oscillatory convection in mushy layers. *Journal of Fluid Mechanics*, **2006**, 553, 419	3.7	20
49	Flow-induced compaction of a deformable porous medium. *Physical Review E*, **2016**, 93, 023116	2.4	19
48	A physically based parameterization of gravity drainage for sea-ice modeling. *Journal of Geophysical Research: Oceans*, **2014**, 119, 5599-5621	3.3	19
47	Time-dependent fluxes across double-diffusive interfaces. *Journal of Fluid Mechanics*, **2004**, 505, 287-307	3.7	19
46	Measurement of the solid fraction in the crystallization of a binary melt. *Journal of Crystal Growth*, **1991**, 113, 566-574	1.6	19
45	On measurement and prediction of the solid fraction within mushy layers. *Journal of Crystal Growth* , **1992**, 125, 487-494	1.6	19
44	Lateral controls on grounding-line dynamics. *Journal of Fluid Mechanics*, **2013**, 722,	3.7	18
43	A one-dimensional enthalpy model of sea ice. *Annals of Glaciology*, **2006**, 44, 123-128	2.5	18
42	Solidification and compositional convection of a ternary alloy. *Journal of Fluid Mechanics*, **2003**, 497, 167-199	3.7	18
41	Axisymmetric gravity currents of power-law fluids over a rigid horizontal surface. *Journal of Fluid Mechanics*, **2013**, 716,	3.7	17

40	A simple dynamical model for gravity drainage of brine from growing sea ice. *Geophysical Research Letters*, **2013**, 40, 307-311	4.9	17
39	Axisymmetric viscous gravity currents flowing over a porous medium. *Journal of Fluid Mechanics*, **2009**, 622, 135-144	3.7	17
38	A time-dependent formulation of the mushy-zone free-boundary problem. *Journal of Fluid Mechanics*, **2005**, 541, 193	3.7	17
37	Interactions between steady and oscillatory convection in mushy layers. *Journal of Fluid Mechanics*, **2010**, 645, 411-434	3.7	16
36	Similarity solutions describing the melting of a mushy layer. *Journal of Crystal Growth*, **2000**, 208, 746-756	1.6	16
35	Flow focusing instability in a solidifying mushy layer. *Journal of Fluid Mechanics*, **1995**, 297, 293-305	3.7	16
34	Segregation and flow during the solidification of alloys. *Journal of Crystal Growth*, **1994**, 139, 134-146	1.6	16
33	Melting and dissolving of a vertical solid surface with laminar compositional convection. *Journal of Fluid Mechanics*, **2011**, 687, 118-140	3.7	15
32	Controls on microstructural features during solidification of colloidal suspensions. *Acta Materialia*, **2018**, 157, 288-297	8.4	12
31	On the mechanisms of icicle evolution. *Journal of Fluid Mechanics*, **2010**, 647, 287-308	3.7	12
30	Free convection in laterally solidifying mushy regions. *Journal of Fluid Mechanics*, **2006**, 558, 69	3.7	11
29	Conditions for defect-free solidification of aqueous ammonium chloride in a quasi two-dimensional directional solidification facility. *Journal of Crystal Growth*, **2008**, 310, 3545-3551	1.6	10
28	Release of a viscous power-law fluid over an inviscid ocean. *Journal of Fluid Mechanics*, **2012**, 700, 63-76	3.7	9
27	An experimental and theoretical study of the dynamics of grounding lines. *Journal of Fluid Mechanics*, **2013**, 728, 5-28	3.7	9
26	Numerical modelling of convection in a reactive porous medium with a mobile mush–liquid interface. *Journal of Fluid Mechanics*, **2006**, 549, 99	3.7	9
25	Dynamics of laterally confined marine ice sheets. *Journal of Fluid Mechanics*, **2016**, 790,	3.7	9
24	Lubricated viscous gravity currents. *Journal of Fluid Mechanics*, **2015**, 766, 626-655	3.7	8
23	Assessment of ice flow dynamics in the zone close to the calving front of Antarctic ice shelves. *Journal of Glaciology*, **2015**, 61, 1194-1206	3.4	8

22	Comment on "A quantitative framework for interpretation of basal ice facies formed by ice accretion over subglacial sediment" by Poul Christoffersen et al.. *Journal of Geophysical Research*, **2007**, 112,		7
21	Flow-induced morphological instability of a mushy layer - CORRIGENDUM. *Journal of Fluid Mechanics*, **2006**, 549, 442	3.7	7
20	Vigorous Motions in Magma Chambers and Lava Lakes. *The IMA Volumes in Mathematics and Its Applications*, **1992**, 141-173	0.5	7
19	Instability of radially spreading extensional flows. Part 1. Experimental analysis. *Journal of Fluid Mechanics*, **2019**, 881, 722-738	3.7	5
18	Stability of lubricated viscous gravity currents. Part 1. Internal and frontal analyses and stabilisation by horizontal shear. *Journal of Fluid Mechanics*, **2019**, 871, 970-1006	3.7	4
17	Stability of lubricated viscous gravity currents. Part 2. Global analysis and stabilisation by buoyancy forces. *Journal of Fluid Mechanics*, **2019**, 871, 1007-1027	3.7	4
16	Can unconfined ice shelves provide buttressing via hoop stresses?. *Journal of Glaciology*, **2020**, 66, 349-361	3.4	4
15	On the thermodynamic boundary conditions of a solidifying mushy layer with outflow. *Journal of Fluid Mechanics*, **2015**, 762,	3.7	4
14	Surface transport in premelted films with application to grain-boundary grooving. *Physical Review Letters*, **2005**, 95, 176102	7.4	4
13	Structure of a Convecting Mushy Layer. *Applied Mechanics Reviews*, **1990**, 43, S59-S62	8.6	4
12	Instability of radially spreading extensional flows. Part 2. Theoretical analysis. *Journal of Fluid Mechanics*, **2019**, 881, 739-771	3.7	3
11	Linear stability of a solid–vapour interface. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2010**, 466, 1005-1025	2.4	3
10	Mushy Zones with Fully Developed Chimneys **2001**, 71-80		3
9	Patterns of convection in solidifying binary solutions. *Geophysical and Astrophysical Fluid Dynamics*, **2011**, 105, 304-328	1.4	2
8	Colloidal mushy layers. *Journal of Fluid Mechanics*, **2021**, 914,	3.7	2
7	The formation of grounding zone wedges: theory and experiments. *Journal of Fluid Mechanics*, **2020**, 898,	3.7	1
6	Dynamics of Marine Ice Sheets. *Procedia IUTAM*, **2014**, 10, 263-272		1
5	Transpiration through hydrogels. *Journal of Fluid Mechanics*, **2021**, 925,	3.7	1

4	Thermal regelation of single particles and particle clusters in ice. *Soft Matter*, **2021**, 17, 1779-1787	3.6	1
3	Permeability measurements using oscillatory flows. *Experiments in Fluids*, **2020**, 61, 1	2.5	
2	SESSILE DROP SOLIDIFICATION **2002**, 283-283		
1	Corrugations of the Sea-Ice-Ocean Interface Caused By Ocean Shear **1999**, 285-287		