David G Dritschel

List of Publications by Year in descending order

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#	Article	IF	CITATIONS
1	On the spacing of meandering jets in the strong-stair limit. Journal of Fluid Mechanics, 2022, 930, .	3.4	3
2	Potential vorticity fronts and the late-time evolution of large-scale quasi-geostrophic flows. Journal of Fluid Mechanics, 2022, 939, .	3.4	1
3	Self-similar collapse of three vortices in the generalised Euler and quasi-geostrophic equations. Physica D: Nonlinear Phenomena, 2022, 434, 133226.	2.8	5
4	EPIC: The Elliptical Parcel-In-Cell method. Journal of Computational Physics: X, 2022, 14, 100109.	0.7	0
5	Nonlinear effects in the excited states of many-fermion Einstein-Dirac solitons. Physical Review D, 2021, 104, .	4.7	5
6	Balance in non-hydrostatic rotating shallow-water flows. Physics of Fluids, 2021, 33, .	4.0	5
7	Velocity–pressure correlation in Navier–Stokes flows and the problem of global regularity. Journal of Fluid Mechanics, 2021, 911, .	3.4	3
8	The validity of two-dimensional models of a rotating shallow fluid layer. Journal of Fluid Mechanics, 2020, 900, .	3.4	5
9	<i>N</i> -symmetric interaction of <i>N</i> hetons. I. Analysis of the case <i>N</i> = 2. Physics of Fluids, 2020, 32, .	4.0	6
10	On the regularity of the Green–Naghdi equations – CORRIGENDUM. Journal of Fluid Mechanics, 2020, 900, .	3.4	1
11	Fermion self-trapping in the optical geometry of Einstein-Dirac solitons. Physical Review D, 2020, 101, .	4.7	5
12	Stability and evolution of two opposite-signed quasi-geostrophic shallow-water vortex patches. Geophysical and Astrophysical Fluid Dynamics, 2020, 114, 561-587.	1.2	7
13	The deflection angle between a wind-forced surface current and the overlying wind in an ocean with vertically varying eddy viscosity. Physics of Fluids, 2020, 32, .	4.0	13
14	Equilibria and stability of four point vortices on a sphere. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2020, 476, 20200344.	2.1	3
15	The stability and nonlinear evolution of quasi-geostrophic toroidal vortices. Journal of Fluid Mechanics, 2019, 863, 60-78.	3.4	12
16	Scale-invariant singularity of the surface quasigeostrophic patch. Journal of Fluid Mechanics, 2019, 863, .	3.4	8
17	Long frontal waves and dynamic scaling in freely evolving equivalent barotropic flow. Journal of Fluid Mechanics, 2019, 866, .	3.4	3
18	Comparison of the Moist Parcelâ€inâ€Cell (MPIC) model with largeâ€eddy simulation for an idealized cloud. Quarterly Journal of the Royal Meteorological Society, 2019, 145, 1865-1881.	2.7	6

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19	On the regularity of the Green–Naghdi equations for a rotating shallow fluid layer. Journal of Fluid Mechanics, 2019, 865, 100-136.	3.4	7
20	Point mass dynamics on spherical hypersurfaces. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2019, 377, 20180349.	3.4	2
21	Imperfect Bifurcation for the Quasi-Geostrophic Shallow-Water Equations. Archive for Rational Mechanics and Analysis, 2019, 231, 1853-1915.	2.4	15
22	Modeling Subsurface Hydrology in Floodplains. Water Resources Research, 2018, 54, 1428-1459.	4.2	5
23	Circulation conservation and vortex breakup in magnetohydrodynamics at low magnetic PrandtlÂnumber. Journal of Fluid Mechanics, 2018, 857, 38-60.	3.4	5
24	The interaction of two asymmetric quasi-geostrophic vortex patches. Geophysical and Astrophysical Fluid Dynamics, 2018, 112, 375-401.	1.2	4
25	The moist parcelâ€inâ€cell method for modelling moist convection. Quarterly Journal of the Royal Meteorological Society, 2018, 144, 1695-1718.	2.7	4
26	Numerical Simulation of a Self-Similar Cascade of Filament Instabilities in the Surface Quasigeostrophic System. Physical Review Letters, 2014, 112, 144505.	7.8	33
27	Simply-connected vortex-patch shallow-water quasi-equilibria. Journal of Fluid Mechanics, 2014, 743, 481-502.	3.4	2
28	The effect of slip length on vortex rebound from a rigid boundary. Physics of Fluids, 2013, 25, .	4.0	6
29	Waves and Turbulence: Their Cooperative Role in Structure Formation. Procedia IUTAM, 2013, 8, 85-93.	1.2	2
30	Halting scale and energy equilibration in two-dimensional quasigeostrophic turbulence. Journal of Fluid Mechanics, 2013, 721, .	3.4	6
31	Quasi-geostrophic shallow-water doubly-connected vortex equilibria and theirÂstability. Journal of Fluid Mechanics, 2013, 723, 40-68.	3.4	14
32	Vortical control of forced two-dimensional turbulence. Physics of Fluids, 2013, 25, .	4.0	14
33	Instability in internal solitary waves with trapped cores. Physics of Fluids, 2012, 24, .	4.0	15
34	Two-dimensional magnetohydrodynamic turbulence in the small magnetic Prandtl number limit. Journal of Fluid Mechanics, 2012, 703, 85-98.	3.4	14
35	The structure of zonal jets in geostrophic turbulence. Journal of Fluid Mechanics, 2012, 711, 576-598.	3.4	68
36	Quasi-geostrophic shallow-water vortex–patch equilibria and their stability. Geophysical and Astrophysical Fluid Dynamics, 2012, 106, 574-595.	1.2	17

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37	Flow–topography interactions in shallow-water turbulence. Geophysical and Astrophysical Fluid Dynamics, 2012, 106, 45-66.	1.2	0
38	An exact steadily rotating surface quasi-geostrophic elliptical vortex. Geophysical and Astrophysical Fluid Dynamics, 2011, 105, 368-376.	1.2	26
39	Shallow-water vortex equilibria and their stability. Journal of Physics: Conference Series, 2011, 318, 062019.	0.4	0
40	The steady-state form of large-amplitude internal solitary waves. Journal of Fluid Mechanics, 2011, 666, 477-505.	3.4	21
41	Jet sharpening by turbulent mixing. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2011, 369, 754-770.	3.4	39
42	Numerical simulation of shear-induced instabilities in internal solitary waves. Journal of Fluid Mechanics, 2011, 683, 263-288.	3.4	20
43	Revisiting Vacillations in Shallow-Water Models of the Stratosphere Using Potential-Vorticity-Based Numerical Algorithms. Journals of the Atmospheric Sciences, 2011, 68, 1007-1022.	1.7	6
44	Homostrophic vortex interaction under external strain, in a coupled QG-SQG model. Regular and Chaotic Dynamics, 2010, 15, 66-83.	0.8	9
45	The combined Lagrangian advection method. Journal of Computational Physics, 2010, 229, 5408-5417.	3.8	37
46	Effective degrees of nonlinearity in a family of generalized models of two-dimensional turbulence. Physical Review E, 2010, 81, 016301.	2.1	17
47	Energy dissipation and resolution of steep gradients in one-dimensional Burgers flows. Physics of Fluids, 2010, 22, 037102.	4.0	10
48	Generation of an internal tide by surface tide/eddy resonant interactions. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 39-50.	0.2	0
49	Eddies and Circulation: Lessons from Oceans and the GFD Lab. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 77-94.	0.2	0
50	Quasigeostrophic and stratified turbulence in the atmosphere. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 117-130.	0.2	10
51	A Perspective on Submesoscale Geophysical Turbulence. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 131-141.	0.2	4
52	The structure of zonal jets in shallow water turbulence on the sphere. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 243-252.	0.2	4
53	On spontaneous imbalance and ocean turbulence: generalizations of the Paparella–Young epsilon theorem. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 3-15.	0.2	4
54	Modeling mixing in two-dimensional turbulence and stratified fluids. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 155-167.	0.2	1

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55	Inertia-gravity-wave generation: a geometric-optics approach. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 17-26.	0.2	3
56	Parallels between stratification and rotation in hydrodynamics, and between both of them and external magnetic field in magnetohydrodynamics, with applications to nonlinear waves. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 27-37.	0.2	3
57	Generation of harmonics and sub-harmonics from an internal tide in a uniformly stratified fluid: numerical and laboratory experiments. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 51-62.	0.2	7
58	Spectra and Distribution Functions of Stably Stratified Turbulence. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 143-154.	0.2	0
59	Observations on Rapidly Rotating Turbulence. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 95-104.	0.2	0
60	Zigzag instability of the Kármán vortex street in stratified and rotating fluids. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 197-206.	0.2	1
61	Triple cascade behaviour in QG and drift turbulence and generation of zonal jets. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 265-288.	0.2	Ο
62	Instabilities of a columnar vortex in a stratified fluid. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 207-215.	0.2	1
63	The HyperCASL algorithm. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 289-298.	0.2	Ο
64	Jet formation in decaying two-dimensional turbulence on a rotating sphere. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2010, , 253-263.	0.2	1
65	The Diabatic Contour-Advective Semi-Lagrangian Algorithms for the Spherical Shallow Water Equations. Monthly Weather Review, 2009, 137, 2979-2994.	1.4	10
66	On the simulation of nearly inviscid two-dimensional turbulence. Journal of Computational Physics, 2009, 228, 2707-2711.	3.8	23
67	The HyperCASL algorithm: A new approach to the numerical simulation of geophysical flows. Journal of Computational Physics, 2009, 228, 6411-6425.	3.8	27
68	A family of helically symmetric vortex equilibria. Journal of Fluid Mechanics, 2009, 634, 245.	3.4	13
69	Destructive interactions between two counter-rotating quasi-geostrophic vortices. Journal of Fluid Mechanics, 2009, 639, 195-211.	3.4	14
70	Late time evolution of unforced inviscid two-dimensional turbulence. Journal of Fluid Mechanics, 2009, 640, 215-233.	3.4	13
71	Balance in non-hydrostatic rotating stratified turbulence. Journal of Fluid Mechanics, 2008, 596, 201-219.	3.4	27
72	Multiple Jets as PV Staircases: The Phillips Effect and the Resilience of Eddy-Transport Barriers. Journals of the Atmospheric Sciences, 2008, 65, 855-874.	1.7	276

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73	Unifying Scaling Theory for Vortex Dynamics in Two-Dimensional Turbulence. Physical Review Letters, 2008, 101, 094501.	7.8	49
74	Interaction between two quasi-geostrophic vortices of unequal potential vorticity. Journal of Fluid Mechanics, 2008, 597, 395-414.	3.4	20
75	Assessing the Numerical Accuracy of Complex Spherical Shallow-Water Flows. Monthly Weather Review, 2007, 135, 3876-3894.	1.4	17
76	Vortex Dipole Formation by Baroclinic Instability of Boundary Currents. Journal of Physical Oceanography, 2007, 37, 1661-1677.	1.7	18
77	Strong interactions between two corotating quasi-geostrophic vortices. Journal of Fluid Mechanics, 2007, 592, 117-133.	3.4	26
78	Revisiting Batchelor's theory of two-dimensional turbulence. Journal of Fluid Mechanics, 2007, 591, 379-391.	3.4	33
79	The persistence of balance in geophysical flows. Journal of Fluid Mechanics, 2007, 570, 365-383.	3.4	15
80	Bending and twisting instabilities of columnar elliptical vortices in a rotating strongly stratified fluid. Journal of Fluid Mechanics, 2006, 561, 73.	3.4	6
81	Instability of a shallow-water potential-vorticity front. Journal of Fluid Mechanics, 2006, 561, 237.	3.4	26
82	The stability of a quasi-geostrophic ellipsoidal vortex in a background shear flow. Journal of Fluid Mechanics, 2006, 560, 1.	3.4	14
83	Vanishing enstrophy dissipation in two-dimensional Navier–Stokes turbulence in the inviscid limit. Journal of Fluid Mechanics, 2006, 559, 107.	3.4	42
84	Spontaneous generation of inertia–gravity wave packets by balanced geophysical flows. Journal of Fluid Mechanics, 2006, 553, 107.	3.4	42
85	Impeded inverse energy transfer in the Charney–Hasegawa–Mima model of quasi-geostrophic flows. Journal of Fluid Mechanics, 2006, 551, 435.	3.4	11
86	The Diabatic Contour Advective Semi-Lagrangian Model. Monthly Weather Review, 2006, 134, 2503-2514.	1.4	12
87	Vortex–Vortex Interactions in the Winter Stratosphere. Journals of the Atmospheric Sciences, 2006, 63, 726-740.	1.7	15
88	Revisiting the Rossby–Haurwitz wave test case with contour advection. Journal of Computational Physics, 2006, 217, 473-484.	3.8	19
89	Large-scale dynamics in two-dimensional Euler and surface quasigeostrophic flows. Physics of Fluids, 2006, 18, 121703.	4.0	7
90	The stability of quasi-geostrophic ellipsoidal vortices. Journal of Fluid Mechanics, 2005, 536, 401-421.	3.4	19

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91	Quasi-geostrophic vortices in compressible atmospheres. Journal of Fluid Mechanics, 2005, 530, 305-325.	3.4	10
92	The critical merger distance between two co-rotating quasi-geostrophic vortices. Journal of Fluid Mechanics, 2005, 522, 357-381.	3.4	43
93	Downward Wave Propagation on the Polar Vortex. Journals of the Atmospheric Sciences, 2005, 62, 3382-3395.	1.7	5
94	Contour-advective semi-Lagrangian algorithms for many-layer primitive-equation models. Quarterly Journal of the Royal Meteorological Society, 2004, 130, 347-364.	2.7	26
95	Optimal potential vorticity balance of geophysical flows. Journal of Fluid Mechanics, 2004, 521, 343-352.	3.4	43
96	Destabilization of barotropic flows small-scale topography. Journal of Fluid Mechanics, 2004, 517, 359-374.	3.4	9
97	The quasi-geostrophic ellipsoidal vortex model. Journal of Fluid Mechanics, 2004, 505, 201-223.	3.4	42
98	Potential Vorticity and the Quasigeostrophic and Semigeostrophic MesoscaleVertical Velocity. Journal of Physical Oceanography, 2004, 34, 865-887.	1.7	27
99	Dynamic Potential Vorticity Initialization and the Diagnosis of Mesoscale Motion. Journal of Physical Oceanography, 2004, 34, 2761-2773.	1.7	6
100	Enhancement of Rossby Wave Breaking by Steep Potential Vorticity Gradients in the Winter Stratosphere. Journals of the Atmospheric Sciences, 2004, 61, 904-918.	1.7	28
101	The CASL algorithm for quasi-geostrophic flow in a cylinder. Journal of Computational Physics, 2003, 188, 232-251.	3.8	19
102	A balanced approach to modelling rotating stably stratified geophysical flows. Journal of Fluid Mechanics, 2003, 488, 123-150.	3.4	72
103	Vertical velocity in mesoscale geophysical flows. Journal of Fluid Mechanics, 2003, 483, 199-223.	3.4	68
104	The motion of a fluid ellipsoid in a general linear background flow. Journal of Fluid Mechanics, 2003, 474, 147-173.	3.4	27
105	The shape of vortices in quasi-geostrophic turbulence. Journal of Fluid Mechanics, 2003, 474, 175-192.	3.4	67
106	The merger of vertically offset quasi-geostrophic vortices. Journal of Fluid Mechanics, 2002, 469, 287-315.	3.4	56
107	An explicit potential-vorticity-conserving approach to modelling nonlinear internal gravity waves. Journal of Fluid Mechanics, 2002, 458, 75-101.	3.4	10
108	Vortex merger in rotating stratified flows. Journal of Fluid Mechanics, 2002, 455, 83-101.	3.4	42

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109	A high-resolution, three-dimensional model of Jupiter's Great Red Spot. Journal of Geophysical Research, 2001, 106, 5099-5105.	3.3	32
110	Hierarchies of Balance Conditions for thef-Plane Shallow-Water Equations. Journals of the Atmospheric Sciences, 2001, 58, 2411-2426.	1.7	59
111	A Numerical Investigation of the Stability of Isolated Shallow Water Vortices. Journal of Physical Oceanography, 2000, 30, 2562-2573.	1.7	48
112	The role of boundary conditions in the simulation of rotating, stratified turbulence. Geophysical and Astrophysical Fluid Dynamics, 2000, 92, 233-253.	1.2	9
113	Mixing in two-dimensional vortex interactions. Physics of Fluids, 2000, 12, 3285-3288.	4.0	8
114	The Contour-Advective Semi-Lagrangian Algorithm for the Shallow Water Equations. Monthly Weather Review, 1999, 127, 1551-1565.	1.4	57
115	The Dependence of Rossby Wave Breaking on the Vertical Structure of the Polar Vortex. Journals of the Atmospheric Sciences, 1999, 56, 2359-2375.	1.7	30
116	The three-dimensional vortical nature of atmospheric and oceanic turbulent flows. Physics of Fluids, 1999, 11, 1512-1520.	4.0	48
117	On the persistence of non-axisymmetric vortices in inviscid two-dimensional flows. Journal of Fluid Mechanics, 1998, 371, 141-155.	3.4	57
118	A contour-advective semi-lagrangian numerical algorithm for simulating fine-scale conservative dynamical fields. Quarterly Journal of the Royal Meteorological Society, 1997, 123, 1097-1130.	2.7	143
119	Introduction to "Contour Dynamics for the Euler Equations in Two Dimensions― Journal of Computational Physics, 1997, 135, 217-219.	3.8	6
120	The instability and breakdown of tall columnar vortices in a quasi-geostrophic fluid. Journal of Fluid Mechanics, 1996, 328, 129-160.	3.4	79
121	On the nature of vortex interactions and models in unforced nearlyâ€inviscid twoâ€dimensional turbulence. Physics of Fluids, 1996, 8, 1252-1256.	4.0	40
122	High gradient phenomena in twoâ€dimensional vortex interactions. Physics of Fluids, 1995, 7, 539-548.	4.0	37
123	A general theory for two-dimensional vortex interactions. Journal of Fluid Mechanics, 1995, 293, 269-303.	3.4	154
124	Vortex stripping and the erosion of coherent structures in twoâ€dimensional flows. Physics of Fluids, 1994, 6, 3954-3962.	4.0	121
125	Three-dimensional quasi-geostrophic contour dynamics, with an application to stratospheric vortex dynamics. Quarterly Journal of the Royal Meteorological Society, 1994, 120, 1267-1297.	2.7	65
126	A Comparison of the Contour Surgery and Pseudo-spectral Methods. Journal of Computational Physics, 1993, 104, 287-302.	3.8	51

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127	Vortex stripping and the generation of high vorticity gradients in two-dimensional flows. Flow, Turbulence and Combustion, 1993, 51, 445-455.	0.2	70
128	Vortex properties of twoâ€dimensional turbulence. Physics of Fluids A, Fluid Dynamics, 1993, 5, 984-997.	1.6	79
129	The dynamics of long frontal waves in the shallowâ€water equations. Physics of Fluids A, Fluid Dynamics, 1993, 5, 1089-1091.	1.6	44
130	Wave and vortex dynamics on the surface of a sphere. Journal of Fluid Mechanics, 1993, 255, 35.	3.4	99
131	A fast contour dynamics method for manyâ€vortex calculations in twoâ€dimensional flows. Physics of Fluids A, Fluid Dynamics, 1993, 5, 173-186.	1.6	30
132	Modeling Oceanic and Atmospheric Vortices. Physics Today, 1993, 46, 44-51.	0.3	45
133	Quantification of the inelastic interaction of unequal vortices in twoâ€dimensional vortex dynamics. Physics of Fluids A, Fluid Dynamics, 1992, 4, 1737-1744.	1.6	188
134	The roll-up of vorticity strips on the surface of a sphere. Journal of Fluid Mechanics, 1992, 234, 47.	3.4	45
135	Generalized helical Beltrami flows in hydrodynamics and magnetohydrodynamics. Journal of Fluid Mechanics, 1991, 222, 525.	3.4	54
136	The elliptical model of twoâ€dimensional vortex dynamics. II: Disturbance equations. Physics of Fluids A, Fluid Dynamics, 1991, 3, 855-869.	1.6	30
137	The stability of filamentary vorticity in two-dimensional geophysical vortex-dynamics models. Journal of Fluid Mechanics, 1991, 231, 575-598.	3.4	44
138	The stability of a two-dimensional vorticity filament under uniform strain. Journal of Fluid Mechanics, 1991, 230, 647-665.	3.4	106
139	The elliptical model of twoâ€dimensional vortex dynamics. I: The basic state. Physics of Fluids A, Fluid Dynamics, 1991, 3, 845-854.	1.6	50
140	A new, but flawed, numerical method for vortex patch evolution in two dimensions. Journal of Computational Physics, 1991, 93, 481-484.	3.8	3
141	Does contour dynamics go singular?. Physics of Fluids A, Fluid Dynamics, 1990, 2, 748-753.	1.6	32
142	The stability of elliptical vortices in an external straining flow. Journal of Fluid Mechanics, 1990, 210, 223-261.	3.4	83
143	Contour dynamics and contour surgery: Numerical algorithms for extended, high-resolution modelling of vortex dynamics in two-dimensional, inviscid, incompressible flows. Computer Physics Reports, 1989, 10, 77-146.	2.2	277
144	On the stabilization of a two-dimensional vortex strip by adverse shear. Journal of Fluid Mechanics, 1989, 206, 193-221.	3.4	86

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145	Contour dynamics/surgery on the sphere. Journal of Computational Physics, 1988, 79, 477-483.	3.8	32
146	Contour surgery: A topological reconnection scheme for extended integrations using contour dynamics. Journal of Computational Physics, 1988, 77, 240-266.	3.8	229
147	The repeated filamentation of two-dimensional vorticity interfaces. Journal of Fluid Mechanics, 1988, 194, 511.	3.4	85
148	Nonlinear stability bounds for inviscid, two-dimensional, parallel or circular flows with monotonic vorticity, and the analogous three-dimensional quasi-geostrophic flows. Journal of Fluid Mechanics, 1988, 191, 575.	3.4	86
149	The nonlinear evolution of rotating configurations of uniform vorticity. Journal of Fluid Mechanics, 1986, 172, 157.	3.4	142
150	The stability and energetics of corotating uniform vortices. Journal of Fluid Mechanics, 1985, 157, 95-134.	3.4	183