Ian G Main

List of Publications by Year
in descending order

161 papers	8,054 citations	50276 46 h-index	53230 85 g-index
171 all docs	171 docs citations	171 times ranked	4644 citing authors

#	Article	IF	Citations
1	Scaling of fracture systems in geological media. Reviews of Geophysics, 2001, 39, 347-383.	23.0	1,047
2	Assessing Damage of Reinforced Concrete Beam Using â€œ b â€Š-valueâ€•Analysis of Acoustic Emission Signals. Journal of Materials in Civil Engineering, 2003, 15, 280-286.	2.9	396
3	Statistical physics, seismogenesis, and seismic hazard. Reviews of Geophysics, 1996, 34, 433-462.	23.0	370
4	Timeâ€dependent brittle creep in Darley Dale sandstone. Journal of Geophysical Research, 2009, 114, .	3.3	288
5	Brittle creep in basalt and its application to time-dependent volcano deformation. Earth and Planetary Science Letters, 2011, 307, 71-82.	4.4	206
6	A damage mechanics model for power-law creep and earthquake aftershock and foreshock sequences. Geophysical Journal International, 2000, 142, 151-161.	2.4	198
7	Role of pore fluids in the generation of seismic precursors to shear fracture. Nature, 1992, 359, 228-230.	27.8	195
8	Sequential growth of deformation bands in the laboratory. Journal of Structural Geology, 2000, 22, 25-42.	2.3	191
9	A reinterpretation of the precursory seismic b-value anomaly from fracture mechanics. Geophysical Journal International, 1989, 96, 131-138.	2.4	180
10	OPERATIONAL EARTHQUAKE FORECASTING. State of Knowledge and Guidelines for Utilization. Annals of Geophysics, 2011, 54, .	1.0	175
11	Temporal variations in seismicity during quasi-static and dynamic rock failure. Tectonophysics, 1990, 175, 249-268.	2.2	167
12	Non-universal scaling of fracture length and opening displacement. Nature, 1994, 367, 160-162.	27.8	134
13	Applicability of time-to-failure analysis to accelerated strain before earthquakes and volcanic eruptions. Geophysical Journal International, 1999, 139, F1-F6.	2.4	125
14	Comparison of polarity and moment tensor inversion methods for source analysis of acoustic emission data. International Journal of Rock Mechanics and Minings Sciences, 2010, 47, 161-169.	5.8	98
15	Numerical simulation of wave propagation in media with discrete distributions of fractures: effects of fracture sizes and spatial distributions. Geophysical Journal International, 2003, 152, 649-668.	2.4	95
16	Heterogeneity: The key to failure forecasting. Scientific Reports, 2015, 5, 13259.	3.3	94
17	One slope or two? Detecting statistically significant breaks of slope in geophysical data, with application to fracture scaling relationships. Geophysical Research Letters, 1999, 26, 2801-2804.	4.0	92
18	Application of a modified Griffith criterion to the evolution of fractal damage during compressional rock failure. Geophysical Journal International, 1993, 115, 367-380.	2.4	91

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19	Origin and Nonuniversality of the Earthquake Interevent Time Distribution. Physical Review Letters, 2009, 102, 168501.	7.8	90
20	A comparison of seismic and structural measurements of scaling exponents during tensile subcritical crack growth. Journal of Structural Geology, 1993, 15, 1485-1495.	2.3	89
21	Predicting the ultimate bending capacity of concrete beams from the â€œrelaxation ratioâ€•analysis of AE signals. Construction and Building Materials, 2005, 19, 746-754.	7.2	88
22	Apparent Breaks in Scaling in the Earthquake Cumulative Frequency-Magnitude Distribution: Fact or Artifact?. Bulletin of the Seismological Society of America, 2000, 90, 86-97.	2.3	87
23	Earthquakes as critical phenomena: Implications for probabilistic seismic hazard analysis. Bulletin of the Seismological Society of America, 1995, 85, 1299-1308.	2.3	86
24	Forecasting volcanic eruptions and other material failure phenomena: An evaluation of the failure forecast method. Geophysical Research Letters, 2011, 38, .	4.0	77
25	Are volcanic seismic b -values high, and if so when?. Journal of Volcanology and Geothermal Research, 2015, 308, 127-141.	2.1	76
26	Temporal variations in seismic event rate and b-values from stress corrosion constitutive laws. Tectonophysics, 1992, 211, 233-246.	2.2	75
27	Influence of confining pressure on the mechanical and structural evolution of laboratory deformation bands. Geophysical Research Letters, 2002, 29, 49-1-49-4.	4.0	73
28	Spatial variations of the fractal properties of seismicity in the Anatolian fault zones. Tectonophysics, 1996, 257, 189-202.	2.2	72
29	Anomalous stress diffusion in earthquake triggering: Correlation length, time dependence, and directionality. Journal of Geophysical Research, 2003, 108, .	3.3	71
30	Scattering attenuation and the fractal geometry of fracture systems. Pure and Applied Geophysics, 1990, 133, 283-304.	1.9	70
31	Stress corrosion constitutive laws as a possible mechanism of intermediate-term and short-term seismic quiescence. Geophysical Journal International, 2007, 107, 363-372.	2.4	70
32	Shear-wave anisotropy: spatial and temporal variations in time delays at Parkfield, Central California. Geophysical Journal International, 1997, 130, 771-785.	2.4	67
33	A constitutive law for low-temperature creep of water-saturated sandstones. Journal of Geophysical Research, 2001, 106, 21811-21826.	3.3	67
34	Challenges for forecasting based on accelerating rates of earthquakes at volcanoes and laboratory analogues. Geophysical Journal International, 2011, 185, 718-723.	2.4	63
35	Damage mechanics with long-range interactions: correlation between the seismicb-value and the fractal two-point correlation dimension. Geophysical Journal International, 1992, 111, 531-541.	2.4	62
36	Long odds on prediction. Nature, 1997, 385, 19-20.	27.8	62

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37	Rupture Cascades in a Discrete Element Model of a Porous Sedimentary Rock. Physical Review Letters, 2014, 112, 065501.	7.8	62
38	A modified Griffith criterion for the evolution of damage with a fractal distribution of crack lengths: application to seismic event rates and b-values. Geophysical Journal International, 2007, 107, 353-362.	2.4	59
39	Fault sealing during deformation-band growth in porous sandstone. Geology, 2000, 28, 1131.	4.4	55
40	Entropy, energy, and proximity to criticality in global earthquake populations. Geophysical Research Letters, 2002, 29, 25-1.	4.0	55
41	Hydromechanical Behavior of Fractured Rocks. International Geophysics, 2004, , 363-421.	0.6	55
42	Approach to failure in porous granular materials under compression. Physical Review E, 2013, 88, 062207.	2.1	55
43	The limits of predictability of volcanic eruptions from accelerating rates of earthquakes. Geophysical Journal International, 2013, 194, 1541-1553.	2.4	53
44	Seismicity in north-eastern Brazil: fractal clustering and the evolution of thebvalue. Geophysical Journal International, 1994, 116, 217-226.	2.4	51
45	Relating flow channelling to tracer dispersion in heterogeneous networks. Advances in Water Resources, 2004, 27, 843-855.	3.8	49
46	Strain rate and temperature dependence of Omori law scaling constants of AE data: Implications for earthquake foreshock-aftershock sequences. Geophysical Research Letters, 2004, 31, .	4.0	48
47	Acceleration and localization of subcritical crack growth in a natural composite material. Physical Review E, 2014, 90, 052401.	2.1	47
48	Dual simulations of fluid flow and seismic wave propagation in a fractured network: effects of pore pressure on seismic signature. Geophysical Journal International, 2006, 166, 825-838.	2.4	44
49	Statistical analysis of daily seismic event rate as a precursor to volcanic eruptions. Geophysical Research Letters, 2003, 30, .	4.0	43
50	Classification of earthquake precursors from a fracture mechanics model. Tectonophysics, 1989, 167, 273-283.	2.2	42
51	A characteristic earthquake model of the seismicity preceding the eruption of Mount St. Helens on 18 May 1980. Physics of the Earth and Planetary Interiors, 1987, 49, 283-293.	1.9	40
52	Is the reliable prediction of individual earthquakes a realistic scientific goal?. Nature, 0, , .	27.8	40
53	Experimental constraints on the diagenetic self-sealing capacity of faults in high porosity rocks. Earth and Planetary Science Letters, 2000, 183, 187-199.	4.4	39
54	Pâ€wave attenuation anisotropy in fractured media: A seismic physical modelling study. Geophysical Prospecting, 2013, 61, 420-433.	1.9	39

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55	Does an inter-flaw length control the accuracy of rupture forecasting in geological materials?. Earth and Planetary Science Letters, 2017, 475, 181-189.	4.4	39
56	Entropy production and self-organized (sub)criticality in earthquake dynamics. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 131-144.	3.4	38
57	Predicting mining collapse: Superjerks and the appearance of record-breaking events in coal as collapse precursors. Physical Review E, 2017, 96, 023004.	2.1	38
58	Long-term earthquake recurrence constrained by tectonic seismic moment release rates. Bulletin of the Seismological Society of America, 1986, 76, 297-304.	2.3	38
59	The evolution of seismicity at Parkfield: observation, experiment and a fracture-mechanical interpretation. Journal of Structural Geology, 1992, 14, 905-913.	2.3	37
60	Numerical simulation of wave propagation in 2-D fractured media: scattering attenuation at different stages of the growth of a fracture population. Geophysical Journal International, 2007, 171, 865-880.	2.4	37
61	Statistical evaluation of characteristic earthquakes in the frequencyâ€magnitude distributions of Sumatra and other subduction zone regions. Geophysical Research Letters, 2009, 36, .	4.0	37
62	A Poisson model for earthquake frequency uncertainties in seismic hazard analysis. Geophysical Research Letters, 2008, 35, .	4.0	36
63	A Poisson model for identifying characteristic size effects in frequency data: Application to frequency-size distributions for global earthquakes, â€œstarquakesâ€, and fault lengths. Journal of Geophysical Research, 2001, 106, 13473-13484.	3.3	35
64	3-D structure of the lithosphere in the Aegean region. Geophysical Journal International, 1990, 102, 219-229.	2.4	34
65	Effect of the Sumatran mega-earthquake on the global magnitude cut-off and event rate. Nature Geoscience, 2008, 1, 142-142.	12.9	34
66	Seismotectonics and the earthquake frequency-magnitude distribution in the Aegean area. Geophysical Journal International, 1989, 98, 575-586.	2.4	33
67	Earthquake scaling. Nature, 1992, 357, 27-28.	27.8	33
68	Temporal variations in the fractal properties of seismicity in the North Anatolian Fault Zone between 31ï¿½E and 41ï¿½E. Pure and Applied Geophysics, 1996, 147, 147-159.	1.9	33
69	A statistical evaluation of a â€˜stress-forecastâ€™ earthquake. Geophysical Journal International, 2004, 157, 187-193.	2.4	33
70	Catastrophic Failure: How and When? Insights From 4â€D In Situ Xâ€ray Microtomography. Journal of Geophysical Research: Solid Earth, 2020, 125, e2020JB019642.	3.4	33
71	Microseismic properties of a homogeneous sandstone during fault nucleation and frictional sliding. Geophysical Journal International, 1994, 119, 219-230.	2.4	32
72	Constraints on the frequency-magnitude relation and maximum magnitudes in the UK from observed seismicity and glacio-isostatic recovery rates. Geophysical Journal International, 2002, 137, 535-550.	2.4	32

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73	The nucleation and rupture process of the 1981 Gulf of Corinth earthquakes from deconvolved broad-band data. Geophysical Journal International, 1995, 120, 393-405.	2.4	31
74	Statistical physics of earthquakes: Comparison of distribution exponents for source area and potential energy and the dynamic emergence of log-periodic energy quanta. Journal of Geophysical Research, 2000, 105, 6105-6126.	3.3	31
75	Correlation of microseismic and chemical properties of brittle deformation in Locharbriggs sandstone. Journal of Geophysical Research, 2003, 108, .	3.3	31
76	Influence of fractal flaw distributions on rock deformation in the brittle field. Geological Society Special Publication, 1990, 54, 81-96.	1.3	30
77	Numerical simulation of seismicity due to fluid injection in a brittle poroelastic medium. Geophysical Journal International, 1999, 139, 263-272.	2.4	30
78	Maximum earthquake magnitudes in the Aegean area constrained by tectonic moment release rates. Geophysical Journal International, 2003, 152, 94-112.	2.4	29
79	Temporal variations of the fractal properties of seismicity in the western part of the north Anatolian fault zone: possible artifacts due to improvements in station coverage. Nonlinear Processes in Geophysics, 1995, 2, 147-157.	1.3	27
80	Strength characteristics and shear acoustic anisotropy of rock core subjected to true triaxial compression. International Journal of Rock Mechanics and Mining Sciences, 1995, 32, 189-200.	0.0	26
81	A simple fractureâ€mechanical model for the evolution of seismicity. Geophysical Research Letters, 1992, 19, 365-368.	4.0	25
82	Convergence of the frequencyâ€size distribution of global earthquakes. Geophysical Research Letters, 2013, 40, 2585-2589.	4.0	25
83	A fracture-mechanical cellular automaton model of seismicity. Pure and Applied Geophysics, 1994, 142, 545-565.	1.9	24
84	One-dimensional fluid diffusion induced by constant-rate flow injection: Theoretical analysis and application to the determination of fluid permeability and specific storage of a cored rock sample. Journal of Geophysical Research, 2004, 109, .	3.3	24
85	Physical links between crustal deformation, seismic moment and seismic hazard for regions of varying seismicity. Geophysical Journal International, 1984, 79, 469-488.	2.4	23
86	The thermal evolution of sedimentary basins and its effect on the maturation of hydrocarbons. Geophysical Journal International, 1999, 139, 248-260.	2.4	23
87	The dilatancyâ€“diffusion hypothesis and earthquake predictability. Geological Society Special Publication, 2012, 367, 215-230.	1.3	23
88	Application of complementary methods for more robust characterization of sandstone cores. Marine and Petroleum Geology, 2009, 26, 39-56.	3.3	22
89	Volcanic Eruption Forecasts From Accelerating Rates of Drumbeat Longâ€Period Earthquakes. Geophysical Research Letters, 2018, 45, 1339-1348.	4.0	22
90	Masking of earthquake triggering behavior by a high background rate and implications for epidemic-type aftershock sequence inversions. Journal of Geophysical Research, 2011, 116, .	3.3	21

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91	Fault gouge diagenesis at shallow burial depth: Solutionâ€“precipitation reactions in well-sorted and poorly sorted powders of crushed sandstone. Earth and Planetary Science Letters, 2006, 243, 607-614.	4.4	20
92	Experimental constraints on the mechanical and hydraulic properties of deformation bands in porous sandstones: a review. Geological Society Special Publication, 2001, 186, 43-63.	1.3	18
93	Maximum entropy production and earthquake dynamics. Geophysical Research Letters, 2008, 35, .	4.0	18
94	Regional variations in the diffusion of triggered seismicity. Journal of Geophysical Research, 2005, 110, .	3.3	17
95	On the threshold of flow in a tight natural rock. Geophysical Research Letters, 2012, 39, .	4.0	17
96	Mode switching in volcanic seismicity: El Hierro 2011â€“2013. Geophysical Research Letters, 2016, 43, 4288-4296.	4.0	17
97	Coda Wave Interferometry for Accurate Simultaneous Monitoring of Velocity and Acoustic Source Locations in Experimental Rock Physics. Journal of Geophysical Research: Solid Earth, 2019, 124, 5629-5655.	3.4	17
98	Momentâ€”magnitude scaling in the Aegean area. Tectonophysics, 1990, 179, 273-285.	2.2	16
99	On the resolving power of tomographic images in the Aegean area. Geophysical Journal International, 1991, 107, 197-203.	2.4	16
100	Comment on â€œRelationship between accelerating seismicity and quiescence, two precursors to large earthquakesâ€•by Arnaud Mignan and Rita Di Giovambattista. Geophysical Research Letters, 2009, 36, .	4.0	16
101	Induced seismicity at the UK â€˜hot dry rockâ€™ test site for geothermal energy production. Geophysical Journal International, 2018, 214, 331-344.	2.4	16
102	A lattice BGK model for the diffusion of pore fluid pressure, including anisotropy, heterogeneity, and gravity effects. Geophysical Research Letters, 1996, 23, 13-16.	4.0	15
103	Influence of open and sealed fractures on fluid flow and water saturation in sandstone cores using Magnetic Resonance Imaging. Geophysical Journal International, 2001, 147, 263-271.	2.4	15
104	Loading rate dependence of permeability evolution in porous aeolian sandstones. Journal of Geophysical Research, 2004, 109, .	3.3	15
105	Probabilistic identification of earthquake clusters using rescaled nearest neighbour distance networks. Geophysical Journal International, 2019, 217, 487-503.	2.4	15
106	A cellular automaton fracture model: the influence of heterogeneity in the failure process. Journal of Structural Geology, 1996, 18, 343-348.	2.3	14
107	Hydromechanical behaviour of fine-grained calcilutite and fault gouge from the Aigion Fault Zone, Greece. Comptes Rendus - Geoscience, 2004, 336, 445-454.	1.2	13
108	Long-range, critical-point dynamics in oil field flow rate data. Geophysical Research Letters, 2006, 33, n/a-n/a.	4.0	12

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109	Extreme events and predictability of catastrophic failure in composite materials and in the Earth. European Physical Journal: Special Topics, 2012, 205, 183-197.	2.6	12
110	Time evolution of damage due to environmentally assisted aging in a fiber bundle model. Physical Review E, 2013, 88, 032802.	2.1	12
111	Fragmentation and shear band formation by slow compression of brittle porous media. Physical Review E, 2016, 94, 053003.	2.1	12
112	Self-organised criticality and fluid-rock interactions in the brittle field. Pure and Applied Geophysics, 1994, 142, 529-543.	1.9	11
113	Observation and modeling of the suction pump effect during rapid dilatant slip. Geophysical Research Letters, 2003, 30, n/a-n/a.	4.0	11
114	A hand on the aftershock trigger. Nature, 2006, 441, 704-705.	27.8	11
115	The Statistical Reservoir Model: calibrating faults and fractures, and predicting reservoir response to water flood. Geological Society Special Publication, 2007, 292, 469-482.	1.3	11
116	Quantifying uncertainty in mean earthquake interevent times for a finite sample. Journal of Geophysical Research, 2009, 114, .	3.3	11
117	Record-breaking events during the compressive failure of porous materials. Physical Review E, 2016, 93, 033006.	2.1	11
118	Digital rock physics in four dimensions: simulating cementation and its effect on seismic velocity. Geophysical Journal International, 2020, 222, 1606-1619.	2.4	11
119	Coupled geomechanicsâ€“flow modelling at and below a critical stress state used to investigate common statistical properties of field production data. Geological Society Special Publication, 2007, 292, 453-468.	1.3	10
120	Low-cost Monitoring of Inter-well Reservoir Communication Paths Through Correlations in Well Rate Fluctuations: Case Studies from Mature Fields in the North Sea. , 2010, , .		10
121	Earthquake clustering in modern seismicity and its relationship with strong historical earthquakes around Beijing, China. Geophysical Journal International, 2017, 211, 1005-1018.	2.4	10
122	Dataâ€Driven Optimization of Seismicity Models Using Diverse Data Sets: Generation, Evaluation, and Ranking Using Inlabru. Journal of Geophysical Research: Solid Earth, 2020, 125, e2020JB020226.	3.4	10
123	Perceptible earthquakes in the broad Aegean area. Tectonophysics, 2003, 371, 175-186.	2.2	9
124	Complexity and Extreme Events in Geosciences: An Overview. Geophysical Monograph Series, 2012, , 1-16.	0.1	9
125	Statistical Modeling of the 1997-1998 Colfiorito Earthquake Sequence: Locating a Stationary Solution within Parameter Uncertainty. Bulletin of the Seismological Society of America, 2014, 104, 885-897.	2.3	9
126	Modeling seismic wave propagation during fluid injection in a fractured network: Effects of pore fluid pressure on time-lapse seismic signatures. The Leading Edge, 2004, 23, 778-783.	0.7	8

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127	Laboratory measurement of hydrodynamic saline dispersion within a micro-fracture network induced in granite. Earth and Planetary Science Letters, 2007, 260, 407-418.	4.4	8
128	Impact of recycling and lateral sediment input on grain size fining trendsâ€"Implications for reconstructing tectonic and climate forcings in ancient sedimentary systems. Basin Research, 2019, 31, 866-891.	2.7	8
129	The use of the CAPE Environment in the simulation of rock fracturing. Concurrency and Computation: Practice and Experience, 1991, 3, 687-698.	0.5	7
130	Cell scale self-organisation in the OFC model for earthquake dynamics. European Physical Journal B, 2008, 64, 139-146.	1.5	7
131	Effect of disorder on the spatial structure of damage in slowly compressed porous rocks. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2019, 377, 20170393.	3.4	7
132	Seismic Risk and the North Sea. , 1983, , 347-364.		7
133	Quasi-static modelling of stress histories during the earthquake cycle: precursory seismic and aseismic stress release. Geophysical Journal International, 1990, 102, 195-203.	2.4	6
134	Emergent patterns of localized damage as a precursor to catastrophic failure in a random fuse network. Physical Review E, 2013, 87, 042811.	2.1	6
135	Model selection and uncertainty in earthquake hazard analysis. , 2011, , 735-743.		6
136	Fault sealing during deformation-band growth in porous sandstone. Geology, 2000, 28, 1131-1134.	4.4	5
137	A two-layer attenuation model for the upper mantle at short periods. Geophysical Research Letters, 1995, 22, 2561-2564.	4.0	4
138	Reply to â€œComment on â€˜Entropy, energy, and proximity to criticality in global earthquake populationsâ€™â€• by Chien-chih Chen and Chun-Ling Chang. Geophysical Research Letters, 2004, 31, n/a-n/a.	4.0	4
139	Effects of CO2 on P-wave attenuation in porous media with micro-cracks: A synthetic modelling study. Journal of Applied Geophysics, 2016, 135, 309-316.	2.1	4
140	Volcanic Eruptions, Real-Time Forecasting of. , 2021, , 1-16.		4
141	Source mechanisms of recent earthquakes in the Hellenic arc from broadband data. Tectonophysics, 1991, 200, 233-248.	2.2	3
142	Three-dimensional structure and constraints on the nature of the coupled subduction-spreading process in the Aegean area. Tectonophysics, 1992, 201, 199-207.	2.2	3
143	Little Earthquakes in the Lab. Physics Magazine, 2013, 6, .	0.1	3
144	Damage growth in fibre bundle models with localized load sharing and environmentally-assisted ageing. Journal of Physics: Conference Series, 2013, 410, 012064.	0.4	3

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145	eScience Gateway Stimulating Collaboration in Rock Physics and Volcanology. , 2014, , .		3
146	Geological repositories: scientific priorities and potential high-technology transfer from the space and physics sectors. Mineralogical Magazine, 2015, 79, 1651-1664.	1.4	3
147	Detection of change points in underlying earthquake rates, with application to global mega-earthquakes. Geophysical Journal International, 2015, , .	2.4	3
148	FAULTS IN FOCUS. Terra Nova, 1995, 7, 4-6.	2.1	2
149	Seismic attenuation in fractured porous media: insights from a hybrid numerical and analytical model. Journal of Geophysics and Engineering, 2015, 12, 210-219.	1.4	2
150	Source parameters of earthquakes in the Aleutian Islands subduction zone. Geophysical Journal International, 1995, 120, 419-432.	2.4	1
151	Frontiers of Seismology. Astronomy and Geophysics, 2009, 50, 4.31-4.34.	0.2	1
152	Crackling Noise in Digital and Real Rocksâ€“Implications for Forecasting Catastrophic Failure in Porous Granular Media. Understanding Complex Systems, 2017, , 77-97.	0.6	1
153	Volcanic Eruptions, Real-Time Forecasting of. , 2015, , 3892-3906.		1
154	Scale in structure and dynamics. Astronomy and Geophysics, 2006, 47, 6.24-6.25.	0.2	0
155	Correlation Between Microstructure and Flow Behavior in Porous Sandstones. Petroleum Science and Technology, 2009, 27, 511-529.	1.5	0
156	Scale-model seismicityâ€”Taking the rough with the smooth. Geology, 2017, 45, 859-860.	4.4	0
157	Frontiers of seismology. Astronomy and Geophysics, 2020, 61, 4.29-4.35.	0.2	0
158			