Mathias Rotach

List of Publications by Year
in descending order

#	Article	IF	Citations
1	Cold-Air Pool Processes in the Inn Valley During FÃ¶hn: A Comparison of Four Cases During the PIANO Campaign. Boundary-Layer Meteorology, 2022, 182, 335-362.	2.3	7
2	Numerically consistent budgets of potential temperature, momentum, and moisture in Cartesian coordinates: application to the WRF model. Geoscientific Model Development, 2022, 15, 669-681.	3.6	3
3	A Collaborative Effort to Better Understand, Measure, and Model Atmospheric Exchange Processes over Mountains. Bulletin of the American Meteorological Society, 2022, 103, E1282-E1295.	3.3	7
4	Influence of grid resolution of largeâ€eddy simulations on foehnâ€cold pool interaction. Quarterly Journal of the Royal Meteorological Society, 2022, 148, 1840-1863.	2.7	5
5	Energy and mass exchange at an urban site in mountainous terrain â€“ the Alpine city of Innsbruck. Atmospheric Chemistry and Physics, 2022, 22, 6559-6593.	4.9	4
6	Largeâ€eddy simulation of foehnâ€“cold pool interactions in the InnÂ Valley during PIANO IOPâ€‰2. Quarterly Journal of the Royal Meteorological Society, 2021, 147, 944-982.	2.7	17
7	CROSSINN: A Field Experiment to Study the Three-Dimensional Flow Structure in the Inn Valley, Austria. Bulletin of the American Meteorological Society, 2021, 102, E38-E60.	3.3	10
8	Transport and Exchange Processes in the Atmosphere over Mountainous Terrain: Perspectives and Challenges for Observational and Modelling Systems, from Local to Climate Scales. Atmosphere, 2021, 12, 199.	2.3	2
9	A process-based evaluation of the Intermediate Complexity Atmospheric Research Model (ICAR) 1.0.1. Geoscientific Model Development, 2021, 14, 1657-1680.	3.6	5
10	Spatial and temporal variations in nearâ€surface energy fluxes in an Alpine valley under synoptically undisturbed and clearâ€sky conditions. Quarterly Journal of the Royal Meteorological Society, 2021, 147, 2173-2196.	2.7	6
11	Evaluation of a stochastic weather generator in simulating univariate and multivariate climate extremes in different climate zones across Europe. Meteorologische Zeitschrift, 2021, 30, 127-151.	1.0	2
12	Modeling spatially distributed snow instability at a regional scale using Alpine3D. Journal of Glaciology, 2021, 67, 1147-1162.	2.2	7
13	Crossâ€valley vortices in the Inn valley, Austria: Structure, evolution and governing force imbalances. Quarterly Journal of the Royal Meteorological Society, 2021, 147, 3835-3861.	2.7	3
14	Parametric gridded weather generator for use in present and future climates: focus on spatial temperature characteristics. Theoretical and Applied Climatology, 2020, 139, 1031-1044.	2.8	6
15	Commentaries on Top-Cited Boundary-Layer Meteorology Articles. Boundary-Layer Meteorology, 2020, 177, 169-188.	2.3	3
16	Estimating Ensemble Flood Forecastsâ€™ Uncertainty: A Novel â€œPeak-Boxâ€•Approach for Detecting Multiple Peak-Flow Events. Atmosphere, 2020, 11, 2.	2.3	3
17	Atmospheric Pollutant Dispersion over Complex Terrain: Challenges and Needs for Improving Air Quality Measurements and Modeling. Atmosphere, 2020, 11, 646.	2.3	41
18	Foehnâ€“cold pool interactions in the Inn Valley during PIANO IOP2. Quarterly Journal of the Royal Meteorological Society, 2020, 146, 1232-1263.	2.7	19

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19	Studying Urban Climate and Air Quality in the Alps: The Innsbruck Atmospheric Observatory. Bulletin of the American Meteorological Society, 2020, 101, E488-E507.	3.3	17
20	Multi-scale transport and exchange processes in the atmosphere over mountains. , 2020, , .		15
21	Sensitivity of modeled snow stability data to meteorological input uncertainty. Natural Hazards and Earth System Sciences, 2020, 20, 2873-2888.	3.6	8
22	Air Quality of the Urban Alps: Innsbruckâ€™s new observatory. Bulletin of the American Meteorological Society, 2020, 101, 492-498.	3.3	0
23	Assessing the added value of the Intermediate Complexity Atmospheric Research (ICAR) model for precipitation in complex topography. Hydrology and Earth System Sciences, 2019, 23, 2715-2734.	4.9	8
24	A Method to Identify Synoptically Undisturbed, Clear-Sky Conditions for Valley-Wind Analysis. Boundary-Layer Meteorology, 2019, 173, 435-450.	2.3	13
25	Subsiding shells and the distribution of up- and downdraughts in warm cumulus clouds over land. Atmospheric Chemistry and Physics, 2019, 19, 9769-9786.	4.9	4
26	A New Horizontal Length Scale for a Three-Dimensional Turbulence Parameterization in Mesoscale Atmospheric Modeling over Highly Complex Terrain. Journal of Applied Meteorology and Climatology, 2019, 58, 2087-2102.	1.5	14
27	Scaling, Anisotropy, and Complexity in Nearâ€Surface Atmospheric Turbulence. Journal of Geophysical Research D: Atmospheres, 2019, 124, 1428-1448.	3.3	33
28	Validating modeled critical crack length for crack propagation in the snow cover model SNOWPACK. Cryosphere, 2019, 13, 3353-3366.	3.9	13
29	The Impact of Three-Dimensional Effects on the Simulation of Turbulence Kinetic Energy in a Major Alpine Valley. Boundary-Layer Meteorology, 2018, 168, 1-27.	2.3	51
30	Turbulence kinetic energy budget in the stable boundary layer over a heterogeneous surface. Quarterly Journal of the Royal Meteorological Society, 2018, 144, 1045-1062.	2.7	11
31	Scalar-Flux Similarity in the Layer Near the Surface Over Mountainous Terrain. Boundary-Layer Meteorology, 2018, 169, 11-46.	2.3	32
32	Current Challenges in Understanding and Predicting Transport and Exchange in the Atmosphere over Mountainous Terrain. Atmosphere, 2018, 9, 276.	2.3	67
33	Exchange Processes in the Atmospheric Boundary Layer Over Mountainous Terrain. Atmosphere, 2018, 9, 102.	2.3	131
34	Comment on: â€œCorrections to the Mathematical Formulation of a Backwards Lagrangian Particle Dispersion Modelâ€•by Gibson and Sailor (2012: Boundary-Layer Meteorology 145, 399â€"406). Boundary-Layer Meteorology, 2018, 166, 153-160.	2.3	1
35	Developing a Research Strategy to Better Understand, Observe, and Simulate Urban Atmospheric Processes at Kilometer to Subkilometer Scales. Bulletin of the American Meteorological Society, 2017, 98, ES261-ES264.	3.3	40
36	Toward Generalizing the Impact of Surface Heating, Stratification, and Terrain Geometry on the Daytime Heat Export from an Idealized Valley. Journal of Applied Meteorology and Climatology, 2017, 56, 2711-2727.	1.5	9

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37	Numerical ragweed pollen forecasts using different source maps: a comparison for France. International Journal of Biometeorology, 2017, 61, 23-33.	3.0	28
38	Investigating Exchange Processes over Complex Topography: The Innsbruck Box (i-Box). Bulletin of the American Meteorological Society, 2017, 98, 787-805.	3.3	49
39	Reasons for the Extremely High-Ranging Planetary Boundary Layer over the Western Tibetan Plateau in Winter. Journals of the Atmospheric Sciences, 2016, 73, 2021-2038.	1.7	45
40	On the Measurement of Turbulence Over Complex Mountainous Terrain. Boundary-Layer Meteorology, 2016, 159, 97-121.	2.3	87
41	Evaluation of local similarity theory in the wintertime nocturnal boundary layer over heterogeneous surface. Agricultural and Forest Meteorology, 2016, 228-229, 164-179.	4.8	27
42	Current challenges for numerical weather prediction in complex terrain: Topography representation and parameterizations. , 2016, , .		15
43	Quantifying horizontal and vertical tracer mass fluxes in an idealized valley during daytime. Atmospheric Chemistry and Physics, 2016, 16, 13049-13066.	4.9	27
44	The impact of valley geometry on daytime thermally driven flows and vertical transport processes. Quarterly Journal of the Royal Meteorological Society, 2015, 141, 1780-1794.	2.7	54
45	Cool city mornings by urban heat. Environmental Research Letters, 2015, 10, 114022.	5.2	55
46	Influence of along-valley terrain heterogeneity on exchange processes over idealized valleys. Atmospheric Chemistry and Physics, 2015, 15, 6589-6603.	4.9	25
47	Accuracy of retrieving temperature and humidity profiles by ground-based microwave radiometry in truly complex terrain. Atmospheric Measurement Techniques, 2015, 8, 3355-3367.	3.1	27
48	A simple two-dimensional parameterisation for Flux Footprint Prediction (FFP). Geoscientific Model Development, 2015, 8, 3695-3713.	3.6	579
49	The Impact of the Temperature Inversion Breakup on the Exchange of Heat and Mass in an Idealized Valley: Sensitivity to the Radiative Forcing. Journal of Applied Meteorology and Climatology, 2015, 54, 2199-2216.	1.5	31
50	Papers from the DACHÂ2013 conference at Innsbruck, Austria. Meteorologische Zeitschrift, 2014, 23, 191-192.	1.0	0
51	The Impact of Horizontal Model Grid Resolution on the Boundary Layer Structure over an Idealized Valley. Monthly Weather Review, 2014, 142, 3446-3465.	1.4	46
52	The World is Not Flat: Implications for the Global Carbon Balance. Bulletin of the American Meteorological Society, 2014, 95, 1021-1028.	3.3	60
53	EMPOL 1.0: a new parameterization of pollen emission in numerical weather prediction models. Geoscientific Model Development, 2013, 6, 1961-1975.	3.6	43
54	Monthly Weather Forecasts in a Pest Forecasting Context: Downscaling, Recalibration, and Skill Improvement. Journal of Applied Meteorology and Climatology, 2012, 51, 1633-1638.	1.5	7

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55	Downscaling climate change scenarios for apple pest and disease modeling in Switzerland. Earth System Dynamics, 2012, 3, 33-47.	7.1	41
56	Building models for daily pollen concentrations. Aerobiologia, 2012, 28, 499-513.	1.7	12
57	On the efficiency and correction of vertically oriented blunt bioaerosol samplers in moving air. International Journal of Biometeorology, 2012, 56, 1113-1121.	3.0	8
58	A method to derive vegetation distribution maps for pollen dispersion models using birch as an example. International Journal of Biometeorology, 2012, 56, 949-958.	3.0	41
59	Impact of Climate Change on Voltinism and Prospective Diapause Induction of a Global Pest Insect â€“ Cydia pomonella (L.). PLoS ONE, 2012, 7, e35723.	2.5	85
60	Uncertainty propagation for flood forecasting in the Alps: different views and impacts from MAP D-PHASE. Natural Hazards and Earth System Sciences, 2012, 12, 2439-2448.	3.6	5
61	The Nature, Theory, and Modeling of Atmospheric Planetary Boundary Layers. Bulletin of the American Meteorological Society, 2011, 92, 123-128.	3.3	103
62	Application of Statistical Weather Data From the Numerical Weather Prediction Model COSMO-2 for Noise Mapping Purposes. Acta Acustica United With Acustica, 2011, 97, 403-415.	0.8	5
63	The Convective and Orographicallyâ€induced Precipitation Study (COPS): the scientific strategy, the field phase, and research highlights. Quarterly Journal of the Royal Meteorological Society, 2011, 137, 3-30.	2.7	181
64	Evaluation of the COSMO-SC turbulence scheme in a shear-driven stable boundary layer. Meteorologische Zeitschrift, 2011, 20, 335-350.	1.0	37
65	Flux Footprints Over an Undulating Surface. Boundary-Layer Meteorology, 2010, 136, 325-340.	2.3	9
66	Simulation of Pollutant Transport in Complex Terrain with a Numerical Weather Predictionâ€“Particle Dispersion Model Combination. Boundary-Layer Meteorology, 2010, 137, 373-396.	2.3	11
67	Assessing the Benefits of Convection-Permitting Models by Neighborhood Verification: Examples from MAP D-PHASE. Monthly Weather Review, 2010, 138, 3418-3433.	1.4	113
68	The Budget of Turbulent Kinetic Energy in the Urban Roughness Sublayer. Boundary-Layer Meteorology, 2009, 131, 193-222.	2.3	65
69	MAP D-PHASE: Real-Time Demonstration of Weather Forecast Quality in the Alpine Region. Bulletin of the American Meteorological Society, 2009, 90, 1321-1336.	3.3	121
70	Supplement to MAP D-PHASE: Real-Time Demonstration of Weather Forecast Quality in the Alpine Region: Additional Applications of the D-Phase Datasets. Bulletin of the American Meteorological Society, 2009, 90, S28-S32.	3.3	9
71	Deriving turbulence characteristics from the COSMO numerical weather prediction model for dispersion applications. Advances in Science and Research, 2009, 3, 79-84.	1.0	8
72	MAP Dâ€PHASE: realâ€time demonstration of hydrological ensemble prediction systems. Atmospheric Science Letters, 2008, 9, 80-87.	1.9	102

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73	Boundary layer characteristics and turbulent exchange mechanisms in highly complex terrain. Acta Geophysica, 2008, 56, 194-219.	2.0	55
74	RESEARCH CAMPAIGN: The Convective and Orographically Induced Precipitation Study. Bulletin of the American Meteorological Society, 2008, 89, 1477-1486.	3.3	194
75	On the boundary-layer structure over highly complex terrain: Key findings from MAP. Quarterly Journal of the Royal Meteorological Society, 2007, 133, 937-948.	2.7	156
76	The effect of mountainous topography on moisture exchange between the â€œsurfaceâ€•and the free atmosphere. Boundary-Layer Meteorology, 2007, 125, 227-244.	2.3	49
77	On the nature of turbulent kinetic energy in a steep and narrow Alpine valley. Boundary-Layer Meteorology, 2007, 123, 177-199.	2.3	43
78	The effect of mountainous topography on moisture exchange between the â€œsurfaceâ€•and the free atmosphere. , 2007, , 71-88.		1
79	Meteorology applied to urban air pollution problems: concepts from COST 715. Atmospheric Chemistry and Physics, 2006, 6, 555-564.	4.9	40
80	High-Resolution Large-Eddy Simulations of Flow in a Steep Alpine Valley. Part II: Flow Structure and Heat Budgets. Journal of Applied Meteorology and Climatology, 2006, 45, 87-107.	1.5	70
81	Temporal dynamics of CO2 fluxes and profiles over a Central European city. Theoretical and Applied Climatology, 2006, 84, 117-126.	2.8	119
82	High-Resolution Large-Eddy Simulations of Flow in a Steep Alpine Valley. Part I: Methodology, Verification, and Sensitivity Experiments. Journal of Applied Meteorology and Climatology, 2006, 45, 63-86.	1.5	153
83	Validation of an Urban Surface Exchange Parameterization for Mesoscale Modelsâ€"1D Case in a Street Canyon. Journal of Applied Meteorology and Climatology, 2005, 44, 1484-1498.	1.7	18
84	BUBBLE â€" an Urban Boundary Layer Meteorology Project. Theoretical and Applied Climatology, 2005, 81, 231-261.	2.8	326
85	The performance of RAMS in representing the convective boundary layer structure in a very steep valley. Environmental Fluid Mechanics, 2005, 5, 35-62.	1.6	40
86	Turbulence Structure and Exchange Processes in an Alpine Valley: The Riviera Project. Bulletin of the American Meteorological Society, 2004, 85, 1367-1386.	3.3	76
87	Mean Flow and Turbulence Characteristics in an Urban Roughness Sublayer. Boundary-Layer Meteorology, 2004, 111, 55-84.	2.3	197
88	A Simple Parameterisation for Flux Footprint Predictions. Boundary-Layer Meteorology, 2004, 112, 503-523.	2.3	611
89	Flow structure and turbulence characteristics of the daytime atmosphere in a steep and narrow Alpine valley. Quarterly Journal of the Royal Meteorological Society, 2004, 130, 2605-2627.	2.7	66
90	Pollutant dispersion close to an urban surface ? the BUBBLE tracer experiment. Meteorology and Atmospheric Physics, 2004, 87, 39.	2.0	57

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91	Evaluation of Lagrangian footprint model using data from wind tunnel convective boundary layer. Agricultural and Forest Meteorology, 2004, 127, 189-201.	4.8	51
92	Roof Level Urban Tracer Experiment: Measurements and Modelling. , 2004, , 471-479.		3
93	Urban Effects on Air Pollutant Dispersion in Very Complex Terrain: The Athens Case. , 2004, , 601-602.		0
94	Surface radiation budget in an Alpine valley. Quarterly Journal of the Royal Meteorological Society, 2003, 129, 877-895.	2.7	79
95	Comparison of the Langrangian Footprint. Boundary-Layer Meteorology, 2003, 106, 349-355.	2.3	64
96	On the impact of urban surface exchange parameterisations on air quality simulations: the Athens case. Atmospheric Environment, 2003, 37, 4217-4231.	4.1	78
97	Horizontal Variability of 2-m Temperature at Night during CASES-97. Journals of the Atmospheric Sciences, 2003, 60, 2431-2449.	1.7	30
98	Practical considerations to speed up Lagrangian stochastic particle models. Computers and Geosciences, 2002, 28, 143-154.	4.2	8
99	A Three-Dimensional Backward Lagrangian Footprint Model For A Wide Range Of Boundary-Layer Stratifications. Boundary-Layer Meteorology, 2002, 103, 205-226.	2.3	224
100	An Urban Surface Exchange Parameterisation for Mesoscale Models. Boundary-Layer Meteorology, 2002, 104, 261-304.	2.3	852
101	Investigating the Surface Energy Balance in Urban Areas â€" Recent Advances and Future Needs. Water, Air and Soil Pollution, 2002, 2, 1-16.	0.8	51
102	Investigating the Surface Energy Balance in Urban Areas â€" Recent Advances and Future Needs. , 2002, , 1-16.		2
103	COST 715 WORKSHOP ON URBAN BOUNDARY LAYER PARAMETERIZATIONS. Bulletin of the American Meteorological Society, 2002, 83, 1501-1504.	3.3	3
104	Modification of an Operational Dispersion Model for Urban Applications. Journal of Applied Meteorology and Climatology, 2001, 40, 864-879.	1.7	12
105	Simulation Of Urban-Scale Dispersion Using A Lagrangian Stochastic Dispersion Model. Boundary-Layer Meteorology, 2001, 99, 379-410.	2.3	57
106	Title is missing!. Surveys in Geophysics, 2001, 22, 589-596.	4.6	21
107	A wind tunnel study of organised and turbulent air motions in urban street canyons. Journal of Wind Engineering and Industrial Aerodynamics, 2001, 89, 849-861.	3.9	179
108	A Method to Speed up a Lagrangian Stochastic Particle Dispersion Model. , 2000, , 509-517.		1

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109	Introduction of a Puff-Particle Approach for Near-Source Dispersion into the Calpuff Model. , 2000, , 147-155.		0
110	On the influence of the urban roughness sublayer on turbulence and dispersion. Atmospheric Environment, 1999, 33, 4001-4008.	4.1	140
111	A novel approach to atmospheric dispersion modelling: The Puff-Particle Model. Quarterly Journal of the Royal Meteorological Society, 1998, 124, 2771-2792.	2.7	64
112	Extension of an operational short-range dispersion model for applications in an urban environment. International Journal of Vehicle Design, 1998, 20, 105.	0.3	6
113	The Treatment of Relative Dispersion Within a Combined Puff-Particle Model (PPM). , 1998, , 389-398.		2
114	On the turbulence structure in the stable boundary layer over the Greenland ice sheet. Boundary-Layer Meteorology, 1997, 85, 111-136.	2.3	78
115	Nested regional simulation of climate change over the Alps for the scenario of a doubled greenhouse forcing. Theoretical and Applied Climatology, 1997, 57, 209-227.	2.8	35
116	A two-dimensional Lagrangian stochastic dispersion model for daytime conditions. Quarterly Journal of the Royal Meteorological Society, 1996, 122, 367-389.	2.7	84
117	A two-dimensional Lagrangian stochastic dispersion model for daytime conditions. Quarterly Journal of the Royal Meteorological Society, 1996, 122, 367-3898.	2.7	2
118	Profiles of turbulence statistics in and above an urban street canyon. Atmospheric Environment, 1995, 29, 1473-1486.	4.1	197
119	Determination of the zero plane displacement in an urban environment. Boundary-Layer Meteorology, 1994, 67, 187-193.	2.3	47
120	Turbulence close to a rough urban surface part II: Variances and gradients. Boundary-Layer Meteorology, 1993, 66, 75-92.	2.3	82
121	Turbulence close to a rough urban surface part I: Reynolds stress. Boundary-Layer Meteorology, 1993, 65, 1-28.	2.3	147
122	On the Vertical Exchange of Heat, Mass, and Momentum Over Complex, Mountainous Terrain. Frontiers in Earth Science, 0, 3, .	1.8	48
123	Including the Urban Canopy Layer in a Lagrangian Particle Dispersion Model. Boundary-Layer Meteorology, 0, , .	2.3	0