

**Peer Reviewed publications 1991-2009**

2009

Rotach MW, Ambrosetti P, Ament F, Appenzeller C, Arpagaus M, Bauer HS, Behrendt A, Bouttier F, Buzzi A, Corazza M, Davolio S, Denhard M, Dorninger M, Fontannaz L, Frick J, Fundel F, Germann U, Gorgas T, Hegg C, Hering A, Keil C, Liniger MA, Marsigli C, McTaggart-Cowan R, Montani A, Mylne K, Ranzi R, Richard E, Rossa A, Santos-Muñoz D, Schär C, Seity Y, Staudinger M, Stoll M, Volkert H, Walser A, Wang Y, Werhahn J, Wulfmeyer V, Zappa M: 2009, MAP D-PHASE: Real-time Demonstration of Weather Forecast Quality in the Alpine Region, *Bull Amer Meteor Soc*, **90** (9), 1321–1336, doi:10.1175/2009BAMS2776.1

Rotach MW, et al: 2009, Supplement: Additional applications of the D-PHASE data sets, *Bull Amer Meteor Soc*, **90** (9), electronic supplement: S28-S32.

Christen A, Rotach MW, Vogt R: 2009, The Budget of Turbulent Kinetic Energy in the Urban Roughness Sublayer, *Boundary-Layer Meteorology*, **131**(2), 193-222.

Szintai B, Kaufmann P and Rotach MW: 2009, Deriving turbulence characteristics from the COSMO numerical weather prediction model for dispersion applications, *Advances in Science and Research*, **3**, 79-84.

2008

Rotach MW, Andretta M, Calanca P, Weigel AP, Weiss A: 2008, Turbulence characteristics and exchange mechanisms in highly complex terrain, *Acta Geophysicae*, **56** (1), 194-219.

Zappa M, Rotach MW, Arpagaus M, Dorninger M, Hegg C, Montani A, Ranzi R, Ament F, Germann U, Grossi G, Jaun S, Rossa A, Vogt S, Walser A, Wehrhan J and Wunram C: 2008, MAP D-PHASE: real-time demonstration of hydrological ensemble prediction systems, *Atmos. Sci. Let.*, **2**, 80-87, doi: 10.1002/asl.183

Wulfmeyer V, Behrendt A, Bauer HS, Kottmeier C, Corsmeier U, Blyth A, Craig G, Schumann U, Hagen M, Crewell S, Di Girolamo P, Flamant C, Miller M, Montani A, Mobbs S, Richard E, Rotach MW, Arpagaus M, Russchenberg H, Schlüssel P, König M, Gärtner V, Steinacker R, Dorninger M, Turner DD, Weckwerth T, Hense A and Simmer C, 2008: The Convective and Orographically-induced Precipitation Study: A Research and Development Project of the World Weather Research Program for improving quantitative precipitation forecasting in low-mountain regions. *Bull. Amer. Meteor. Soc.* **89**(10), 1477-1486, doi: 10.1175/2008BAMS2367.1.

2007

Rotach MW and Zardi D: 2007, On the boundary layer structure over highly complex terrain: key findings from MAP, *Quarterly J Roy Meteorol Soc*, **133**, 937–948, doi: 10.1002/qj.71

Weigel AP, Chow FK and Rotach MW: 2007, On the nature of turbulent kinetic energy in a steep and narrow Alpine valley, *Boundary-Layer Meteorology*, **123** 177-199, doi: 10.1007/s10546-006-9142-9.

Weigel AP, Chow FK, Rotach MW: 2007, The effect of mountainous topography on moisture exchange between the "surface" and the free atmosphere, *Boundary-Layer Meteorology*, **125** (2), 227-244, doi: 10.1007/s10546-006-9120-2.

2006

Chow FK, Weigel AP, Street RL, Rotach MW and Xue M: 2006, High-resolution large-eddy simulations of flow in a steep Alpine valley. Part I: Methodology, verification, and sensitivity studies, *J Appl Meteorol Climatol*, **45** (1), 63-86.

Fisher B, Kukkonen J, Piringer M, Rotach MW and Schatzmann M: 2006, Meteorology applied to urban air pollution problems: concepts from COST 715, *Atmos. Chem. Phys.*, **6**, 555–564.

Vogt R, Christen A, Rotach MW, Roth M and Satyanarayana ANV: 2006, [Temporal dynamics of CO<sub>2</sub> fluxes and profiles over a Central European city](#), *Theor Appl Clim*, **84** (1-3), 117-126, doi: 10.1007/s00704-005-0149-9.

Weigel AP, Chow FK, Rotach MW, Street RL and Xue M: 2006, High-resolution large-eddy simulations of flow in a steep Alpine valley. Part II: Flow Structure and Heat Budgets, *J Appl Meteorol Climatol*, **45** (1), 87-107.

2005

De Wekker, S. F. J. , D. G. Steyn, J. D. Fast, M. W. Rotach and S. Zhong: 2005, The performance of RAMS in representing the convective boundary layer structure in a very steep valley, *Environmental Fluid Mechanics* **5**, 35-62.

Fisher B, Kukkonen J, Piringer M, Rotach MW and Schatzmann M: 2005, Meteorology applied to urban air pollution problems: concepts from COST 715, *Atmos. Chem. Phys. Discuss.*, **5**, 7903–7927.

Rotach, M.W.; Vogt, R.; Bernhofer, C.; Batchvarova, E.; Christen, A.; Clappier, A.; Feddersen, B.; Gryning, S.-E.; Mayer, H.; Mitev, V.; Oke, T.R.; Parlow, E.; Richner, H.; Roth, M.; Roulet, Y.-A.; Ruffieux, D.; Salmond, J.; Schatzmann, M. and Voogt, J.A.: 2005, 'BUBBLE – an Urban Boundary Layer Project', *Theoretical Appl Climatol* **81**(3-4), 231 – 261, doi: 10.1007/s00704-004-0117-9

Roulet, Y-A, Martilli, A., Rotach, M. W., Clappier, A.: 2005, Validation of an Urban Surface Exchange Parameterization for Mesoscale Models—1D Case in a Street Canyon, *Journal of Appl Meteorol*, **44**, No. 9, 1484–1498.

2004

Kastner-Klein, P and Rotach, M.W.: 2004, 'Mean Flow and Turbulence Characteristics in an Urban Roughness Sublayer', *Boundary-Layer Meteorology*, **111**, 55-84.

- Kljun, N.; Kastner-Klein, P.; Fedorovich, E. and Rotach, M.W.: 2004 'Evaluation of a Lagrangian footprint model using data from a wind tunnel convective boundary layer', *Argr. Forest Meteorol*, **127** (3-4), 189-201.
- Kljun, N.; Calanca, P. Rotach, M.W. and Schmid, H.P.: 2004, 'A simple parameterization for flux footprint predictions', *Boundary-Layer Meteorology* **112**: 503–523.
- Rotach, M.W., Gryning, S.-E.; Batchvarova, E.; Christen, A. and Vogt, R. 2004: 'Pollutant dispersion close to an urban surface - the BUBBLE tracer experiment', *Meteorol Atm Phys.*, **87**, No 1-3, 39-58.
- Rotach, M.W, P. Calanca, G. Graziani, J. Gurtz, D.G. Steyn, R. Vogt, M Andretta, A. Christen, S. Cieslik, R. Connolly, S.F.J. De Wekker, S. Galmarini, E.N. Kadygrov, V. Kadygrov, E. Miller, B. Neininger, M. Rucker, E. van Gorsel, H. Weber, A. Weiss, M. Zappa: 2004, 'Turbulence structure and exchange processes in an Alpine Valley: The Riviera project', *Bulletin of the American Meteorological Society*, **85**, No 9, 1367-1385, DOI:10.1175/BAMS-85-9-1367
- Weigel, A.P. and Rotach M.W.: 2004, Flow structure and turbulence characteristics of the daytime atmosphere in a steep and narrow Alpine valley, *Quart J Roy Meteorol Soc*, **130**, 2605-2627.

## 2003

- Kljun, N.; Kormann, R.; Rotach, M.W and Meixner, F.X.: 2003, 'Comparison of the Lagrangian Footprint Model LPDM-B with an Analytical Footprint Model', *Boundary-Layer Meteorology*, **106**, 349-355.
- Lemone, M.A.; Ikeda, K; Grossmann, R.L. and Rotach, M.W.: 2003, 'Horizontal Variability of 2-m Temperature at Night during CASES-97', *J Atm Sci*, **60**, 2431-2449.
- Martilli, A.; Roulet, Y.A.; Jeunier, M.; Kirchner, F.; Rotach, M.W. and Clappier, A.: 2003 'On the impact of urban surface exchange parameterisations on air quality simulations: the Athens case', *Atmospheric Environ.*, **37**, 4217-4231.
- Matzinger, N.; Andretta, M., van Gorsel, E.; Vogt, R.; Ohmura, A. and Rotach, M.W: 2003, 'Surface Radiation Budget in an Alpine Valley', *Quarterly J. Roy. Meteorol. Soc.*, **129**, 877-895.

## 2002

- Kljun, N.; Rotach, M.W. and Schmid, H.P.: 2002, 'A 3D Backward Lagrangian Footprint Model for a Wide Range of Boundary Layer Stratifications', *Boundary-Layer Meteorology*, **103**, 205-226.
- Martilli, A, A. Clappier and Rotach, M.W.: 2002, 'An urban surface exchange parameterisation for mesoscale models', *Boundary-Layer Meteorology*, **104**, 261-304.

Piringer, M.; Grimmond, C. S. B.; Joffre, S. M.; Mestayer, P.; Middleton, D. R.; Rotach, M. W.; Baklanov, A.; De Ridder, K.; Ferreira, J.; Guilloteau, E.; Karppinen, A.; Martilli, A.; Masson, V.; Tombrou, M.: 2002, 'Investigating the Surface Energy Balance in Urban Areas – Recent Advances and Future Needs', *Water, Air & Soil Pollution: Focus*, **2**, (5-6), 1-16.

Rotach, M.W.; Fisher, B. and Piringer, M.: 2002, COST 715 Workshop on Urban Boundary Layer Parameterizations, *Bulletin of the American Meteorological Society*, **83** (10), 1501-1504.

Schwere, S.; Stohl, A. and Rotach, M.W.: 2002, 'Practical Considerations to Speed up Lagrangian Stochastic Particle Models', *Computers and Geoscience*, **28**, 143–154.

2001

de Haan, P.; Rotach, M.W. and Werfeli, M: 2001, 'Modification of an Operational Dispersion Model for Urban Applications', *J. Appl. Meteorol.*, **40**, No 5, 864-879.

Kastner-Klein, P.; Fedorovich, E. and Rotach, M.W.: 2001, 'A wind tunnel study of organised and turbulent air motions in urban street canyons', *J. Wind Engineering Industrial Aerodynamics*, **98**, No 9, 849–861.

Rotach, M.W.: 2001, 'Simulation of urban-scale dispersion using a Lagrangian stochastic dispersion model', *Boundary-Layer Meteorol.*, **99**, 379-410.

Weiss, A.; Hennes, M. and Rotach, M.W.: 2001, 'Derivation of refractive index- and temperature gradients from optical scintillometry for the correction of atmospheric induced problems in highly precise geodetic measurements', *Surveys in Geophysics*, **22**, 589-596.

1999

Rotach, M.W.: 1999, 'On the Influence of the Urban Roughness Sublayer on Turbulence and Dispersion', *Atmospheric Environ.*, **33**, 4001–4008.

1998

de Haan, P. and Rotach, M.W.: 1998, 'A Novel Approach to Atmospheric Dispersion Modelling: The Puff-Particle Model', *Quart. J. Roy. Meteorol. Soc.*, **124**, 2771–2792.

1997

Forrer, J. and Rotach, M.W.: 1997, 'On the Turbulence Structure in the Stable Boundary Layer over the Greenland Ice Sheet', *Boundary-Layer Meteorol.*, **85**, 111-136.

Rotach M.W.: 1997, 'The Turbulence Structure in an Urban Roughness Sublayer', in: Perkins, R.J. and Belcher, S.E. (Eds.): *Flow and Dispersion through Groups of Obstacles*, Clarendon Press, Oxford, 249pp., 143-155.

Rotach, M.W.: 1997, 'Towards a Meteorological Preprocessor for Dispersion Models in an Urban Environment', *Int. J. Environment and Pollution*, **8**, Nos. 3-6, 548-556.

Rotach, M.W and de Haan, P.: 1997, 'On the Urban Aspect of the Copenhagen Data Set', *Int. J. Environment and Pollution*, **8**, Nos. 3-6, 279-286.

Rotach, M.W., Marinucci, M. M., Wild, M, Tschuck, P., Ohmura, A. and Beniston. M., 1997: 'Nested Regional Simulation of Climate Change over the Alps for the Scenario of a Doubled Greenhouse Forcing', *Theor. Appl. Climatol.*, **57**, 209-228.

1996

Rotach M.W., Gryning, S.-E. and Tassone C. 1996: 'A Two-Dimensional Stochastic Lagrangian Dispersion Model for Daytime Conditions', *Quart. J. Roy. Meteorol. Soc.*, **122**, 367-389.

1995

de Haan, P. and Rotach, M.W.: 1995, 'A Puff-Particle Dispersion Model', *Int. J. Environment and Pollution*, **5**, Nos. 4-6, 350-359.

Rotach, M.W.: 1995, 'Profiles of Turbulence Statistics in and Above an Urban Street Canyon', *Atmospheric Environ.*, **29**, 1473-1486.

1994

Rotach, M W.: 1994, 'Determination of the Zero Plane Displacement in an Urban Environment', *Boundary-Layer Meteorol.*, **67**, 187-193.

1993

Rotach, M.W.: 1993, 'Turbulence Close to a Rough Urban Surface Part I: Reynolds Stress', *Boundary-Layer Meteorol.*, **65**, 1-28.

Rotach, M.W.: 1993, 'Turbulence Close to a Rough Urban Surface Part II: Variances and Gradients', *Boundary-Layer Meteorol.*, **66**, 75-92.

1991

Rotach, M.W.: 1991, 'Turbulence Within and Above an Urban Canopy', ETH Diss. 9439, 240 pp., Published as ZGS, Heft 45, Verlag GIETH, Zürich.

## Contributions to books

Gohm A, Wagner J, Leukauf D, Rotach MW, Posch C: 2013, Earth-atmosphere exchange of heat and mass over mountainous terrain, in: Barden M, Ostermann A (Eds): 2013, *Scientific Computing @ uibk*, innsbruck university press, ISBN-13: 978-3902936196, 166pp, 35-38

Reif M, Rotach MW, Gohm A, Wohlfahrt G: 2013, Carbon Dioxide Exchange in Complex Topography, in: Barden M, Ostermann A (Eds): 2013, *Scientific Computing @ uibk*, innsbruck university press, ISBN-13: 978-3902936196, 166pp, 131-133.

- Weigel AP, Chow FK, Rotach MW: 2007, 'The effect of mountainous topography on moisture exchange between the "surface" and the free atmosphere', in: Baklanov A, Grisogono B (Eds): 2007, *Atmospheric Boundary Layers, Nature, Theory and Application to Environmental Modelling and Security*, Springer, ISBN-978-0-387-74318-9, 71-88.
- Batchvarova E and Rotach MW: 2005, *Bilateral Co-operation on Urban Boundary Layer Studies. Turbulence Measurements for Urban Boundary Layer Research I Sofia*, in Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 185-188.
- Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 276 pp.
- Rotach MW: Structure of the urban boundary layer, in: Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 21-25.
- Rotach MW, Batchvarova E, Berkowitz R, Brechler J, Janour Z, Krajni E, Georgieva E, Middleton D, Osrodka L, Prior V, Soriano C: 2005, *Modification of Flow and Turbulence Structure over Urban Areas*, in : Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 27-46.
- Rotach MW, Christen A, Batchvarova E, Berkowitz R, Brechler J, Janour Z, Krajni E, Georgieva E, Middleton D, Osrodka L, Prior V, Soriano C, Kastner-Klein P: 2005, *Preparation of Meteorological Input Data for Urban Air Pollution Models, Part 1*, in: Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 135-158.
- Rotach MW: 2005, *Basel Urban Boundary Layer Experiment (BUBBLE)*, in: Fisher B, Joffre S, Kukkonen J, Piringer M, Rotach M and Schatzmann M (Eds): 2005, *Meteoecology Applied to Urban Air Pollution Problems, Final report COST Action 715*, Demetra Ltd Publishers, ISBN 954-9526-30-5, 167-184
- Rotach, M.W.; Fisher, B. and Piringer, M. (Eds.), 2003: *Workshop on 'Urban Boundary Layer Parameterisations'*, EUR 20355, (ISBN: 92-894-4143-7), 119 pp.

- Rotach, M.W.; Fisher, B. and Piringer, M.: 2003, 'Overview and Discussion Summary'; in: Rotach, M.W.; Fisher, B. and Piringer, M. (Eds.): Workshop on 'Urban Boundary Layer Parameterisations', *EUR 20355*, (ISBN: 92-894-4143-7), 1-5.
- Soriano, C.; Batchvarova, E.; Berkowicz, R.; Brechler, J.; Janour, Z.; Kastner-Klein, P.; Middleton, D.; Prior, V.; Rotach, M.W.; Sacré, C.; and Baldasano, J.M.: 2003, 'Comparison of urban and rural wind speeds', in: Rotach, M.W.; Fisher, B. and Piringer, M. (Eds.): Workshop on 'Urban Boundary Layer Parameterisations', *EUR 20355*, (ISBN: 92-894-4143-7), 41-50.
- Rotach, M.W. and Calanca, P.: 2002, 'Microclimate', in Holton, J.C., Pyle, J and Curry, J.A. (Eds.), 'Encyclopaedia of Atmospheric Sciences', Academic Press, 1301-1307.
- Piringer, M.; Grimmond, C. S. B.; Joffre, S. M.; Mestayer, P.; Middleton, D. R.; Rotach, M. W.; Baklanov, A.; De Ridder, K.; Ferreira, J.; Guilloteau, E.; Karppinen, A.; Martilli, A.; Masson, V.; Tombrou, M.: 2002, 'Investigating the Surface Energy Balance in Urban Areas – Recent Advances and Future Needs', in: Sokhi, R.S. and Bartzis, J.G. (Eds.): Urban Air Quality-Recent Advances, *Kluwer Academic Publishers, Dordrecht*, 1-16.
- Rotach, M.W.: 2002, 'The siting, choice and operation of surface instrumentation in urban areas', in Piringer, M. (Ed.): Surface energy balance in urban areas, Extended abstracts of a COST 715 expert meeting, Antwerp, April 12 2000, *EUR 19447*, (ISBN: 92-984-1413-8), 5-15.
- Rotach, M.W., Mitev, V.; Vogt, R.; Clappier, A.; Richner, H. and Ruffieux, D.: 2002, 'BUBBLE – current status of the experiment and planned investigation of the urban mixing height', in: Piringer, M. and Kukkonen, J. (Eds.): Mixing height and inversions in urban areas, *proceedings of the workshop 3 and 4 October 2001, Toulouse, France*, (ISBN: 92-984-4214-X), 45-51.
- Rotach, M.W.: 2001, 'Meteorological Preprocessors for urban applications – the Situation in Switzerland', in: Schatzmann, M.; Brechler, J, and Fisher, B. (Eds.): 'Preparation of meteorological data for urban site studies', *proceedings of the COST 715 workshop*, Prague, June 15 2000, *EUR 19446* (ISBN: 92-984-0923-1), 51–52.
- Rotach, M.W., Batchvarova, E.; Berkowicz, R.; Brechler, J.; Janour, Z.; Kastner-Klein, P.; Middleton, D.; Prior, V.; Sacré, Ch. And Soriano, C.: 2001, 'Wind input data for urban dispersion modeling', in: Schatzmann, M.; Brechler, J, and Fisher, B. (Eds.): 'Preparation of meteorological data for urban site studies', *proceedings of the COST 715 workshop*, Prague, June 15 2000, *EUR 19446* (ISBN: 92-984-0923-1), 77-86.

- Rotach, M.W.: 2001, 'Wind input data for urban dispersion modeling', in: Schatzmann, M.; Brechler, J. and Fisher, B. (Eds.): 'Preparation of meteorological data for urban site studies', *proceedings of the COST 715 workshop*, Prague, June 15 2000, *EUR 19446* (ISBN: 92-984-0923-1), 77–86.
- Kadygrov, E.; Kadygrov, V.; Miller, E.; Weber, H. and Rotach, M.W.: 2001, 'The thermal structure of the atmospheric boundary layer in an Alpine valley: Results of continuous remote sensing measurements and comparison with radiosonde data', In: W. L. Smith and Yu. M. Timofeyev (Eds.), *IRS 2000: Current Problems in Atmospheric Radiation*, A. Deepak Publishing, Hampton, VA. pp. 1097-1101.
- de Haan, P.; Scire, J.S., Strimatis, D.G. and Rotach, M.W.: 2000, 'Introduction of a puff-particle approach for near-source dispersion into the CALPUFF model', in: Gryning, S.-E. and Batchvarova, E. (Eds.), *Air Pollution Modeling and its Application XIII*, Kluwer Academic/Plenum Publishers, New York, pp 147-155.
- Rotach, M. W. and Schwere, S.: 2000, 'A method to speed up a Lagrangian stochastic particle model', in: Gryning, S.-E. and Batchvarova, E. (Eds.), *Air Pollution Modeling and its Application XIII*, Kluwer Academic/Plenum Publishers, New York, pp 509-517.
- Rotach, M.W. and Schmid, H.P.: 1996, 'Ausbreitung von Luftschadstoffen', in: Oddsson, B. (Ed.), *Instabile Hänge und andere risikorelevante natürliche Prozesse*, Publikation in der Serie CSF Monte Verità, Birkhäuser Verlag, 337-352.
- Rotach, M. W., 1996: 'Zum Klima der Stadt Zürich. Auf dem Weg zu einer verbesserten Schadstoffmodellierung', in: *Mensch und Natur, Festschrift zur 250-Jahr-Feier der Naturforschenden Gesellschaft in Zürich*, 156-164.
- Rotach M.W., Gryning, S.-E. and Tassone C., 1994: 'Lagrangian Stochastic Dispersion Modelling for Varying Boundary Layer Stabilities', in: Gryning, S.-E. and Milan. M. Milan (Eds.) *Air Pollution Modelling and its Application X*, Plenum, London, 607-608.
- Tassone C., Gryning, S.-E. and Rotach M.W., 1994: 'A Random Walk Model for Atmospheric Dispersion in the Daytime Boundary Layer', in: Gryning, S.-E. and Milan. M. Milan (Eds.) *Air Pollution Modelling and its Application X*, Plenum, London, 243-251.
- Ohmura A., Beniston M., Rotach M., Tschuck P., Wild M. Marinucci, M.R.: 1994, 'Simulation of Climate Trends over the Alpine Region', Final Report NFP-31, vdf, Zürich, 197 pp.