Curriculum Vitae

Mathias Walter Rotach

Address

Permanent: University of Innsbruck, *Institute of Atmospheric and Cryospheric Sciences, ACINN* (formerly Institute for Meteorology and Geophysics), Innrain 52f, A-6020 Innsbruck, mathias.rotach@uibk.ac.at

Personal

Date of Birth	March 31, 1960
Place of Birth	Zürich
Citizenship	Swiss (Herisau, AR)
Marital status	married with Viola Rohner Rotach children Ricarda (* 7/94) and Rosanna (* 5/96)
Orcid	0000-0003-2283-309X

Degrees

2001 Habilitation in *Boundary Layer Meteorology* at the Swiss Federal Institute of Technology (Faculty of Environmental Natural Sciences), 'Air pollution Modeling in Urban areas' (collection of papers on the subject).

1991 Ph.D., Doctor of Natural Sciences, ETH Zurich. Thesis: 'Turbulence within and Above an Urban Canopy'. Ref.: Prof. Dr. A. Ohmura, Co-Ref's: Prof. Dr. H.C. Davies (ETHZ), Prof. Dr. T.R. Oke (UBC, Vancouver).

1985 Diploma of Natural Sciences ETHZ (Atmospheric Physics), thesis: 'Smog and Ozone – The Smog Chamber', Ref.: Prof. H. Dütsch.

Education

1988 Participant of the Workshop (Fall School) on "Measurement and Parameterization of Land-Surface Evaporation Fluxes", October 10-21, Banyuls, France.

1986 Participant of NATO Advanced Study Institute on "Physically-based Modeling and Simulation of Climatic Change", May 11-23, Erice, Sicily.

1985 Diploma in Natural Sciences (ETH), Atmospheric Physics, Thesis: "The Smog Chamber"

1983-85 "Project Oriented Studies" (POST), a course in applied scientific work. Project: "Smog and Ozone" (measurement techniques and investigations to quantify transport mechanisms of smog constituents)

1980-85 Swiss Federal Institute of Technology (ETH), Faculty of Natural Sciences (XB4, Environmental Physics - 'Umweltphysik')

Professional Appointments

2011-24 Head of Institute for Meteorology and Geophysics. As of May 6, 2015 the name of the institute has changed to become *Institute of Atmospheric and Cryospheric Sciences.*

2010 University of Innsbruck, full Professor for Dynamic Meteorology

2008 Swiss Federal Office for Meteorology and Climatology Head Bio and Environmental Meteorology

2003 Swiss Federal Office for Meteorology and Climatology: Head Research and Development

2002-03 Visiting Scientist at NCAR (National Centre for Atmospheric Research), Mesoscale and Microscale Meteorology (MMM), Boulder CO (August to August).

2001 Visiting Professor, Ecole Centrale de Nantes, F, (June)/July.

2001-03 Institute for Atmospheric and Climate Science ETHZ (new institute – merger from former 'Climate Research' and 'Atmospheric Science' institutes), Head of Boundary Layer Group, various research projects, supervision of Ph.D. students and teaching activities

2000 Visiting Scientist at Pacific Northwest National Laboratories, Richland WA, July to August.

1999-01 Institute for Climate Research ETHZ (new institute name), Head of Boundary Layer Group, various research projects, supervision of Ph.D. students and teaching activities

1996-99 Head of Boundary-Layer Group, various research projects, supervision of Ph.D. students and teaching activities

1994-95 Research Associate, ETHZ, Research project: Regional Climate Modeling in the framework of NFP 31/CLEAR. Nesting of a mesoscale model (RegCM2) into global fields. Analysis of 'double CO2-scenarios'.

1993 Postdoctoral position at ETHZ: 'Lagrangian modeling of air pollutants in urban areas' (ETH Project).

1992 Postdoctoral position at Risø National Laboratory, Denmark, Department of Meteorology and Wind Energy. Project: 'Modellierung des Schadstoff-Transports in einer städtischen Umgebung', SNF fellowship.

1990/91 Participant of the ETH Greenland Expedition (5 months in total, of which 1 month as station manager).

1985 Research assistant and Ph.D. student with Prof. Ohmura. Topic: 'Turbulence structure over an urban surface' (within the framework of the 'Zürich Urban Climate Program').

Grants held

2023 TEAMx – numerical modeling support (COSMO), €60’000.-

2022 Innsbruck Network for Weather and Climate Research, 2022-2024, co-funding from LFUI, €16’000.-

2022 HighResMountains, Mountain weather in high-resolution climate data: How will the new generation of ÖKS benefit from new emerging datasets? Austrian Climate Research Program ACRP, EUR 143.427,00, 2022 – 2025, co-PI with Dr. Nicolina Ban

2021 TEAMx Observational Campaign, Infrastructure LFUI, 86759.-

2021 Investigating the Surface Energy Balance in Mountainous terrain, EUREGIO, €163’353 (individual part for LFUI), 2021-2024, co-PI with Dr. Giovannini (U Trento, It)

2020 Innsbruck-Box. Fit for TEAMx, Infrastructure LFUI, 99640.-

2019 DOCC. Dynamics of Complex Continua, EU (Marie-Sokolodska Curie Programme), €150’000.- (individual part, total €1’220’400.-), 2019-2023, co-PI with Dr. Alexander Kendl (et al)

2018 MICIA. Multiscale Interactions in Convection Initiation in the Alps, FWF €345’562, co-PI [host] with Dr. Stefano Serafin

2017 TEAMx-Seed, various research partners (institutional ‘crowd funding’), €140’000.-, 2017-2020

2017 Footprint Estimation over Rough Urban Surfaces (FERUS), FWF, €129’307, 2017-2020, PI

2017 Turbulent exchange in urban areas in highly complex terrain, FWF Lise Meitner program, #M 2244-N32, €142’180, 2013-2015, co-PI with Dr. Helen Ward

2017 CYCLAMEN (Cycling of carbon and water in mountain ecosystems under changing climate and land use), Autonomous Province of Bozen, 5/2017-4/2020, EUR 299’599.- (total, of which €78’300 for ACINN part), PI

2016 ‘Urban Canopy Turbulence Profile, IAOplus’, Infrastructure call, University of Innsbruck, € 185'934, PI

2016 ÖAD, Sci. and Technological Cooperation with the Czech Republic, Project CZ12/2016, duration 2 years, €2240.-, PI

2015 Stable boundary layers in mountainous terrain. Scale interactions in stable boundary layers over mountainous terrain, Hertha-Firnberg-Program, FWF, EUR 226.530, 12/2015 – 11/2018, co-PI (with Dr. I. Stiperski)

EPISCATER: Ensemble predictions in complex snow covered alpine terrain, WSL internal project (Swiss Federal Institute for Forest, Snow and Landscape Research), 12 months, €48'300.-, co-PI (with Dr. S. Bellaire)

2014 HydroGeM^3: **Hydro**logical scenarios in the Austrian Alps for the next century using a statistical Weather **Ge**nerator and enhanced process understanding for **M**odelling of seasonal snow and glacier **M**elt for improved Water resources **M**anagement, ÖAW (Austrian Academy of Science), €510'540.-, joint-PI with U. Strasser, UIBK.

2013 ALP-AIR, Atmospheric flux-measurements of precursor-gases for air-quality and climate research, EU - FP7 CIG -Career Integration Grants, 4 yrs, € 100'000, co-PI

2013 Large Research Facilities, core facility 'Boundary Layer Research' for Research Focus 'Alpine Space' (UIBK), EUR 225'000, 2013, PI

2013 hiSNOW, High resolution monitoring and modelling under Climate Change conditions, Autonomous Province of Bozen, €49'514, co-PI with Prof. Stötter

2013 INHOM-TCT, INvestigating spatial inHOMogeneity of surface layer Turbulence in Complex Terrain, FWF, EUR 145'089, 2013-2016, PI

2013 Turb-i-Box; Assessment of turbulence in COSMO-1, 2013-2016, MeteoSwiss, €138'211, PI

2013 SAINT – **S**now cover **A**tmosphere **INT**eractions, Lise Meitner program, #M 1521-N26, EUR 133'360, 2013-2015, co-PI with Dr. S. Bellaire

2012 Research exchange, U Swansea (Dr. Kljun), U Innsbruck, International Relations, summer 2012, €800

2009 SNF-R'Equip: SwissMex-veg (Swiss Soil Moisture Experiment - Soil moisture-*Vege*tation-Climate dynamics in Switzerland), co-investigator with Prof. Seneviratne (ETHZ), (2 years, CHF 75000.-)

2009 SBF: Impact of climate change and variability on sustainable management of apple orchards, co-PI with Dr. J. Samietz (ACW), (1 year, 83'500.- for MeteoSwiss part).

2008 SNF: SwissMex (Swiss Soil Moisture EXperiment), co-investigator with Prof. Seneviratne (ETHZ), (3 years, CHF 95000.-)

DFG: Coordination of the SPP 1167: Study of the Process chain and predictability of precipitation by combining the D-PHASE ensemble and the COPS data sets in the COPS domain', co-investigator with Prof. Wulfmeyer et al, (2 years, 57'934.- for MeteoSwiss part)

2007 ETH/Swisselectric: OPTICONTROL (Use of Weather and Occupancy Forecasts for optimal building climate control), *PI* (3 years 288'000.-).

2006 DFG: 'COPS (Convective Precipitation Study), within SPP 1167, co-investigator with Prof Wulfmeyer (Univ Hohenheim), (2 years, 3'131'000.-)

2006 DFG: 'Combined Data Assimilation with Radar and Satellite Retrievals and Ensemble Modelling for the Improvement of Short Range Quantitative Precipitation Forecasts (DAQUA'), within SPP 1167, co-investigator with Prof. Simmer (Univ Bonn) et al.), (3 years, 97'300.-)

2005 DFG: 'Combined Data Assimilation with Radar and Satellite Retrievals and Ensemble Modellingfor the Improvement of Short Range Quantitative Precipitation Forecasts (DAQUA'), within SPP 1167, co-investigator with Prof. Simmer (Univ Bonn) et al.), (1 year, 30'000.-)

2005 SBF: 'Probabilistic Forecasting Tools for Heavy Precipitation Events in the Alpine Region', *PI, (3 years*, CHF 292'000.-)

2005 EU (FP6): Eurorisk/Preview, *PI (3 years, Euro 83'000.-)*

2004 BBW: 'Investigation of the Urban Boundary layer' COST 715 project**,** extension, *PI* (1 year, CHF 45'000.-)

2003 SNF: ''Boundary Layer Structure and Exchange Processes in an Alpine Valley Part II', follow-up, *PI* (2 years, CHF 95'759.-)

2002 BBW: 'Integrated Systems for Forecasting Urban Meteorology, Air Pollution and Population Exposure (FUMAPEX)', co-investigator with Dr. A Clappier, EPFL-LPAS (30 months, CHF 159'300.-)

2002 ETH, 'Pollutant transport and dispersion in the urban boundary layer', *PI* (3 years, CHF 246'000.-)

2001 SNF, 'Turbulence Measurements for Urban Boundary Layer research', program SCOPES 2000-03, *PI* (3 years, CHF 99'460.-)

2001 SNF: 'Boundary Layer Structure and Exchange Processes in an Alpine Valley Part II', *PI* (2 years, CHF 178'024.-)

2000 BBW: 'Investigation of the Urban Boundary layer' COST 715 project**,** *PI* (4 years, CHF 279'000.-)

2000 TMR (Training and Mobility of Researchers) network TRAPOS: 'Optimization of modeling methods for traffic pollution in streets', *PI* (6 months prolongation Fr. CHF 36'387.-)

1999 BBW: Coordination Credit for COST 715: Meteorology Applied to Urban Air Pollution Problems (4 years, CHF 40'000.-)

1999 SNF: 'The climate of Dry Snow Zone in Greenland', co-PI with Prof. A. Ohmura, (2 years, CHF 269'600.-)

1998 SNF: 'Boundary Layer Structure and Exchange Processes in an Alpine Valley', *PI* (2 years, CHF 220'664.-)

1998 ERCOFTAC Fellowship Program: 'Development of an Urban Turbulence Parameterization for Mesoscale Atmosphere Model', co-applicant with Prof. van den Bergh, EPFL (3 years, CHF 109'697.-)

1998 TMR (Training and Mobility of Researchers) network TRAPOS: 'Optimization of modeling methods for traffic pollution in streets', *PI* (3 years, CHF 164'000.-)

1997 EUROTRAC II (KTI): 'Integral exchange of Nitric trace gases (NH3, NO, N2O) between the Atmosphere and the soil-vegetation system (part D**),** *PI* (3 years, CHF 107'251.-)

1997 SNF: 'Regional Aggregation of Atmospheric Fluxes over Inhomogeneous Terrain', prolongation of the 1995 project, *PI* (2 years, CHF 98'512.-)

1996 SNF: 'Dispersion of Air Pollutants in Urban Environments', *PI* (2 years, CHF 81'400.-)

1995 NF: 'Regional Aggregation of Atmospheric Fluxes over Inhomogeneous Terrain', co-applicant with Dr. H.-P. Schmid, (2 years, CHF 141'689.-)

1992 COST 615 (citair): 'Entwicklung eines operationellen Ausbreitungsmodells für Luftschadstoffe in städtischem Gebiet', *PI* (2 years, CHF 71'000.-)

Research related Professional Activities

Member, Editorial Board for the journal Bulletin of Atmospheric Science and Technology, 2024 -

Member, International Advisory Board (IAB) of the Journal of the European Meteorological Society (JEMS), 2024 -

Member, Scientific Advisory Board of GeoSphere Austria (Austrian Federal Institute for Geology, Geophysics, Climatology and Meteorology), 2024-2027

Member, TEAMxUK Programme Advisory Committee, 2023-

Member, Global Cryosphere Watch – Advisory Group (GCW-AG) of WMO, 2022-

Member Scientific Committee International Mountain Conference, IMC2022, 2020 -

Chairman, Fakultätsrat Fakultät für Geo- und Atmosphärenwissenschaften (chairman, advisory Board, School for Geo and Atmospheric Sciences), March 2021 – Feb 2024

Member, Study Group on WMO Cryosphere Crosscutting Functions: Global Cryosphere Watch (SG-CRYO), 2020 -2022

Member of the ÖAW (Austrian Academy of Sciences) Commission on Climate and Air Quality, 4/2019 – 3/2023

Member, KIT (Karlsruhe Institute of Technology) Advisory Board 'Earth and Environment'. 2019-

Member of the Board of the Austrian Meteorological Society, 2017-

Member of the Senate, University of Innsbruck for the term 2016-2020

Speaker, Research Center 'Climate: Cryosphere and Atmosphere', University of Innsbruck, 2016 -

Corresponding Member, Austrian Academy of Sciences, since April 2015

Member, Intl Commission on Dynamical Meteorology of IAMAS (International Association of Meteorology and Atmospheric Science), 2015 -

Member, Scientific Advisory Board, Helmholz Programme 'Atmosphere and Climate', Dec 2013 – 18.

Member, Austrian National IUGG Commission, IAMAS Correspondent, since fall 2012

Member, HPC Board, Research Platform on High Performance Computing, University of Innsbruck, 2012-2022

Member, International Advisory Board DRIHM (Distributed Research Infrastructure for Hydrometeorology, EU FP7), since summer 2011

Member, Scientific Advisory Board of the German Weather Service (Wissenschaftlicher Beirat des Deutschen Wetterdienstes), since summer 2011, deputy chairman 2015-2019

Chairman, Fakultätsbeirat Fakultät für Geo- und Atmosphärenwissenschaften (chairman, advisory Board, School for Geo and Atmospheric Sciences), March 2011 – Feb 2014

Member, Program Council Hans-Ertel Centre for Weather related Research, since May 2010, co-chairman 2015-

Member, working group on Mesoscale Weather Forecasting, World Weather Research Programme (WWRP), 2007-2015.

Member, COST Domain Committee ESSEM (Earth System Science and Environmental Management): 2006-2008.

Member, Global Atmosphere Watch – Switzerland: Grant review organization and attribution committee 2006:

Chairman, International Steering Committee MAP D-PHASE (Forecast Demonstration Project of World Weather Research Programme): 2007-2013

Member, International Scientific Steering Committee, COPS (Convective Orographic Precipitation Study): 2006-2012

Member, Editorial Board Boundary-Layer Meteorology, since summer 2004

Chairman, Steering Committee COSMO (Consortium on Small Scale numerical Modeling) 2005-2008 (member 2003-2008)

Representative of MeteoSwiss, IKAR-GMES, 2003-2005

Member, AMS Committee on Mountain Meteorology, for the term 2002-2005

Member Management Committee, COST 715 (Meteorology Applied to Urban air Pollution Problems)

Member, MAP Steering Committee (MSC), Mesoscale Alpine Programme (chairman working group on Planetary Boundary Layers)

Member, Scientific Committee Leonhard Euler Centre (Swiss Pilot Centre of ERCOFTAC)

Member, scientific steering committee TRAPOS (Optimisation of modelling methods for **TRA**ffic **PO**llution in **S**treets): 1997-2001

Member, scientific steering committee BAT (**B**iosphere-**A**tmosphere-**T**ransfer): EUROTRAC-II project, 1996-2000

Reviews and Evaluations

Reviewer of countless scientific papers (since 1995) for: Boundary-Layer Meteorology; Quarterly Journal Royal Meteorological Society; Atmospheric Environment; Journal Applied Meteorology; Journal Atmospheric Sciences, Geophysical Research Letters; Nature, Bulletin American Meteorological Society, Tellus, JGR Atmosphere, J Turbulence, Atmospheric Science Letters, Theoretical Applied Climatology; Journal Environmental Fluid Dynamics, Aquatic Sciences; Il Nuovo Cimento, Int J Environ Poll, J Hydrometeorology, ….

Review of research grant applications for: Swiss National Science Foundation (several); US NSF (several); Natural Environment Research Council (UK – many); DFG ('German Research Community' - many); Agence Nationale de Recherche (F), Israel Science Fund (ISF - several); Bundesministerium für Forschung (program: Atmosphärenforschung 2000, Germany); Grant Agency of the Czech Republic (several); Programm 'Lebensgrundlage Umwelt und ihre Sicherung' (BWPLUS, Germany); University Grants Committee, Hong Kong; FWF (A); Dutch Council for the Earth and Life Sciences (NL); ETHZ (CH); ERC (EU); BMFWF (D); EPSRC (UK); NSERC (Ca).

Search committees

Member of search committees for professor positions at ETHZ ('Climate Dynamics' (2006); the universities of Hamburg (W2-Professur "Satellitengestützte Beobachtung des Meereises", 2012), University of Innsbruck („Mensch-Umwelt-Systemforschung", 2012; Atmospheric Physics (chair, 2011-13), University of Cologne (external review, 2011), KIT Karlsruhe, LMU Munich (2017, W2 professor in Theoretical Meteorology, external review); University of Hamburg (2020) (W2 professor for Small Scale Numerical Modeling), KIT (2023-24): Experimental Meteorology

Institute Evaluations

2021 Accreditation of 'Cluster Environment' at University of Hohenheim (D). 29.-30.4. 2021 (online event)

2014 Member of the Evaluation panel for SENSE Research School (SENSE=Socio-Economic and Natural Science of the Environment), Amsterdam, The Netherlands, 2014

2014 Member of the Evaluation Panel for Laboratoire de l'étude des Transferts en Hydrologie et Environment, LTHE, Université Joseph Fourier, Grenoble (F), 2014

2012 Member Review panel for CNRM-GAME (Centre Nationale de Recherches Météorologiques, Groupe d'études de l'Atmosphère Meteorologique). Centre Nationale de Recherches Météorologiques, 2012

Organized conferences & workshops

EMS 2024, Barcelona Sept 2-7 2024, co-convener of Session on 'Multi-scale transport and exchange processes in the atmosphere over mountains' (with Dino Zardi, Chantal Staquet, Brigitta Goger, BiancaAdler)

IUGG General Assembly, Berlin (D), 11.-20.7. 2023, co-convener of Session M29b - Dynamics of Mountain Weather and Climate: Observations, Modeling and Prediction at All Scales

9th Meeting of the Austrian Meteorological Society, 11-12 May 2023, Innsbruck (A), member of local organizing committee

Turbulence Workshop, Innsbruck, Nov 3-5 2022, co-organizer with Ivana Stiperski

EMS 2022, Bonn Sept 5-9 2022, co-convener of Session on 'Multi-scale transport and exchange processes in the atmosphere over mountains' (with Dino Zardi, Chantal Staquet, Helen Ward)

EMS 2022, Bonn Sept 5-9 2022, convener of Session on 'Acquiring value through transdisciplinary consortia with national weather and climate services' (with Mathieu Masbou)

1st TEAMx Workshop, 28-30 August 2019, Rovereto (I), Scientific Organizing Committee

IUGG General Assembly, Montreal (CA), 8.-20.7. 2019, co-convener of Session M14 - Dynamics of Mountain Weather and Climate: Observations, Modeling and Prediction at All Scales

IAMAS-IAPSO-IAGA Conference in Cape Town, South Africa, 27 August to 1 September 2017, co-convener of Session M09 - Dynamics of Mountain Weather and Climate: Observations, Modeling and Prediction at All Scales

CCSH15, 1st academic conference on climate change and sustainable heritage 2015, 18-20 February 2015, Graz (AT), member of Conference Scientific Board

ICAM 2015, International Conference on Alpine Meteorology, August 30 – September 4 2015, Innsbruck, A: chairman local organizing committee

Davos Atmosphere and Cryosphere Assembly (DACA 2013), Davos, 8-12.07. 2013, Convener of session B3.2 'Dynamics of Mountain Weather and Climate', co-convener of session B3.1 'General Dynamics'

Organizing committee DACH 2013; German-Austrian-Swiss Meteorology Congress, Innsbruck, Austria, 3-6 September 2013

Co-organizer, HiRCoT2012, Workshop on 'High-resolution Modeling in Complex Terrain, Vienna, Feb 21-23 2012.

10th EMS Annual Meeting, 8th European Conference on Applied Climatology (ECAC), Zürich, CH, 13.-17. 9. 2010, co-convener session NWP4/AW15 'Host country topical session: Mountain Meteorology

EGU (European Geophysical Union), General Assembly, Vienna (A), 2012: co-convener session AS1.21 Quantitative precipitation forecasting in complex terrain: Results of the Convective and Orographically-induced Precipitation Study (COPS) and other campaigns),

Organizer, Joint MAP D-PHASE Scientific Meeting - COST 731 mid-term Seminar, 'Challenges in hydro-meteorological forecasting in complex terrain', Bologna, Italy, 19-22 May 2008

Organizer, First MAP D-PHASE Scientific Meeting, Vienna, AT, 6-8 November 2006

EGU (European Geophysical Union), General Assembly, Nice (F), 2002 and 2003: co-convener, session on 'Urban Meteorology and Urban Air Pollution'

Organizer, COST 715 Workshop on Urban Boundary Layer Parameterizations, Zurich, May 24-25, 2001

EGU (European Geophysical Union), General Assembly, Nice (F), 2001: co-convener, session on 'Urban Meteorology'

Teaching and Administration related Professional Activities

Summer School 'Innsbruck Summer School on Alpine Research', 23-29.8 2015, 19 participants from 10 countries, main (responsible) organizer

Member of the Curriculums Committee, Faculty of Earth and Atmospheric Science, University of Innsbruck, 2013-2014

Undergraduate student advisor, Climatology and Hydrology, Faculty of Earth Sciences ETHZ (1996-2002)

Member of the Curriculum Committee, Faculty of Earth Sciences ETHZ (1996-2003)

Member of Faculty Committees for the new curriculum in Environmental sciences/ Earth Science (new Bachelor/Masters system), Faculty of Environmental Natural Science and Faculty of Earth Sciences, ETHZ (2001-2003)

Member of inter-departmental committee for the definition of a Masters degree in Atmospheric Science ETH (2000-2003)

Member of Faculty Committee ('Departementsversammlung'), Faculty of Environmental Natural Science ETHZ (4 years term 1995-99 as 'Standesvertreter Mittelbau')

Teaching

2023- Atmospheric Dynamics II, University of Innsbruck, BSc Atmospheric Sciences

2022- Atmospheric Dynamics I, University of Innsbruck, BSc Atmospheric Sciences

2014 The Changing Climate System, University of Innsbruck, MSc level (all faculties)

2011 Field course on Alpine Meteorology, University of Innsbruck MSc Atmospheric Sciences

2011- Geo-Fluid Dynamics, University of Innsbruck, University of Innsbruck MSc Atmospheric Sciences

2010-22 Theoretical Meteorology (I and II), University of Innsbruck,

2010-15 Boundary Layer Meteorology, University of Innsbruck, MSc Atmospheric Sciences

2010- Introduction in Meteorology and Climatology, University of Innsbruck, BSc Atmospheric Sciences

2006 Advanced Aerobiology Course (5 days) on 'Pollen Dispersion in Alpine Environments', lecturer

1996– Boundary Layer Meteorology (MSc climatologists, atmospheric scientists, students of Environmental Natural Sciences), ETHZ, Starting 2006/07: includes Air Pollution Modeling.

2001–03 Atmospheric Physics I (5./7. Sem. Atmospheric Scientists), (with M. Wüest)

2001–03 Course of practical field work 'System Atmosphere' (3rd/4th year atmospheric scientists), (with others)

2000–03 Course of practical field work 'Experiment in Climatology and Hydrology' (3rd/4th year climatologists), ETHZ, (alone).

1993–03 Applied Climatology: Air Pollution Modeling (3rd/4th year climatologists, atmospheric scientists, students of Environmental Natural Sciences), ETHZ, (together with H.P. Schmid, from 1996: alone).

1993–03 Climatology and Hydrology I (2nd year earth scientists and physics), ETHZ, (some years: alone, some years: shared with a colleague)

1993–03 Field Course: 'Climatology and Hydrology' (measurement techniques, 2nd year earth scientists), ETHZ, (with others).

1996-98 Climate Systems II (4th year students of Environmental Natural Sciences), ETHZ, (with others).

1995-98 Climate Systems 3rd year environmental natural sciences), ETHZ, (with others).

1994 Post Graduate Course in Applied Earth Sciences: Natural Processes of Risk Relevance, April, 5 - 9, 1994, Part on 'Dispersion of Air Pollutants' (together with H.P. Schmid).

Supervision of Diploma (DA), MSc and Ph.D. theses and postdoctoral scientists

Postdocs

Bethany Saunders (2024 -)

Lena Pfister (2021 - 2025)

Stefano Serafin (2018 -2020)

Helen Ward (2017-)

Manuela Lehner (research assistant, 2016-)

Marlis Hofer (postdoc, 2015- 2021)

Sascha Bellaire (Postdoc, 2013-2015)

Ivana Stiperski (research assistant & postdoc): 2011-2015, i-Box project – turbulence and exchange processes in complex terrain.

Petra Kastner-Klein (postdoc) 1999-2001: urban near-surface turbulence and dispersion characteristics (TRAPOS)

Jana Lataste (postdoc) 1999: urban particle dispersion and flow modeling (TRAPOS)

Ph.D.

Ongoing:

Martina Destro, University of Innsbruck (supervisor), Surface Energy Balance closure in complex terrain, start Nov 2022

Alzbeta Medvedova, University of Innsbruck (supervisor, with co-supervisor Nikolina Ban), Representation of mountain weather, climate, and climate change over the Greater Alpine Region in high-resolution datasets, start Oct 2022

Giorgos Bagiatis, University of Innsbruck (co-supervisor with Ivana Stiperski, ACINN), Dissipation of TKE in complex flows, start Jan 2020.

Soroush Dabiri, University of Innsbruck (co-supervisor with Wolfgang Rauch, Engineering Hydrology), Slush reactor modeling

Gaspard Simonet, University of Innsbruck (co-supervisor with Manuela Lehner), "An evaluation of surface exchanges and turbulence parameterizations for high-resolution modeling of processes over complex terrain (ASTER)", start summer 2019

Maria Wind, University of Innsbruck (supervior in collaboration with Christoph Spötl, Geology), start, summer 2019

Maria Siller, University of Innsbruck (supervisor), Convection in the Alps, start March 2018, - not completed

Stefan Stöckl, University of Innsbruck (supervisor), Footprint modeling over rough surfaces, start 11/2015 - not completed

Eleni Sfyri, University of Innsbruck (supervisor), turbulence characteristics in complex terrain, start 1/2014 - not completed

Matthias Reif, University of Innsbruck (supervisor), numerical model of CO2 exchange in complex terrain, start 11/2012, *abandoned - re-started 2022*

Completed:

Matthias Göbel, University of Innsbruck (supervisor, with co-supervisor Stefano Serafin), Convective Initiation in complex terrain, defense: August 20 2024

Hetal Dabhi, University of Innsbruck (supervisor), Downscaling climate data, start 6/2015, defense: March 12, 2024

Lukas Umek, University of Innsbruck (PhD committee), Turbulent Processing during Penetration and Interruption of Alpine Foehn, Start March 2017, defense Feb 29, 2024

Maren Haid, University of Innsbruck (PhD Committee), Foehn-cold pool interaction in the Inn valley: a study of meso- and microscale processes observed during the PIANO field campaign, defense Nov 2022

Johannes Horak, University of Innsbruck (supervisor), Exploring the Potential of Simplified Physics-Based Downscaling Approaches for Glacierized Mountain Environments, defense Nov 2021

Brigitta Goger, University of Innsbruck (supervisor), Evaluation of a High-Resolution Numerical Weather Prediction Model in Complex Terrain, defense April 2019

Christian Mallaun (PhD Committee, Univ of Innsbruck), Dynamics of shallow convection over land: Airborne measurements of wind, temperature, humidity and pressure in small cumulus clouds, defense Nov 20, 2018

Daniel Leukauf (PhD Committee, Univ of Innsbruck), Quantifying exchange processes over mountainous terrain: Sensitivity of bulk uxes to atmospheric background conditions and surface heating, defense Nov 2016

Johannes Wagner (PhD committee, Univ Innsbruck), The influence of valley geometry on daytime thermally driven flows and vertical exchange processes over mountainous terrain in idealized numerical simulations, defense Dec 12 2014

Katrin Zink Dispersion of Ambrosia sources (plants) and their pollen in the Alpine area, University of Innsbruck (supervisor), defense October 16 2014.

Balázs Szintai, Improving the turbulence coupling between high resolution numerical weather prediction models and Lagrangian particle dispersion models, Start Nov 2006, EPFL thesis NO. 4827, defense Sept 9 2010

Matteo Buzzi, Challenges in Operational numerical Weather prediction at high resolution in complex terrain, ETH Dissertation #17714, defense April 2, 2008.

Berend Feddersen (based at University of Hamburg, Ph.D.), wind tunnel modeling of urban turbulent exchange processes (start: 2002), external [first part of thesis] advisor and project coordinator (tracer - BUBBLE), defense March 4 2005.

Andreas Weigel, turbulence characteristics in a valley atmosphere (start 2001), defense March 15 2005, *silver medal* of ETH for outstanding thesis.

Andreas Christen (based at University of Basel, Ph.D.), Urban turbulence and exchange (start: 2000), external advisor and project coordinator (BUBBLE).

Alexandra Weiss, 'Determination of stratification and turbulence of the atmospheric surface layer for different types of terrain by optical scintillometry', defense Jan 24 2002, ETH Dissertation #14514.

Natascha Kljun, Footprint Modelling in the Planetary Boundary Layer, defense 20 Dec. 2001, ETH Dissertation #14482. [Awarded prize for best student presentation at the Agricultural and Forest Meteorology Conference, Davis CA; 14 - 18 August 2000]

Alberto Martilli (based at EPFL): 'Development of an Urban Turbulence Parameterisation for Mesoscale Atmospheric Models', defense 20. 8. 2001, subm. for award best dissertation EPFL.

Peter de Haan (DA, PHYS ETHZ and PhD, 'Studies on Short-Range Air Pollution Modeling'. 15. 3. 1999, ETH Dissertation #13089

Jann Forrer (DA, ERDW ETHZ and PhD), 'The structure and turbulence characteristics of the stable boundary layer over the Greenland ice sheet', 13. 8. 1998, ETH Dissertation #12803

MSc / Diploma

Alexander Hedenig, turbulence at Alpine crest sites, start 2022

Alexander Platter, Deriving defensible estimates of nighttime CO2 exchange over a mountain forest, start spring 2023

Michael Pfeiffenberger (MSc U Innsbruck): Reconstruction of local climate conditions during the last years and decades at the site where Ötzi's body was found, February 2022

Cornelius Weiss (MSc U Innsbruck), Dynamics of Gap Winds in the Great Rift Valley, Ethiopia Emphasis on Strong Winds at Lake Abaya, fall 2021

Maximilian Stärz (MSc U Innsbruck): Eulerian Integral Timescale in Complex Terrain, August 2021

Federico Buzzi (Msc Env Sciences ETH Zurich): Parameterized short range air pollution model, submitted March 31 2020

Stefanie Knobloch (MSc U Innsbruck): The three-dimensional structure of TKE in complex terrain: an evaluation of the spatial interpolation method Kriging, defense Feb 18 2020.

Philipp Raffler (MSc U Innsbruck): Atmospheric Boundary Layer Structure in the Inn Valley: A Performance Evaluation of the Numerical Weather Prediction Model COSMO, defense November 28, 2019

Antonio Giordani (MSc U Innsbruck): Estimating ensemble flood forecast uncertainty, defense Sept 2019

Florian Herla (MSc U Innsbruck): A unified particle dispersion parameterization for ground-level concentration distributions, defense December 12, 2018.

Robert Gleirscher, start 2017a abandoned, fall 2018

Eva Laiminger (MSc U Innsbruck), Scaling of Turbulent Kinetic Energy in an Alpine Valley, defense October 29 2018

Julius Baer (MSc U Innsbruck), Boundary layer heights in the Inn Valley, defense November 26, 2018.

Markus Emprechtinger (MSc University of Innsbruck), Turbulence in Complex Topographie Characterization of the Site Terfens, defense April 24 2018

Martin Schöll, (MSc U Innsbruck), Temperature Variance Profiles in Complex Terrain Testing a Passive Microwave System to Measure Atmospheric Turbulence, defense April 2017

Yasmin Markl (MSc U Innsbruck), Spatial Interpolation and Analysis of Airborne Meteorological Data in an Alpine Valley, defense October 2016.

Christopher Polster (MSc U Innsbruck), Bayesian Retrieval of Thermodynamic Atmospheric Profiles from Ground-based Microwave Radiometer Data, defense August 2016

Alessio Golzio (MSc U Torino, I): Near-Surface Turbulence in Complex Terrain. Example of the Mountain-top Site Arbeser Kogel, defense: June 21 2016

Daniel Meyer (MSc ETHZ, CH), Microwave Sensing of Atmospheric Temperature Investigating the retrieval performance by including additional profile information, March 15 2016

Florian Baur (MSc University of Innsbruck), Determination of turbulent fluxes of airborne data in complex terrain using wavelet analysis, defense December 2015

Stefan Stoeckl (MSc University of Innsbruck), Pollutant transport in the Urban Canopy Layer using a Lagrangian Particle Dispersion Model, Spring 2015

Christoph Speer (MSc University of Innsbruck), planned spring 2014

Felix Wiss, (MSc University of Innsbruck), Statistical analysis of soil moisture in a CMIP5 multi-model ensemble, June 2014

Giovanni Massaro (Physics, Univ of Padoa): 'Temperature and humidity profiles in complex terrain by ground-based microwave radiometry', spring 2013

Sonja Gisinger (MSc University of Innsbruck): Large Eddy Simulation der Luftströmung in einer idealisierten, fraktalen Modellstadt Geschwindigkeit, Turbulenz und Darcy Gesetz, fall 2013

Sebastian Dietz (MSc University of Innsbruck) ,Untersuchung charakteristischer Lebenszyklen von eisübersättigten Regionen in der oberen Troposphäre, fall 2012

Harald Brugger, Diploma Meteorology, U Innsbruck, Spatial variability of turbulence characteristics in an Alpine valley, spring 2012

Benoît Guillot (Msc, Environmental Sciences, ETHZ), Footprint Modeling for Heavy Particles, 2009.

Stefanie Hess (Msc, Environmental Sciences, ETHZ), 'Inversion forecast with the COSMO model', 2009.

Lilian Blaser, (Msc, Computational Science and Engineering, ETHZ), 'Exploratory studies about near surface wind data assimilation in the COSMO model of MeteoSwiss', 2007.

Daniela Domeisen, Analysis of TKE at a non-ideal site, DA Phys. ETHZ, 2006

Daniel Walker: aLMo Verification in the complex terrain of the Alps, DA D-ERD ETHZ, 2005.

Thomas Griesser: Auswertung von Gewittern der Jahre 2003-2004 für die Schweiz, DA D-ERD ETHZ, 2005.

Gregor Schürmann, 'Plume rise in einem Lagrange'schen Partikelmodell', DA, UMNW ETHZ, 2001

Nicolas Matzinger, 'Strahlungsbilanz in einem Alpental, DA, ERDW ETHZ, 2001

Simon Zimmermann 'Bodennahe Turbulenzcharakteristik während MAP-Riviera', DA, ERDW ETHZ, 2000.

Heidi Weber, 'Untersuchung der thermischen Verhältnisse in der Planetaren Grenzschicht im Gebirge mit Hilfe des MTP-5', DA Univ. Zürich (Experimental Physics), 2000.

Pascal Hägeli: (DA, ERDW ETHZ) 'Evaluation of a new Technique for Extracting Mixed Layer Depth and entrainment Zone Thickness from Lidar Backscatter Profiles', 1998.

Stefan Schwere (DA, UMNW ETHZ): 'Verschnellerung Lagrange'scher Partikelmodelle' 1998.

Patricia Handschin (DA, ERDW ETHZ), 'Bestimmung der Nullflächenverschiebung und Rauhigkeitslänge über komplexem Gelände', 1998.

Sabine Issler (DA, Applied Mathematics ETHZ), 'Verallgemeinerung eines stochastischen Partikel-Trajektorien Modells auf horizontal inhomogene Verhältnisse', 1995.

Martin Gauer (DA, ERDW ETHZ), dispersion modeling, 1995

Thomas Leutenegger (DA, ERDW ETHZ), urban turbulence and radiation, 1990.

Gaby Schädler (DA, ERDW ETHZ), urban turbulence, 1989.

Bachelor, other theses

Zellmer Florian, Micrometeorological profiles within the urban canopy, U Innsbruck June 2024, 57pp.

Amelie Linha, Family Portrait of Turbulence Profiles on the FAIR Site, U Innsbruck fall 2023

Verena Pflügler, Performance of regional Climate Simulations over Mountainous Terrain. Comparison by the means of COSMO-CLM, U Innsbruck, fall 2022

Malte Hildebrandt, Wetterprognosequalit im Gebirge und Flachland im Vergleich. Untersuchung am COSMO-1 Modell, U Innsbruck, fall 2022

Valerie Reppert, Recommendation of usage of CO2 data and their spatial variability recorded in the i-Box U Innsbruck, fall 2021

Alexander Platter, CO2-Austausch in einem alpinen Tal, U Innsbruck, U Innsbruck, spring 2021

Paula Spannring, Energiebilanzschliessung an i-Box Stationen, U Innsbruck, spring 2020.

David Kurz, Turbulenz Charakteristika an der i-Box Station Arbeser Kogel, U Innsbruck, fall 2019

Alexander Hedenig, Analyse der Wintertemperaturen in Tirol mit Mann-Kendall-Dreiecken, U Innsbruck, spring 2019

Jörg Hofer, Berechnung von Feuchte- und Temperaturprofilen in komplexer Topographie mittels Monin-Obukhov Theorie, U Innsbruck, spring 2018

Simon Wöckinger, Berechnung von Windprofilen im Inntal mittels Monin-Obukhov Theorie, U Innsbruck, spring 2018

Michael Pfeiffenberger, Ausbreitungsklassen im Inntal, BSc Atmospheric Sciences, U Innsbruck, spring 2018

Roman Viehhauser, Meteorological conditions at two sites in the Inn Valley (German), BSc Atmospheric Sciences, U Innsbruck, spring 2017

Valentina Zeni: Inversionsbestimmung im Inntal anhand von zwei Hangprofilen, BSc Atmospheric Sciences, U Innsbruck, spring 2016

Eva Laiminger: Qualität der Windmessung mit einem Doppler–SODAR in Kolsass, BSc Atmospheric Sciences, U Innsbruck, fall 2014

Fabian Wiler: Qualität von Windfeldern im alpinen Raum. BSc Atmospheric Sciences, U Innsbruck, summer 2014

Martin Schöll, Hydrologische Modellierung eines Tiroler Einzugsgebietes anhand gemessener Stationsdaten und INCA Daten des Nowcastingsystems der ZAMG, BSc Atmospheric Sciences, U Innsbruck, fall 2012

Cindy Steinacher, 'Das Jahr ohne Sommer in Innsbruck', BSc Atmospheric Sciences, U Innsbruck, spring 2012

Manuel Oberhuber, Windregimes im Inntal, BSc Atmospheric Sciences, U Innsbruck, spring 2012

Florian Baur, Turbulenzcharakteristika in einem Alpental, BSc Atmospheric Sciences, U Innsbruck, spring 2012

Katharina Riedinger, Mixed Precision im Dynamischen Kern eines Numerischen Wettervorhersagemodells, BSc Atmospheric Sciences, U Innsbruck, fall 2011

Klaus Einzinger, ‚Kombiniertes Potential von Wind- und Sonnenergie', BSc Atmospheric Sciences, U Innsbruck, fall 2011

Daniel Spitzl, Spatial variability of turbulence characteristics in the Riviera Valley, BSc Atmospheric Sciences, U Innsbruck, spring 2011

Yves Trokay (Environmental Natural Science, ETH): Tests of an empirical Ozone prediction model at sites outside its range of calibration, 2010.

Tatjana Bähler (Thesis paper, ETHZ), Fuzzy Verification, 2007

Stefan Müller, 'Berücksichtigung von *Plume Rise* für das Tracer experiment Indianapolis', Semester Thesis, DPHYS ETH, 2002

External Reviewer for PhD

Jan Weinkämmerer, Goethe Universität Frankfurt a.M., Large-eddy simulations of the mountain boundary layer: Daytime exchange processes and nocturnal fog formation, defense Oct 10, 2023

Evert I. F. de Bruijn, Wageningen University (NL), member of committee and external reviewer, 'Hot-Air Balloon Wind Sensing', defense April 25 2023.

Laura Herrera, School of Mines, Universidad National de Colombia, member of committee and external supervisor, Spatio-temporal variability of the Atmospheric Boundary Layer in the Aburrà Valley: characterization, processes, multi-scale interactions and impacts, defense August 23, 2021

Stephanie Westerhuis, ETHZ, member of PhD committee, Swiss Federal Institute of Technology, DISS. ETH NO. 27245, 'Improving forecasts of fog and low, stratus in a high-resolution numerical weather prediction model, defense: Nov 20, 2020.

Juan José Henao Castaneda, Universidad de Antioquia, Medellin, (Columbia), reviewer and member of defense committee. Dynamics of near-surface atmospheric stability with implications for land-atmosphere interactions in complex terrain and heterogeneous landscapes, defense Oct 8 2020.

Bettina Richter, ETHZ (PhD) and WSL (affiliation), member of committee and external supervisor, Improving Numerical Avalanche Forecasting with Spatial Snow Instability Modeling, ETH Dissertation 26898, defense: June 11 2020.

Sebastian Schlögl, EPFL (Ecole Polytechnique Fédéral de Lausanne), member of committee, Investigation of snow melt dynamics and boundary layer processes over a melting snow surface', defense March 9 2018

Irene Schicker, University of Vienna, external review, Influence of horizontal resolution, landuse and soil moisture on simulations of metorological conditions in complex terrain, defense 2017

Karmen Babic, University of Zagreb, member of committee and external supervisor, Low-level turbulence characteristics over inhomogeneous surface during wintertime conditions, University of Zagreb, defense 20.9. 2016

Nathalie Theeuwes, University of Wageningen, Urban Heat, natural and anthropogenic factors influencing urban air temperatures, defense Nov 18 2015

Maxime Litt, Université de Grenoble (member of committee) Etude de la couche de surface atmosphérique et des flux turbulents sur deux glaciers de montagne dans les Andes tropicales et les Alpes françaises, defense Feb 16 2015

Simona Falbino, Universita degli Studi, Torino, member of committee, Turbulence parameterization in the atmospheric boundary layer: data analysis and new developments in urban roughness and low wind, defense Sept 17, 2014

Theresa Gorgas, Univ Vienna, external review, Spatial validation of high-resolution NWP-models with VERA, defense April 28, 2014

Dominik Michel, University of Basel, member of committee and external supervisor, Characteristics of pollen emission and relation to micrometeorological parameters, defense December 2013

Lavinia Laiti, Universita di Trento, member of committee, An investigation of the Ora del Garda wind by means of airborne and surface measurements, defense April 19 2013

Joris Pianezze, Universite Joseph Fourier, Grenoble, F, member of committee, *Modélisation de la structure verticale de la turbulence optique en milieu naturel*, defense Feb 2013

Vincent Vionnet, Université de Paris-Est, member of committee L'étude du transport de la neige par le vent en conditions alpines : observations et simulations à l'aide d'un modèle couplé atmosphère / manteau neigeux, defense November 2012

Manuela Lehner, University of Utah, member of committee, Observations and Large-Eddy Simulations of the thermally driven cross-basin circulation in a small, closed basin, defense August 2012.

Daniel Nadeau, EPFL, member of committee, Atmospheric Boundary Layer Dynamics of Transitional Flows over Complex Terrain, defense September 2011.

Lorenzo Giovannini, U Trento, external review, Urban scale phenomena and boundary layer processes in mountain valleys, defense 2012

Grégoire Pigeon, Université Paul Sabatier, member of committee, 'Les échanges surface-atmosphère en zone urbaine – projets CLU-ESCOMPTE et CAPITOUL', defense May 2007

Andreas Christen, University of Basel, member of committee and external supervisor, Atmospheric Turbulence and Surface Energy Exchange in Urban Environments, defense April 6 2005.

Raelene Sheppard, IAC-ETHZ, member of committee: On the Parameterization of Turbulent Fluxes in GCMs and Reanalyses, defense August 18 2004.

Yves-Alain Roulet, EPFL, member of committee and external supervisor, Validation and Application of an Urban Turbulence Parameterization Scheme for Mesoscale Atmospheric Models, defense June 2004.

Marie-Aurélie Kerbiriou, Université Joseph Fourier, Grenoble, member of committee, Dynamique d'une inversion thermique, transport et mélange en vallée encaissée : une étude numérique tridimensionelle, defense: March 17 2004.

Sandrine Bernard-Trottolo, Université Toulouse III, Paul Sabatier, member of committee, 'Diagnostique de la présence de structures cohérentes au sein de la couche limite atmosphérique', defense 17 December 2001.

Sylvain Dupont, Ecole Centrale de Nantes, ECN France, member of committee, 'Modélisation dynamique et thermodynamique de la canopée urbaine: réalisation du modèle de sols urbains pour SUBMESO', defense 20 September 2001, ECN

Anne Katrine Vinther-Falk, Risø National Laboratory and Technical University of Denmark, member of committee, 'Footprint Analysis from Random Walk Models for Atmospheric Dispersion', March, 11 1999, Denmarks Techniske Universitet, Copenhagen.

Emanuel Guilloteau, Ecole Centrale de Nantes, ECN, France, member of committee: 'Modélisation des sols urbains pour les simulations de l'atmosphère aux échelles sub-méso', defense September 30, 1999.

Christoph Ammann, Max Planck Institute for Chemistry, Mainz, Germany, external review, 'On the Applicability of Relaxed Eddy Accumulation and common methods for measuring trace gas fluxes', 3. 8. 1998.

Additional Experience

2003 External reviewer for the habilitation of Dr. Sandrine Anquetin, Laboratoire d'études des Transferts en Hydrologie et Environment, Université Joseph Fourier, Grenoble

2002 Expert Opinion on the dissertation of Mr. Jan Schween at the Ludwig-Maximilians-University, Physics Department, Munich (D)

2000 Microclimatological advisor for urban planning by architects Diener&Diener, Basel.

Scientific advisor (turbulence and dispersion) in a scientific project dealing with pollen transport.

1998 Expert Opinion (dispersion modeling, meteorological measurements) on a project of a road tunnel in the Canton Tessin

1994 Course in Didactics, ETHZ/Univ. Zürich

1989-91 Part time job as an air quality consultant (INFRAS, Zürich)

Invited Seminars

2023 Rotach MW: Exchange Processes in the Atmosphere over Mountains, StuMeTa (Student Meteorological Conference), Innsbruck, 18-20 May 2023 (solicited)
Rotach MW: 'Gebirgsmeteorologie', Abschiedssymposium Stefan Emeis, Garmisch-Partenkirchen, 19.4. 2023

2022 Rotach MW: Recent advances and remaining gaps in knowledge concerning exchange processes in the atmosphere over mountains, TRO Seminar, Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, June 21 2022.

Rotach MW: 2022, Exchange Processes in the Atmosphere over Mountains - recent advances and remaining gaps in knowledge, BOKU, Seminar of the Institute of Meteorology and Climatology, 22.02. 2022.

Rotach MW: 2022, Any Questions? – the Physical Basis of Global and Austrian Climate Change, Seminar of the Faculty of Physics, University of Vienna, 7.4. 2022

2021 Rotach MW: 2021, Current state of TEAMx, ICAM Online Event 2021, May 8-12, 2021 invited paper.

Rotach MW: 2021, Scene Setting: Climate Change in Mountainous Areas, Pre-COP26 Conference 'Towards climate-smart Alpine forests', Pre-COP26 House, Villa Necchi, Milan, I, 30 September 2021.

2020 Rotach MW, Arpagaus M, Cuxart J, De Wekker SFJ, Grubišić V, Kalthoff N, Kirshbaum DJ, Lehner M, Mobbs SD, Paci A, Palazzi E, Serafin S, Zardi D: 2020, TEAMx: Multi-scale Transport and Exchange in the Atmosphere over Mountains - Programme and Experiment, SSC Meeting (Scientific Steering Committee) of WWRP (World Weather Research Programme), 29.10. 2020 (online presentation).

Rotach MW, Arpagaus M, Cuxart J, De Wekker SFJ, Grubišić V, Kalthoff N, Kirshbaum DJ, Lehner M, Mobbs SD, Paci A, Palazzi E, Serafin S, Zardi D: 2020, TEAMx: Multi-scale Transport and Exchange in the Atmosphere over Mountains - Programme and DLR, Atmospheric Physics Seminar, 14.7. 2020 (online presentation).

Rotach MW, Arpagaus M, Cuxart J, De Wekker SFJ, Grubišić V, Kalthoff N, Kirshbaum DJ, Lehner M, Mobbs SD, Paci A, Palazzi E, Serafin S, Zardi D: 2020, TEAMx and its relation to applications in Earth system modelling, TEAMx Webinar (Info: Teax-programme.org) originally planned as EGU Splinter meeting', 6.5. 2020

2019 Rotach MW, The world is not flat – implications for the global carbon cycle, 12th MICMoR Research Forum, 6.11. 2019, KIT/IMK-IFU Garmisch-Partenkirchen, (invited keynote)

Rotach MW, Closing the Capacity Gap (Segment 3) – Critical Science Topics, WMO High Mountain Summit, Geneva, October 28-30 2019, (invited intervention)

Rotach MW, Complex Boundary Layers, Symposium 40 years of Progress and Challenges in Meteorology, Wageningen University, October 10 2019 (solicited)

Rotach et al, TEAMx. Multi-scale Transport and Exchange Processes in the Atmosphere over Mountains - Programme and Experiment, paper IUGG19-3756, IUGG General Assembly 2019, Montreal, Ca., July 8-17 2019 (solicited)

Rotach MW, TEAMx – a New international Research Programme on Weather and Climate in the Mountains, Commission for Climate und Air Quality, Austrian Academy of Sciences (ÖAW), Vienna, 26.4. 2019

Rotach MW et al., The White Paper for TEAMx (Multi-Scale Transport and Exchange Processes in the Atmosphere over Mountains – Programme and Experiment), Annual Meeting Austrian Society for Meteorology (ÖGM), Vienna, 27.4. 2019

Rotach MW, TEAMx - Multi-Scale Transport and Exchange Processes in the Atmosphere over Mountains – a new international Programme and Experiment, *19th*

International Symposium on Sustainable Water Resources Development, May 24-25, 2019, Arba Minch University, Arba Minch, Ethiopia, invited keynote

2018 Rotach MW: Can we get reliable information about the climate conditions in the year of Ötzi's tragedy?, Interdisciplinry Seminar on Climate Change, U Innsbeuck, Dec 13 2018

Rotach MW et al.: A coordinated effort to investigate transport and exchange processes in the Atmosphere over mountains, Seminar, Universidad de Medellin, Columbia, 15.8. 2018

Rotach MW et al: A coordinated effort to investigate transport and exchange processes in the Atmosphere over mountains, Graduate Seminar, ACINN, 23.5. 2018

Rotach MW et al.: Why you should remember what **TEAMx** means: a new initiative in mountain Meteorology and Mountain Climate, Meteorologisches Geophysikalisches Kolloquium, Institut für Meteorologie und Geophysik der Universität Wien, 10.4. 2018

2017 Rotach MW: Exchange of mass, momentum and energy between mountainous terrain and the atmosphere, Deutsche Meteorologische Gesellschaft, Sektion Frankfurt, 22. 11. 2017

Rotach MW: 2017, Measurement of Atmospheric turbulence over complex mountainous terrain, Research seminar at Lindenberg observatory of the German Weather Service, March 2, 2017

Rotach MW 2017: Challenges for Convection-Permitting Climate Studies, CLM Assembly 2017, Graz 20.9. 2017 (invited guest lecture)

2016 Rotach MW: 2016, The Climate of the Alps – Urgent Scientific Questions, *Climate Information Distillation workshop*, Vienna, 30.11.-1.12. 2016 (invited)

Rotach MW: 2016, Key scientific challenges in observing and modeling urban atmospheres from minutes to decades, and from building to regional scale, *Urban Workshop on integration of atmospheric processes across scales*, University of Reading, UK, November 16-18, 2016 (*invited keynote*)

Rotach MW, Chen X, Skerlak B, Añel JA, Su Z, Ma Y, Li M: 2016, The Extremely High-ranging Planetary Boundary Layer over the Western Tibetan Plateau in Winter, Seminar University of Zagreb, Dep. of Geosciences, September 21 2016.

2016 Rotach MW: 2016, Aktuelle Themen der Grenzschichtmeteorologie, DACH, 14-18.3. 2016, Berlin (D)

2015 Rotach MW: 2015, Meteorology of Urban Canyons, Workshop on Urban Meteorology, Wageningen University, November 18 2015

Rotach MW: The world is not flat – on the Role of Topography in Land-Atmosphere Exchange, MAQ Seminar, University of Wageningen, September 29 2015

Rotach MW: On the turbulence structure over complex mountainous terrain, AGU fall

meeting San Francisco, Dec 14-18 2015 (invited)

Rotach MW, Martilli A: The city as a power plant, 1st conference on Climate Change and Sustainable Heritage, Techn Univ Graz, 18. - 20.2. 2015 (*invited keynote*)

Rotach MW: What do we know from IPCC – what 's relevant for urban areas? 1st conference on Climate Change and Sustainable Heritage, Techn Univ Graz, 18. - 20.2. 2015 (*invited keynote*)

2014 On the Boundary Layer Structure over Mountainous Complex Terrain, Workshop on Advances in Meso- and Micrometeorology, Donja Stubica, CR, 3-4 Nov 2014 (*invited keynote*)

Achievements and Challenges for Atmospheric Observations from Micro- to Meso-Scales, 1st World Weather Open Science Conference, August 16 - 21, 2014 Montréal, Canada, *invited keynote*

On the Role of Topography in Earth-Atmosphere Exchange over strong topography, National Center for Atmospheric Research (NCAR), *MMM Seminar*, August 12 2014, Boulder CO.

Enhanced earth-atmosphere exchange through topography, Interdisciplinary Climate Seminar, University of Innsbruck, Jan 8 2014

2013 Herausforderungen der numerischen Modellierung in komplexer Topographie, MeteoSwiss, NWP-Seminar, Zurich, 28.6. 2013

Modeling of atmospheric flows in complex terrain, Zentralanstalt für Meteorologie und Geophysik, Vienna, 12.6. 2013

Current challenges and future research for boundary Layer dynamics over complex terrain, Johannes Gutenberg University Mainz, Mainzer Kolloquium für Atmosphärenphysik, 24.1. 2013

HPC in atmospheric science (invited), DK+CIM Winter School, 6.3. 2013, Obergurgl, Austria

Earth-atmosphere exchange processes in complex terrain (keynote), Symposium *Patterns in Soil-Vegetation-Atmosphere-Systems: Monitoring, Modelling & Data Assimilation*, 11 -14 March 2013, Bonn, Germany

2012 Dynamics of exchange processes in the Planetary Boundary Layer over complex terrain, University of Hohenheim (D), Institute for Physics and Meteoroloogy, Seminar, 13.7. 2012

Inhomogeneity of atmospheric boundary layers in complex terrain, EGU General Assembly 2012, session AS2.2/OS5.3 (*solicited*)

Exchange processes in Complex Terrain, Grad. Seminar IMGI, 21.3. 2012

2011 Boundary Layer Dynamics over Complex Terrain: current challenges and future research, 28.9. 2011, Laboratory of Environmental Fluid Mechanics and Hydrology, EFLUM, EPFL, Lausanne, Switzerland.

Uncertainty propagation for flood forecasting in the Alps: Different views and impacts from MAP D-PHASE, EGU2011-12350 (*solicited*), Session NH1.6/HS12.8, 6.4. 2011

Austausch-Prozesse in komplexer Topographie - eine meteorologische Herausforderung, Jahresversammlung der Österreichischen Gesellschaft für Meteorologie, 4. April 2011, ZAMG Wien

Challenges in Boundary Layer Dynamics over Complex Terrain, IMK-IFU, Garmisch-Partenkirchen March 1 2011.

Ensemble forecast in the atmosphere - background and recent results from MAP D-PHASE, HPC Seminar, University of Innsbruck, January 10, 2011.

2010 Challenges in Boundary Layer Dynamics over Complex Terrain, Meteorologisches Kolloquium LMU München, 14. Dezember 2010.

Über die Struktur der Planetaren Grenzschicht in komplexer Topographie, Karlsruher Seminar über aktuelle Forschungsthemen der Meteorologie, 26. Oktober 2010

Grenzschichtdynamik und Austauschprozesse in komplexer Topographie, Meteorologisch-Geophysikalisches Kolloquium der Universität Wien, 23.1. 2010.

MAP D-PHASE MAP D-PHASE: Demonstration der meteorologisch-hydrologischen Vorhersage im Alpenraum, Meteoologisches Seminar IMGI, Universität Innsbruck, 16. 6. 2010.

Aspects of boundary layers in complex terrain and the interaction to the free troposphere (solicited), EMS2010-105, Sept 12-19 2010, Zurich Switzerland.

Flood Forecasting in the Alps using many different coupled atmospheric-hydrologic modeling systems: lessons learned from a demonstration project, Colloquium Atmosphere and Climate ETHZ, 27.9. 2010

Über die Struktur der Planetaren Grenzschicht in komplexer Topographie, Karlsruher Seminar über aktuelle Forschungsthemen der Meteorologie, 26.Oktober 2010

Grenzschichtdynamik und Austauschprozesse in komplexer Topographie, Meteorologisch - Geophysikalisches Kolloquium der Universität Wien, 23. November 2010

Challenges in Boundary Layer Dynamics over Complex Terrain, Meteorologisches Kolloquium LMU München, 14. Dezember 2010

2009 The Swiss Phenological Network - and applications in Climatology, Swiss-South African conference on mountain observatories, various locations, Nov 2-6 2009.

Report on the MAP D-PHASE FDP, Joint Scientific Steering Committee, Weather Research Programme, Sept 9-11 2009.

Climate and more sustainable cities - discussant contribution, *World Climate Conference 3*, WS-8: Climate and More Sustainable Cities, Geneva, Aug 31 -Sept 3 2009.

Bio- and Environmental Meteorology at MeteoSwiss, MCR Lab, University of Basel, 20.5. 2005.

Pollen dispersion modeling with COSMO-ART at MeteoSwiss, ARPA-SIM, Bologna, May 25 2009.

Mikrometeorologie in Städten – was die Pollenausbreitung beeinflusst. Jahresversammlung der schweizerischen Gesellschaft für Aerobiologie, Bern, 12. März 2009.

2008 Chaos in der Wetterküche, *ASCO General Meeting*, 10. April 2008, Zürich.

'Data mining in the joint D-PHASE and COPS archive', *COPS Workshop*, Hohenheim (D), 27-29 Feb 2008.

'Output of the WWRP FDP D-PHASE: what can we expect?', WWRP Working Group on Meso-scale Weather Forecast, Tokyo 17/18 March 2008.

'State of the art in assessing and understanding precipitation processes in mountainous regions for the benefit of flash flood prediction', APUNCH Kick-off Public Workshop, ETHZ, 14 November 2008.

2007 ‚Forschung und Entwicklung: Neue Entwicklungen in der Wettervorhersage', User Consultation, Airport Conference Centre, Airport Zurich, 20.12. 2007.

‚Neue Entwicklungen in der Wettervorhersage: Potential und Anforderungen für Anwender', *Forum für Wissen*, Scientific Meeting of WSL (Swiss Federal Institute for Forest, Snow and Landscape Research), October 30 2007, Zürich Switzerland.

‚*MAP D-PHASE'*, WWRP Working Group on Mesoscale Weather Forecast, Dubrovnik (CRO), October 8-9 2007.

'D-PHASE: DOP now!*', Keynote Lecture*, International Conference on Alpine Meteorology (ICAM), June 4-8, Chambéry (F).

Grundlagen meteorologischer Modellierung, Schweizer End User Workshop, D-PHASE, June 21, Zürich Switzerland

2006 'Scientific Challenges for MAP D-PHASE', First MAP D-PHASE Scientific Meeting, Vienna 6-8 November 2006 (*keynote*).

Meteorologische Begleitfaktoren, OSTLUFT-Workshop Wintersmog, Zürich, 26 October 2006

'COSMO', THROPEX Europe workshop, Exeter (GB), 9-11 October 2006.

Modeling of Boundary Layer Processes in steep orography, ESF LESC Exploratory Workshop on Very High Resolution Environmental Modeling (VHREM), Stuttgart, 21-23.9. 2006

Turbulence Characteristics and Exchange Processes over Highly Complex Topography, National Center for Atmospheric Research, Boulder CO, MMM Seminar, 10.8. 2006.

MAP D-PHASE – How do the Alps influence extreme weather events meteo**risk** Symposium, Vienna, 22.6. 2006

MAP D-PHASE, 3rd COPS Workshop, University of Hohenheim, April 10-11 2006.

Recent Progress on PBL Structure and Turbulence Characteristics over Highly Complex Topography, NATO Advanced Research workshop on PBL, Dubrovnik CR, 18-22 April 2006.

2005 Wind und Wetter im Alpenraum – Resultate von MAP, Union Lecture, Schweiz. Landesverband IUGG, November 25 2005.

MAP D-PHASE', 2nd SRNWP Workshop on Short-Range Ensemble, Bologna, 7-8 April 2005.

Grenzschicht, Theorie und aktuelle Forschungsansätze, Seminar Geographisches Institut Universität Bern, January 12 2005.

2004 Notwendige Grundlagenforschung der atmosphärischen Grenzschicht, besonders für Flux Bestimmung, *Annual Meeting, Schweiz. Gesellschaft für Meteorologie*, 6 October, 2004, Sarnen.

MAP and the Forecast Demonstration Project, Seminar, Instiute of Physics and Meteorology, Unversity Hohenheim, Stuttgart, 8.12. 2004.

On the turbulence structure over highly complex terrain: key findings from the MAP-Riviera project, invited paper at *11th AMS Conference on Mountain Meteorology*, June 21–25 2004.

A local Ensemble Prediction System, International Workshop on Timely Warnings of Heavy Precipitation Episodes and Flash Floods, Ljubljana, Slovenia, 21-22 October 2004

2003 Turbulence in the urban near-surface layer and its impact on urban-scale pollutant dispersion', Environmental Fluid Dynamics Program, Arizona State University, June, 5, 2003.

'The urban near-surface turbulence structure and its influence on urban-scale dispersion', Environmental Fluid Dynamics Laboratory, University of Utah, February, 20, 2003.

'On the energy balance closure in complex terrain', Environmental Fluid Dynamics and Hydrology Department, Stanford University, CA, February 10, 2003.

'On the Influence of Roughness Sublayer Turbulence on Urban-scale Dispersion', Meteorology Department, San Jose State University, February 11, 2003.

'Turbulenz und Austauschproesse in komplexem Gelände', Institut für Meteorologie, LMU München, Probevortrag, 30 January 2003.

2002 'Luftschadstoffmodellierung in der Schweiz', Inauguration lecture ETHZ, 17 January 2002.

'Überblick Forschung IACETH', FOG workshop, MeteoSwiss, 8.4. 2002

'Turbulent exchange in the urban roughness sublayer', EGS General Assembly, Nice, 22-26 April 2002, *solicited paper*.

'Lektionen aus Turbulenzmessungen für das Verständnis von Prozessen des Spurengastransports', Probevortrag, TU München, 16 July, 2002.

'Turbulent exchange in an Alpine Valley – the MAP-Riviera project', *Dynamics happy hour*, National Center for Atmospheric Research (NCAR), Boulder, CO, September 27 2002.

'On the Influence of Roughness Sublayer Turbulence on Urban-scale Dispersion', The University of British Columbia, Vancouver, Atmospheric Science Seminar, October 17 2002.

'Modelling Air Pollutant Dispersion over Complex Surfaces', The University of British Columbia, Vancouver, Geography Department Colloquium, October 16 2002.

'On the Influence of Roughness Sublayer Turbulence on Urban-scale pollutant Dispersion', MMM Seminar, National Center of Atmospheric Research, NCAR, Boulder, CO, December 12, 2002

'Turbulence and Exchange Processes over Highly Complex Terrain', University of Wyoming, Dept. of Atmospheric Sciences, seminar series, Laramie, WY, December 13, 2002

2001 'BUBBLE - current status of the experiment and planned investigation/evaluation of the mixing height', COST 715 expert meeting on *Mixing height and inversions in urban areas*, Toulouse (F), 3/4 October 2001.

'Urban momentum exchange and consequences for dispersion modeling', ECN (F), 20. 9. 2001.

'The MAP-Riviera Project – first results', University of Trento (I), I, 13. 9. 2001

'BUBBLE - The Basel Urban Boundary Layer Experiment', Météo France, (F) , 1. 3. 2001

2000 'On the effect of urban roughness on pollutant surface concentrations', Indiana University, Bloomington IN, 2. 8. 2000.

'The Boundary Layer structure of an Alpine valley – the MAP-Riviera project' Pacific Northwest National Laboratory, Richland WA, 6. 7. 2000.

'The Structure of the Planetary Boundary Layer over complex surfaces: Challenges for the future', ETH Zurich, test lecture for habilitation, June 27 2000.

'Meteorological Preprocessors for urban applications – the Situation in Switzerland', COST 715 workshop, Prague, June 15 2000.

‘Wind input data for urban dispersion modeling’, COST 715 workshop, Prague, June 15 2000.

‘The siting, choice and operation of surface instrumentation in urban areas’, COST 715, expert meeting, Antwerp, April 12 2000.

1999 ‘Big whirls have little whirls...‘, Seminar: ‘Ausgewählte Themen zur Atmosphärenphysik‘, LAPETH, Zürich, February 11-12 1999 (joint presentation with Ch. Appenzeller).

‘The MAP-Riviera project‘, MAP working group on planetary boundary layer – yearly meeting, Appenzell, 8. 6. 1999

‘Working Group 1: The urban wind field‘, MC meeting of COST 715, Rouen (F), 14.-15.10., 1999

1998 ‘Structure of the Planetary Boundary Layer over steep orography’, Workshop on Challenges in Mountain Meteorology’, Monte Verita, Ascona, October 25–30 1998.

'RIVIERA: Ein Projekt zur Untersuchung der Grenzschichtstruktur in einem Alpental', SANW Jahresversammlung, September 24 1998

'Turbulenzstruktur und Schadstoffausbreitung über städtischen Oberflächen', MCR Aktuell, Fachkolloquium, Universität Basel, 24. 6. 1998

'Turbulenzstruktur und Energieaustausch in einem Alpental', Fachkolloquium der SMA, 13. Mai, 1998

'Quellenzuordnung von Spurengasflüssen mittels der Footprint-Methode', Symposium des Instituts für Umweltschutz und Landwirt-schaft, IUL/ FAL, Liebefeld, 14. Januar, 1998

1997 'Full-Scale Urban Roughness Sublayer Observations', Workshop on 'Linkage of Numerical Urban Canopy and PBL Models: How to Proceed?', Nantes (F), 30.6-1.7 1997.

'Lagrange'sche Partikelmodellierung für Schadstoffe: Anwendung für die Schneeverfrachtung', Kolloquium am Eidgenössischen Institut für Schnee und Lawinenforschung (SLF), Davos, 14.April, 1997

1996 'Simualtion des Klimas im Alpenraum mit einem hochaufgelösten, genesteten Modellsystem: Heutiges Klima und 2xCO2 Szenarien.' Interdisziplinäres Seminar über Klimadynamik, ETHZ, 20. 5. 1996

1994 'Modellierung der Schadstoffausbreitung in der städtischen Atmosphäre', Seminar Klima und Umweltphysik, Physikalisches Institut der Univ. Bern, June 6, 1994.

1993 'Turbulenz und Modellierung von Schadstoffausbreitung in der städtischen Atmosphäre', Kolloquium zur Klimatologie und Hydrologie, ETHZ, December 9, 1993

1992 'Lagrangian Particle Model for Dispersion in the Daytime Boundary Layer', Risø Meteorology Seminar, Risø National Laboratory, DK, December 3, 1992.

'Turbulence Characteristics close to a Rough Urban Surface', Risø Meteorology Seminar, Risø National Laboratory, DK, March 12, 1992.

1991 'Turbulenz und Austausch-Charakteristiken in den ersten Metern über einer städtischen Oberfläche', Phys.-Geogr. Kolloquium, ETHZ, November, 21 1991.

Conferences and Meetings

Workshop WMO Standing Committee on Data Processing for Applied Earth System Modelling and Prediction (SC-ESMP), 6 - 8 March 2023, Oslo, Norway

Workshop WMO Global Cryosphere Watch Advisory Group (GCW-AG), 9 - 10 March 2023, Oslo, Norway

EMS Annual Meeting 2022, Bonn, 5-9.9., 2022

ICAM 2020, postponed to 'ICAM online event 2021'.

WMO High Mountain Summit, Geneva, October 29-31 2019

IUGG General Assembly 2019, Montreal, Ca., July 8-17 2019

1st TEAMx Workshop, Rovereto (I), 28-30 August 2019

35th International Conference on Alpine Meteorology, Sept 2-6 2019, Riva del Garda (I)

18th AMS conference on Mountain Meteorology, June 25-29, 2018, Santa Fe NM

European Geosciences Union General Assembly 2018, Vienna, Austria, 8 – 3 April 2018

Workshop eWUPDAT: Bringing eScience to Urban Climate Mapping and Modelling, Lorentz Center, Leiden NL, June 26-30, 2017 (invited talk)

34rd International Conference on Alpine Meteorology, ICAM 2017, Reykjavik, IS, June 19-23 2017.

Urban Workshop on integration of atmospheric processes across scales, University of Reading, UK, November 16-18, 2016, (invited keynote)

22nd Symposium on Boundary Layers and Turbulence 20-24 June 2016, Salt Lake City, UT

17th AMS conference on Mountain Meteorology, June 26-July 1 2016, Burlington VT

DACH2016, March 14-18 2016, Berlin (D) (invited plenary talk)

33rd International Conference on Alpine Meteorology, ICAM 2015, Innsbruck A, August 31 – Sept 4 2015.

Austrian HPC Meeting, 2015 AHCP15, Obergurgl, 15-20.3. 2015

1st conference on Climate Change and Sustainable Heritage, Techn Univ Graz, 18.-20. 2. 2015 (invited keynote)

Workshop on Advances in Meso- and Micrometeorology, Donja Stubica, CR, 3-4 Nov 2014, invited keynote

WWOSC, 1st World Weather Research Open Science Conference, Montreal, Ca, August 16-21, 2014, invited keynote

Workshop on Weather Observation, Experiment and Forecast in Complex Mountain Areas, Institute for Plateau Meteorology, CMA, Chengdu, China, July 3-4, 2014, invited

21st Symposium on Boundary Layers and Turbulence 9-13 June 2014, Leeds, UK

DACH 2013; German-Austrian-Swiss Meteorology Congress, Innsbruck, Austria, 3-6 September 2013.

DACA-13: Davos Atmosphere and Cryosphere Assembly, Davos, Switzerland, 8-12 July 2013, convener of session on 'Dynamics of Mountain Weather and Climate'

32th ICAM (International Conference on Alpine Meteorology), Kranjska Gora, SI, 3-7- June 2013

Workshop: Patterns in Soil-Vegetation-Atmosphere-Systems: Monitoring, Modelling & Data Assimilation, 11 -14 March 2013, Bonn, Germany.

15th Conference on Mountain Meteorology, 20-24 August 2012, Steamboat Springs CO

European Geosciences Union General Assembly 2011, Vienna, Austria, 23 – 28 April 2012

13th Plinius Conference on Mediterranean Storms, Savona (I), 7-9 September 2011.

31th International Conference on Alpine Meteorology (ICAM), May 23-27, Aviemore (Scotland).

European Geosciences Union General Assembly 2011, Vienna, Austria, 03 – 08 April 2011

10th EMS / 8th ECAC, Zurich, Switzerland, 13-17 September 2010

6th European Conference on Radar Meteorology, ERAD2010, Sibiu, RO, 6-10 September, 2010

14th Conference on Mountain Meteorology, 30 August - 3 September 2010, Lake Tahoe Vicinity, CA

Third THORPEX International Science Symposium TTISS, Sept 14-18 2009, Monterey CA.

Third World Climate Conference WCC-3, Aug 31 -Sept 3 2009, Geneva

30th International Conference on Alpine Meteorology (ICAM), May 11-15 2009, Rastatt (D), *keynote*.

COPS Workshop, Strassbourg (F), 27-29 October 2008

Joint MAP D-PHASE Scientific Meeting - COST 731 mid-term Seminar, 'Challenges in hydrometeorological forecasting in complex terrain', Bologna, Italy, 19-22 May 2008, *keynote.*

Forum für Wissen, Meeting of WSL Switzerland, 'Warnung bei aussergewöhnlichen Naturereignissen' (invited).

9th COSMO General Meeting, Athens, GR, 18-21 Sept 2007

3rd HEPEX Workshop, 27-29 June 2007, Stresa (I).

29th International Conference on Alpine Meteorology (ICAM), June 4-8 2007, Chambéry (F), *keynote.*

Second THORPEX International Scientific Symposium, Landshut, D, 4-8 December 2006.

First MAP D-PHASE Scientific Meeting, Vienna, AT, 6-8 November 2006 (keynote).

ESF LESC Exploratory Workshop on Very High Resolution Environmental Modelling (VHREM), Stuttgart, 21-23.9. 2006

8th COSMO General Meeting, Bukarest, RO, 18-20 Sept 2006

12th AMS Conference on Mountain Meteorology, Aug 12 – Sep 1 2006, Santa Fe, NM.

NATO Advanced Research Workshop on PBL, Dubrovnik CR, 18-22 April 2006 (invited)

CHR Workshop 'Ensemble Prediction and uncertainties in flood forecasting', Bern, CH, March 30/31 2006, 31-36.

WMO Commission of Atmospheric Science, 14th Session, Capetown SA, 16-24 February 2006.

7th COSMO General Meeting, Zürich CH, 20-23 Sept 2005

EMS, General Assembly, Utrecht, NL, 12-16 Sept 2005

ICAM / MAP conference, Zadar CR, 23-27 Mai 2005

2nd SRNWP Workshop on Short-Range Ensemble, Bologna, I, 7-8 April 2005

6th COSMO General Meeting, Milan, I, 22-26 Sept. 2004

4th Annual Meeting of the European Meteorological Society, Nice (F), 26-30 September 2004.

9th Int. Conference on Harmonisation within Atmospheric Dispersion Modeling for Regulatory Purposes, 1-4 June 2004, Garmisch-Partenkirchen, D.

11th AMS Conference on Mountain meteorology & MAP meeting, 21-25 June 2004, Bartlett, NH.

5th Int Conference on Urban Climate, Lodz, PL, 1-5 September 2003.

Int. Conference on Alpine Meteorology/MAP meeting, May 19-23 2003, Brig, Switzerland.

10th Conference on Mountain Meteorology & MAP meeting, June 17–21 2002, Park City, UT.

4th AMS Symposium on the Urban Environment, 20-24 May 2002, Norfolk, VA

EGS 27th General Assembly, April 22-22 2002, Nice (F).

3rd International Conference on Environmental Hydraulics, Tempe AZ, 5-8 December 2001.

MAP meeting 2001, Schliersee, May 14–16 2001

EGS 26th General Assembly, March 26-30 2001, Nice (F).

3rd International Conference on Urban Air Quality. 19-23 March 2001, Loutraki (GR).

14th Symposium on Boundary Layers and Turbulence, August 7–11 2000, Aspen, CO.

Ninth Conference on Mountain Meteorology, August 7–11 2000, Aspen, CO.

MAP meeting 2000, Bohinska Bistrica, May 24-26 2000

MAP meeting 1999, Appenzell, June 9-11 1999

EGS XXIV General Assembly, The Hague, 19-23 April 1999

2nd International Conference on Urban Air Quality, March 3-5 1999, Madrid (E).

23rd ITM on Air pollution Modeling and its Application, Varna, September 28-October 2, 1998

MAP meeting 1998, Chamonix, June 17-19 1998

5th International Conference on Harmonisation within Atmospheric Dispersion Modeling for Regulatory Purposes, Rhodes, GR, May 18-21, 1998

12th Symposium on Boundary Layers and Turbulence, Vancouver, BC, July 28 - August 1, 1997

MAP meeting 1997, Belgirate, June 11-13 1997

22nd ITM on Air pollution Modeling and its Application, Clermont-Ferrand, June 2-6, 1997

International Conference on Urban Climatology, Essen, June 10-14, 1996

2. Workshop Regionales Klima/Regionalisierung im Alpenraum, Disentis, 29. Februar-1. März 1996

EUROMECH Colloquium 338, Atmospheric Turbulence and Dispersion in Complex Terrain, Bologna, Sept. 4-6, 1995

MAP meeting 1995, Bad Tölz, June 29-30, 1995

Workshop on Regional Climate Modeling, Bad Tölz, June 28, 1995

EGS, General Assembly, Grenoble, Apr. 25 - 29, 1994

IMA Conference on Flow and Dispersion Through Groups of Obstacles, Cambridge, Mar. 28-30, 1994

XXth ITM on Air pollution Modeling and its Application, Valencia, Nov. 29 - Dec. 3, 1993

2nd Workshop on Mass Balance and Related Topics of the Greenland Ice Sheet, Zermatt, Dec. 2-4, 1990

9th Symposium on Turbulence and Diffusion, AMS, Roskilde, Denmark, Apr. 30 - May 3, 1990

Outreach

Interview für Bayrischen Rundfunk, Sendung von Georg Bayerle:
Nach dem Dolomiten-Orkan - IQ - Wissenschaft und Forschung | BR Podcast, Ausstrahlung 18.10. 2022

Rotach MW: Klimatologie in Zeiten der Cholera, Vereinigung Öffentlicher MandatarInnen Tirol, 3.3. 2022, Zentrum Tivoli, Innsbruck

Rotach M: Haben unsere Bäche auch in Zukunft genug Wasser?, Wasser Tirol Akademie, 20.10. 2021, Schwaz, SZentrum.

Rotach MW: Klimawandel und Auswirkungen auf den Skisport, Lehrgang Deutscher Sportlehrerverband e.V., LV NRW, Tux-Lanersbach, 13. October 2019

Rotach MW: 'What do we know about climate change? And how well do we know this?', 1st MINT Day (Mathematic, Informatics, Natural Sciences, Technical Sciences) Highschool Baden (Gymnasium), Introductory Lecture, 26.9. 2018

Awards and Scientific Acknowledgements

2015 *WIMEK* (Wageningen Institute for Environment and Climate Research) Research Fellowship, September 2015

2015 Corresponding member of the Austrian Academy of Sciences

2001 Individual Recognition Award, IAC-ETH

2001 Visiting Professor, Ecole Centrale de Nantes

2000 1st position on the short list of the Search Committee for a full professor position in 'Experimental Atmospheric Physics', ETHZ (the position was finally not filled).

1992 Postdoctoral fellowship SNF

Societies

Österreichische Gesellschaft für Meteorologie
American Meteorological Society
European Geophysical Society
International Association for Urban Climate
Naturforschende Gesellschaft Zürich
Schweizerische Gesellschaft für Meteorologie
Royal Meteorological Society

List of Publications

Mathias Walter Rotach

Summary (Jan 2025):

Total entries Web of Science	132
h-index	48
total citations	7636
without self-citations	7054
average citations per item	63.63

Submitted

Peer Reviewed publications

2024

Pfister L, Gohm A, Kossmann M, Wieser A; Babić N; Handwerker J; Wildmann N; Vogelmann H; Baumann-Stanzer K; Alexa A; Lapo K; Paunović I; Leinweber R; Sedlmeier K; Lehner M; Hieden A; Speidel J; Federer M; Rotach MW: 2024, TEAMx-PC22 Alpine field campaign – Objectives, instrumentation, and observed phenomena, Meteorolo Z. (Contrib Atm Sci), DOI: 10.1127/metz/2024/1214

Platter A, Scholz K, Hammerle A, Rotach MW, Wohlfahrt: 2024, Agreement of multiple night- and daytime filtering approaches of eddy covariance-derived net ecosystem CO2 exchange over a mountain forest [Agricultural and Forest Meteorology, Volume 356, https://doi.org/10.1016/j.agrformet.2024.110173

Platter A, Scholz K, Hammerle A, Rotach MW, Wohlfahrt: 2024, *Corrigendum to "*Agreement of multiple night- and daytime filtering approaches of eddy covariance-derived net ecosystem CO2 exchange over a mountain forest, Agricultural and Forest Meteorology, 356 *(2024), 110173",* https://doi.org/10.1016/j.agrformet.2024.110365

Reif M, Rotach MW, Gohm A, Wohlfahrt G: 2024, Carbon Dioxide Exchange in an Idealized Valley, accepted Environmental Modelling and Software, *Environmental Modeling & Software*, **171**, Article 105887, https://doi.org/10.1016/j.envsoft.2023.105887

2023

Dabhi HP, Rotach MW, Oberguggenberger M: 2023, A gridded multi-site precipitation generator for complex terrain: an evaluation in the Austrian Alps, *Hydrol Earth Syst Sci, 27, 2123–2147*, https://doi.org/10.5194/hess-27-2123-2023

Göbel M, Serafin S, Rotach MW: 2023, Adverse impact of terrain steepness on thermally driven initiation of orographic convection , Weather Clim Dynam, **4**, 725–745, https://doi.org/10.5194/wcd-4-725-2023

Lehner M, Rotach MW: 2023 The performance of a time-varying filter time under stable conditions over mountainous terrain, *Boundary-Layer Meteorol*, **188**, 523-551, *https://doi.org/10.1007/s10546-023-00824-y*

Wagner W, Schramm M, Logar B, Sipos G, Briese C, Clark T, Reimer C, Kirchengast G, Rotach MW, Haimberger L, Tiede D, Rieder H, Wotawa G, Schwarz M, Fritz S: Federating Scientific Infrastructures and Services for Cross-Domain Applications of Earth Observation and Climate Data, Proc. of the 2023 conference on Big Data from Space (BiDS'23), doi:10.2760/46796

2022

Göbel M, Serafin S, Rotach MW: Numerically consistent budgets of potential temperature, momentum and moisture in Cartesian coordinates: Application to the WRF model, *Geosci. Model Dev.*, **15**, 669–681, https://doi.org/10.5194/gmd-15-669-2022.

Goger B, Rotach MW, Gohm A, Fuhrer O, Stiperski I, Holtslag AAM: Correction to: The Impact of Three-Dimensional Effects on the Simulation of Turbulence Kinetic Energy in a Major Alpine Valley, *Boundary-Layer Meteorol,* https://doi.org/10.1007/s10546-022-00701-0

Haid M, Gohm A, Umek L, Ward HC, Rotach MW: 2022: Cold-Air Pool Processes in the Inn Valley During Föhn: A Comparison of Four Cases During the PIANO Campaign. *Boundary Layer Meteorol*, **182**, 335–362, https://doi.org/10.1007/s10546-021-00663-9

Rotach MW, Serafin S, Ward HC, Arpagaus M, Colfescu I, Cuxart J, De Wekker SFJ, Grubišic V, Kalthoff N, Karl T, Kirshbaum DJ, Lehner M, Mobbs S, Paci A, Palazzi E, Bailey A, Schmidli J, Wittmann C, Wohlfahrt G, Zardi D: 2022, A collaborative effort to better understand, measure and model atmospheric exchange processes over mountains, *Bulletin American Meteorol Soc,* E1282–E1295, https://doi.org/10.1175/BAMS-D-21-0232.1

Stöckl S, Rotach MW, Kljun N: 2022, Including the Urban Canopy Layer in a Lagrangian Particle Dispersion Model, *Boundary-Layer Meteorol*, **185**, 1-34, https://doi.org/10.1007/s10546-022-00722-9

Umek L, Gohm A, Haid M, Ward HC, Rotach MW: 2022, Influence of grid resolution of large-eddy simulations on foehn-cold pool interaction, *Q J R Meteorol Soc,* **148**, 1840–1863, doi: https://doi.org/10.1002/qj.4281

Ward HC, Rotach MW, Gohm A , Graus M, Karl T, Haid M, Lukas Umek L, Muschinski T: 2021 Energy and mass exchange at an urban site in mountainous terrain – the Alpine city of Innsbruck, *Atmos. Chem. Phys.*, **22**, 6559–6593, https://doi.org/10.5194/acp-22-6559-2022

Weiss CI, Gohm A, Rotach MW, Minda TT: 2022, Dynamics of Gap Winds in the Great Rift Valley, Ethiopia: Emphasis on Strong Winds at Lake Abaya, Weather Clim Dynam, **3**, 1003–1019, https://doi.org/10.5194/wcd-3-1003-2022

2021

Adler B, Gohm A, Kalthoff N, Babic N, Corsmeier U, Lehner M, Rotach MW, Haid M, Markmann P, Gast E, George Tsaknakis G, Georgoussis G: 2021, CROSSINN - a field experiment to study the three-dimensional flow structure in the Inn Valley, Austria, *Bulletin American Meteorol Soc,* 102 **(1), pp E38-E60,** https://doi.org/10.1175/BAMS-D-19-0283.1

Babic N, Adler B, Gohm A, Kalthoff N, Haid M, Lehner M, Ladstätter P, Rotach MW: 2021, Cross-valley vortices in the Inn Valley, Austria: Structure, evolution and governing force imbalances, *Q J R Meteorol Soc,* **147**, 3835–3861, https://doi.org/10.1002/qj.4159

Dabhi H, Rotach MW, Dubrovsky M, Oberguggenberger M: 2021, Evaluation of a stochastic weather generator in simulating univariate and multivariate climate extremes in different climate zones across Europe, *Meteorol. Z.* (Contrib. Atm. Sci.), **30**, No. 2, 127–151, https://doi.org/10.1127/metz/2020/1021

Horak J, Hofer M, Gutmann E, Gohm A, Rotach MW: 2021, A process-based evaluation of the Intermediate Complexity Atmospheric Research Model (ICAR) 1.0.1, *Geosci Model Dev,* **14**, 1657–1680, doi: https://doi.org/10.5194/gmd-14-1657-2021

Lehner M, Rotach MW, Obleitner F, Sfyri, E: 2021, Spatial and temporal variations in near-surface energy fluxes in an Alpine valley under synoptically undisturbed and clear-sky conditions, *Q J R Meteorol Soc,* **147**, 2173-2196, doi: 10.1002/qj.4016

Richter B, Schweizer J, Rotach MW, van Herweijnen A: 2021, Modeling spatially distributed snow instability at regional scale using Alpine3D, *J Glaciology*, first view, doi: https://doi.org/10.1017/jog.2021.61

Umek L, Gohm A, Haid M, Ward HC, Rotach MW: 2021, Large-eddy simulation of foehn–cold pool interactions in the Inn Valley during PIANO IOP 2, *Q J R Meteorol Soc, **147***, Issue 735 944-982, https://doi.org/10.1002/qj.3954

Zardi D, Rotach MW: 2021, Transport and Exchange Processes in the Atmosphere over Mountainous Terrain: Perspectives and Challenges for Observational and Modelling Systems, from Local to Climate Scales, *Atmosphere*, **12**, 199, https://doi.org/10.3390/atmos12020199

2020

Dubrovsky M, Huth R, Dabhi H, Rotach MW: 2020, Parametric Gridded Weather Generator for Use in Present and Future Climates: Focus on Spatial Temperature Characteristics, *Theoretical and Applied Climatology*, **139**, 1031–1044, Doi: 10.1007/s00704-019-03027-z

Garratt J, Wilczak J, Holtslag A, Schmid HP, Grachev A, Beljaars A, Foken T, Chen F, Fairall C, Hicks B, Kusaka H, Martilli A, Masson V, Mauder M, Oncley S, Rotach MW, Tjernström M: 2020, Commentaries on Top-Cited Boundary-LayerMeteorology Articles, *Boundary-Layer Meteorology*, **177**, 169–188, https://doi.org/10.1007/s10546-020-00563-4

Giordani A, Zappa M Rotach MW: 2020 Estimating ensemble flood forecasts uncertainty: a novel "Peak-box" approach for detecting multiple peak-flow events, *Atmosphere,* **11**, 2;, https://doi.org/10.3390/atmos11010002

Giovannini L, Ferrero E, Karl T, Rotach MW, Staquet C, Trini Castelli S, Zardi D: 2020, Atmospheric Pollutant Dispersion over Complex Terrain: Challenges and Needs for Improving Air Quality Measurements and Modeling, *Atmosphere,* **11**, 646; https://doi.org/10.3390/atmos11060646

Haid M, GohmA, Umek L, Ward HC, Muschinski T, Lehner L, Rotach MW: 2020, Foehn–cold pool interactions in the Inn Valley during PIANO IOP2, *Q J R Meteorol Soc*, **146**, 1232–1263, https://doi.org/10.1002/qj.3735

Karl T, Gohm A, Rotach MW, Ward HC, Graus M, Cede A, Wohlfahrt G, Hammerle A, Haid M, Tiefengraber M, Lamprecht C, Vergeiner J, Kreuter A, Wagner J, Staudinger M: 2020, Studying Urban Climate and Air Quality in the Alps: The Innsbruck Atmospheric Observatory, *Bulletin American Meteorol Soc,* https://doi.org/10.1175/BAMS-D-19-0270.1

Richter B, van Herwijnen A, Rotach MW, Schweizer J: 2020 Sensitivity of modeled snow stability data to meteorological input uncertainty, *Nat. Hazards Earth Syst. Sci.*, **20**, 2873–2888, https://doi.org/10.5194/nhess-20-2873-2020.

2019

Goger B, Rotach MW, Gohm A, Stiperski I, Fuhrer O, de Morsier G: 2019, A New Horizontal Length Scale for a Three-dimensional Turbulence Parameterization in Meso-scale Atmospheric Modeling over Highly Complex Terrain, *J Appl Meteorol Climatol*, **58**, 2087-2102, https://doi.org/10.1175/JAMC-D-18-0328.1

Horak J, Hofer M, Maussion F, Gutmann E, Gohm A, Rotach MW: 2019, Assessing the added value of the Intermediate Complexity Atmospheric Research (ICAR) model for precipitation in complex topography, *Hydrol. Earth Syst. Sci.*, **23**, 2715–2734, 2019 Doi:10.5194/hess-23-2715-2019

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