

## Curriculum vitae

### Univ.-Prof. Dr.-Ing. Dirk Muschalla

Institute of Urban Water Management  
and Landscape Water Engineering  
Graz University of Technology  
Stremayrgasse 10/I  
8010 Graz, Austria

### Personal data

Date of Birth: 20.02.1970  
Place of Birth: Offenbach am Main (Germany)

### Education

1990 General qualification for university entrance  
1994 State examination as paramedic  
1995 Instructor authorization for paramedics  
2001 Diploma in civil engineering  
2006 Dissertation (passed with distinction)

### Career History

Since 2020 Head Coordination Team of the Doctoral School of Civil Engineer Sciences, Graz University of Technology, Austria  
Since 2016 Chair for Urban Water Management and Landscape Water Engineering, Graz University of Technology, Austria  
Since 2012 Head of the Institute of Urban Water Management and Landscape Water Engineering, Graz University of Technology, Austria  
2017 Visiting Professor, Université Laval, Québec (QC), Canada  
2012 – 2015 Chair for Urban Water Management, Graz University of Technology, Austria  
2010 – 2011 Senior Technical Development Manager at itwh GmbH Hannover, Germany  
2008 – 2010 Postdoctoral Research Fellow at the Canada Research Chair in Water Quality Modelling (Prof. P.A. Vanrolleghem), Université Laval, Québec (QC), Canada  
2007 – 2011 Adjunct professor at Graz University of Technology, Austria  
2006 – 2008 Lecturer at the Institute of Hydraulic and Water Resources Management, Darmstadt University of Technology, Germany  
2001 – 2005 Researcher at the Institute of Hydraulic and Water Resources Management, Darmstadt University of Technology, Germany

### Overall Research Interests

Research interests are focused on modelling and optimization as well as integrated assessment of urban water systems. All aspects of measurement and analysis of hydrological, hydraulic and quality processes and the management of water resources systems are included. Fields of research are model development, mathematical optimization methods, sensitivity and uncertainty analysis, IT-aspects, measurement of flow and water quality, surrogate measurements, data management, real time control of integrated systems, pluvial flooding as well as green-blue infrastructure and low impact development strategies.

## Engagement in Professional Organizations and Working Groups

Working group / Institution	Organization	Period
ÖWAV Leitungsausschuss der Fachgruppe "Abwassertechnik und Gewässerschutz" (ÖWAV Steering Committee of the Division "Wastewater Engineering and Water Protection")	ÖWAV	Since 2020
Sewer Systems and Processes Working Group (Chair)	IWA-IAHR Joint Committee on Urban Drainage	Since 2019
Österreichische Akademie der Wissenschaften (Austrian Academy of Sciences), Member of the National Committee „Global Change“	ÖAW	Since 2018
Working Group “Modelling of Integrated Urban Water Systems“ – Member of the Management Committee (Vice-Chair since 2016)	IWA	Since 2012
DWA AG ES 2.4 „Integrale Abflusssteuerung“ (Working Group “Integrated Real Time Control”)	DWA	Since 2012
Working group “Real Time Control of Urban Drainage Systems” – Member of the Management Committee (Chair from 2012 – 2018)	IWA-IAHR Joint Committee on Urban Drainage	Since 2008
ÖWAV-Arbeitsausschuss “Energie aus Abwasser” (ÖWAV Working Committee „Energy from Waste Water”)	ÖWAV	2018 - 2021
ÖWAV-Arbeitsausschuss “Leitfaden zur Umsetzung des ÖWAV-Regelblattes 19: Richtlinien für die Bemessung von Mischwasserentlastungen” (ÖWAV Working Committee "Guideline for the Implementation of the ÖWAV Rule Sheet 19: Guidelines for the Design of Combined Sewer Overflows".	ÖWAV	2016 - 2019
HSG – „Hochschulgruppe Simulation” (HSG – “University Group Simulation”)	-	2004-2014
AG „Leitfaden zum Erkennen ökologisch kritischer Gewässerbelastungen durch Abwassereinleitungen“ (Working Group „Guideline for the identification of ecologically critical water pollution caused by wastewater discharges“)	HMULV	2007-2008
AG „Integrierte transdisziplinäre Modellierung als Grundlage des Wasserqualitätsmanagements“ (Working Group „Integrated transdisciplinary modelling as a basis for water quality management”)	DWA	2006-2008
SMUSI Arbeitskreis (SMUSI Working Group)	HMULV	2002-2008

### **Selected Referee and Editorial Activities in Journals**

- Journal of Water Management Modeling (Senior Editor)
- ÖWAW – Österreichische Wasser- und Abfallwirtschaft (Member Scientific Advisory Board, Editor)
- Urban Water Journal (Guest Editor)
- Water (Guest Editor)
- Journal Advances in Engineering Software
- Journal of Environmental Management
- Journal of Environmental Modelling and Software
- Journal of Hydroinformatics
- Journal of Hydrology
- Mathematical Methods of Operations Research
- Water Research
- Water, Science & Technology

### **Organisation of Conferences and Workshops**

- Aqua Urbanics 2024, 23.-24. September 2024, Graz, Austria, Organizer and Head Scientific Board
- 16<sup>th</sup> International Conference on Urban Drainage - ICUD 2024, 9.-14. June 2024, Delft, The Netherlands, Member Scientific Committee
- 11<sup>th</sup> IWA Symposium on Modelling and Integrated Assessment - Watermatex 2023, 24.-27. September 2023, Québec, Canada, Member Scientific Committee
- Aqua Urbanica 2023, 08.-10. October 2023, Garching, Germany, Member Scientific Board
- Aqua Urbanica 2022, 14.-15. November 2022, Zweidlen-Glattfelden, Switzerland, Member Scientific Board
- 13<sup>th</sup> IWA Conference on Instrumentation, Control and Automation – ICA 2022, 17.-21. October 2022, Beijing, China, Member Scientific Committee
- 10<sup>th</sup> International Conference on Sewer Processes and Networks – SPN10, 23.-26. August 2022, Graz, Austria, Conference Host and Organizer
- 12<sup>th</sup> Urban Drainage Modeling Conference 2022 (UDM 2022), 10.-12. January 2022, Costa Mesa, CA, USA, Reviewer
- International Conference on Urban Drainage (ICUD), 24.-29. October 2021, Melbourne, Australia, Reviewer
- Aqua Urbanica 2020, 13.-14. September 2021, Innsbruck, Austria, Member Scientific Board
- 2<sup>nd</sup> International Joint Conference in Water Distribution Systems Analysis & Computing and Control in the Water Industry - WDSA / CCWI, 1.-4. September 2020, Beijing, China, Member Scientific Committee (cancelled)
- Aqua Urbanica 2019, 9.-10. September 2019, Rigi Kaltbad, Switzerland, Member Scientific Board
- 17<sup>th</sup> International Computing & Control for the Water Industry Conference- CCWI 2019, 1.-4. September 2019, Exeter, Great Britain, Member Scientific Committee
- Workshop Sewer Sediments: Sampling, Characterization and Modelling at the 9th International Conference on Sewer Processes and Networks – SPN9, 27.-30. August 2019, Workshop organizer

- 11<sup>th</sup> International Conference on Urban Drainage Modelling – UDM 2018, 23.–26. September 2018, Palermo, Italy, Member Scientific Committee
- 1<sup>st</sup> International Joint Conference in Water Distribution Systems Analysis & Computing and Control in the Water Industry - WDSA / CCWI, 23.-25. July 2018, Kingston, Ontario, Canada, Member Scientific Committee
- Aqua Urbanica 2018, 18. June, Landau, Germany, Member Scientific Board
- 14<sup>th</sup> International Conference on Urban Drainage – ICUD 2017, 10.-15. September 2017, Prague, Czech Republic, Member Scientific Committee
- 15<sup>th</sup> International Computing & Control for the Water Industry Conference – CCWI 2017, 5.-7. September 2017, Sheffield, United Kingdom, Member Scientific Committee
- Aqua Urbanica 2017, 28.-29. June 2017, Graz, Austria, Organizer and Head Scientific Board
- 12<sup>th</sup> IWA Specialized Conference on Instrumentation, Control and Automation - ICA 2017, 11.-14. June 2017, Québec, Canada, Member Scientific Committee
- Aqua Urbanica 2016, 26.-27. September 2016, Rigi Kaltbad, Switzerland, Member Scientific Board
- 8<sup>th</sup> International Conference on Sewer Processes & Network – SPN8, 31. August – 2. September 2016, Rotterdam, Netherland, Member Scientific Committee
- Aqua Urbanica 2015, 7.-8. October 2015, Stuttgart, Germany, Member Scientific Board
- 10<sup>th</sup> International Urban Drainage Modelling Conference - UDM 2015, 20.-23. September 2015, Mont-Sainte Anne, Québec, Canada, Member Scientific Committee
- 9<sup>th</sup> IWA Symposium on Systems Analysis and Integrated Assessment - Watermatex 2015, 14.-17. June 2015, Gold Coast, Australia, Member Scientific Committee.
- 1<sup>st</sup> International Academic Conference Climate Change and Sustainable Heritage 2015 – CCSH15, 18-20 February 2015, Graz, Austria, Member Scientific Committee
- Aqua Urbanica 2014, 23.-24. October 2014, Innsbruck, Austria, Member Scientific Board.
- 8<sup>th</sup> International Workshop on Real Time Control of Sewer Systems at Novatech 2013, 23. June 2013, Lyon, France, Chair and Organization
- INTERURBA III, 16.-18. June 2013, Obergurgl, Austria, Workshop organizer
- 20<sup>th</sup> European Junior Scientist Workshop on Sewer Processes and Networks: On-line Monitoring, Uncertainties in Modelling and New Pollutants, Graz, 9.-12. April 2013, Organizer
- Aqua Urbanica 2013, 29.-30. September 2013, Zurich, Switzerland, Member Scientific Board
- 6<sup>th</sup> International Congress on Environmental Modelling and Software - iEMSs2012, 1.-5. July 2012, Leipzig, Germany - Session „Use of models for integrated management of urban water systems”, Member Scientific Committee
- Aqua Urbanica 2012, 8. May 2012, Munich, Germany, Member Scientific Board.
- 4<sup>th</sup> IWA Conference on Automation in Water Quality Monitoring, 18.-21. September 2011, Queretaro, Mexico, Member Scientific Committee
- Watermatex 2011, 8<sup>th</sup> IWA Symposium on System Analysis and Integrated Assessment, 20.-22. June 2011, San Sebastian, Spain, Member Scientific Committee
- 5<sup>th</sup> International Congress on Environmental Modelling and Software - iEMSs2010, 5.-8. July 2010, Ottawa, Canada - Session „Modelling and support tools for management and optimization of the integrated wastewater system”, Member Scientific Committee
- 14<sup>th</sup> IWA Conference on Diffuse Pollution and Eutrophication, 12.-17. September 2010, Mont Sainte-Anne, Canada, Member Scientific Committee

- 7<sup>th</sup> International Workshop on Real Time Control of Sewer Systems at Novatech 2010, 27. June 2010, Lyon, France, Organization committee
- 2<sup>nd</sup> IWA/WEF Wastewater Treatment Modelling Seminar, 28.-30. March 2010, Mont-Sainte-Anne, Canada, Member Scientific Committee
- International OpenMI Workshop for consortium independent simulation software developer, 27. February 2009, Frankfurt, Germany, Organization
- 1<sup>st</sup> IWA/WEF Wastewater Treatment Modelling Seminar, 1.-3. June 2008, Mont-Sainte-Anne, Québec, Canada, Member Scientific Committee

### Teaching activities

Since 2017	Lecture and practice „Kläranlagenmodellierung“ (Modeling of Waster Water Treatment Plants), Graz University of Technology, Austria
Since 2016	Lecture and practice „Modelling of Networks“, Graz University of Technology, Austria
Since 2016	Lecture „Städtische Wasserinfrastruktur“ (Urban Water Infrastructure), Graz University of Technology, Austria
Since 2016	Lecture and practice „Siedlungswasserbau GL1“ (Urban Water Engineering Basics 1), Graz University of Technology, Austria
Since 2016	Lecture and practice „Siedlungswasserbau GL2“ (Urban Water Engineering Basics 2), Graz University of Technology, Austria
Since 2015	Lecture “Einführung in das Bauwesen” (Introduction to Civil Engineering), Graz University of Technology, Austria
Since 2015	Lecture “Hydrology” (Module II and III), Graz University of Technology, Austria
Since 2015	Lecture “Hydrology” (Module I – Basics), Graz University of Technology, Austria
Since 2014	Seminar „Anleitung zum wissenschaftliches Arbeiten“ (Training in academic writing), Continuing Education Center, Vienna University of Technology, Austria
Since 2013	Seminar „Publikationspraxis” (Scientific Writing Seminar), Graz University of Technology, Austria
Since 2012	Seminar „Infrastruktur” (Infrastructure), Graz University of Technology, Austria
Since 2012	Exclusive tutorial „Siedlungswasserwirtschaft FS“ (Urban Water Management), Graz University of Technology, Austria
Since 2007	Lecture and practice „Modellierung in der Siedlungswasserwirtschaft” (Modeling in Urban Water Management), Graz University of Technology, Austria
2012 - 2017	Mentoring the elective course catalogue „Wasserressourcen” (Water Resources) within the master’s program „Umweltsystemwissenschaften / Naturwissenschaft-Technologie“ (Environmental Systems / Natural Science-Technology), Karl-Franzens University Graz and Graz University of Technology, Austria
2012 – 2016	Lecture “Hydrologie” (Hydrology), Graz University of Technology, Austria

- 2012 – 2015 Lecture „Landschaftswasserbau“ (Landscape Water Engineering),  
Graz University of Technology, Austria
- 2012 – 2015 Lecture „Siedlungswasser und Abfallwirtschaft“ (Urban Water and Waste  
Management),  
Graz University of Technology, Austria
- 2012 – 2015 Lecture „Wasser- und Abwasserbehandlung“ (Water and Wastewater  
Treatment),  
Graz University of Technology, Austria
- 2012 – 2015 Lecture and practice „Siedlungswasserbau“ (Urban Water Engineering),  
Graz University of Technology, Austria
- 2012 – 2013 Seminar „Wissenschaftliches Arbeiten“ (Introduction to academic research  
and writing),  
Graz University of Technology, Austria
- 2006 – 2008 Lecture and practice „Ingenieurhydrologie III“ (Engineering Hydrology  
III),  
Darmstadt University of Technology, Germany
- 2001 – 2006 Lecture and practice „Hydraulik und Hydrologie bebauter Gebiete“ (Hy-  
draulic and Hydrology of Urbanized Areas),  
Darmstadt University of Technology, Germany
- 2011 Presentation „Immissionsorientierte Steuerung von Regenrückhaltebecken“  
(Water Quality Oriented Control of Stormwater Basins) as part of the „Kol-  
loquium Wasserwesen“ (Colloquium Water Engineering and Management),  
Berlin University of Technology, Germany
- 2011 Lecture „Kanalnetzplanung in ArcGIS“ (Urban Drainage Plannin using  
ArcGIS) as part of the lecture series „GIS-Anwendungen im Verkehrs- und  
Wasserbau“ (Application of GIS in Traffic and Water Engineering),  
Beuth University, Berlin, Germany
- 2009 – 2010 Lecture “Quality Aspects of Urban and Rural Surface Runoff” as part of the  
lecture “Interventions Bassin Versant”  
Université Laval, Québec (Québec), Canada.
- 2008 Lecture „Anwendung Evolutionärer Algorithmen zur Optimierung wasser-  
wirtschaftlicher Systeme“ (Optimization of Water Systems Using Evolu-  
tionary Algorithms) as part of the lecture series „Biotechnik“ (Biotechnol-  
ogy),  
Darmstadt University of Technology, Germany
- 2007 – 2008 Lecture „Der Faktor Wasser: Gewässerschutz“ (Water pollution control) as  
part of the lecture series „Umweltwissenschaften an der TUD“ (Environ-  
mental Sciences at TUD),  
Darmstadt University of Technology, Germany
- 2004 – 2008 Lecture and practice „Schmutzfrachtmodelle in der Planung von Mischwas-  
sernetzen“ (Application of Water Quality Sewer Models for the Design of  
Combined Sewer Systems) as part of the lecture „EDV in der  
Siedlungswasserwirtschaft“ (Computing in Urban Water Management),  
University of Applied Science Mittelhessen, Germany
- 2002 Module “WASP EUTRO-sub model- structure and sensitivity analysis” as  
part of the internet-based course “Water Pollution Control Planning”,  
University of Guelph, Canada, University of Alabama Tuscaloosa, USA,  
University of Cape Town, South Africa, Darmstadt University of Technol-  
ogy, Germany

## **Habilitation committees, supervised PhD Students and further committee activities**

### *Appointment committees*

- Since 2022 Full Professorship “Hydraulic Engineering, Water Management and Hydraulics” at Graz University of Technology (successor to Zenz), chair of the appointment committee
- 2012 Professorial career position in hydraulic engineering, member of the appointment committee

### *Habilitation committees (postdoctoral lecture qualification)*

- 2022 Dr. Matthias Landgraf, Graz University of Technology, chair of the habilitation committee
- 2017 Dr. Stephan Fuchs, Karlsruhe Institute of technology, external reviewer
- 2017 Dr. Josef Schneider, Graz University of Technology, chair of the habilitation committee
- 2016 Dr. Daniela Fuchs-Hanusch, Graz University of Technology, member of the habilitation committee

### *PhD Students as Main Supervisor*

- Since 2021 Albert König “Nature based solutions for integrated urban water systems – Model representation”
- Since 2020 Bettina Polgar “Nature based solutions for integrated urban water systems – Quality processes”
- Since 2019 Werner Sprung “Integrated Modelling and Real Time Control of Combined Sewer Systems”
- Since 2018 Markus Pichler “Hydraulic determined urban drainage structures – from reality to model representation”
- Since 2018 Stefan Reinstaller “Integrated modelling and assessment of heavy rain risk in urbanized areas”
- Since 2015 Katja Fricke “Pollution based Real Time Control”
- Since 2014 Roman Maier „Spatial Rainfall Variability of Storms in Urban Runoff Simulation “
- Since 2014 Huizi Sun „Determination of wastewater characteristics“
- 2012 - 2018 Thomas Hofer „Pollution based modelling and control of urban wastewater systems”
- 2014 - 2019 Johannes Leimgruber „Economical rehabilitation planning for urban water systems“
- 2014 - 2018 Dominik Leutnant „Water quality processes and modelling in urban areas“
- 2012 - 2017 Robert Scheucher „Green infrastructure: Strategies for sustainable sewer management in urban areas“
- 2012 - 2015 Rosa Sulzbacher „Urban flooding – modelling, risk assessment and vulnerabilities“
- 2014 Mario Regneri „Fuzzy predictive control of integrated urban wastewater treatment systems with simultaneous aerobic sludge stabilization”

### *PhD Students as reviewer or co-supervisor*

- 2023 Irene Schepersboer “Condition assessment of concrete sewer pipes through an integrated experimental-numerical approach” member of defense committee, Eindhoven University of Technology, Netherlands.

- 2022 Ditte Marie Reinholdt Jensen “Challenging current practices for management of pollution in separate stormwater discharges”, member of PhD examination committee, Technical University of Denmark.
- 2022 Mathias Riechel “Integrated Modelling of Stormwater Management Strategies and CSO Impacts on an Urban River”, member of PhD examination committee, Berlin University of Technology, Germany.
- 2021 Ico Broekhuizen “Uncertainties in rainfall-runoff modelling of green urban drainage systems: Measurements, data selection and model structure”, member of PhD examination committee, Luleå University of Technology, Sweden.
- 2020 Sovanna Tik “Gestion intégrée d'un système d'assainissement urbain : Contrôle basé sur la qualité des eaux, vers des stratégies tolérantes aux fautes”, member of PhD examination committee, Université Laval, Québec, Canada.
- 2020 Alex Duinemeijer “On the free-surface vortex driven motion of buoyant particles”, member of PhD examination committee, Delft University of Technology, Netherlands.
- 2019 A.K. Thota Radhakrishnan “Domestic Slurry Hydraulics in Transport”, member of PhD examination committee, Delft University of Technology, Netherlands.
- 2019 Katharina Teuber “A 3 D two-phase model for flow, transport and mass transfer processes in sewers”, member of PhD examination committee, Berlin Technical University of Technology, Germany
- 2019 Antonio Manuel Moreno Rodenas “Propagation of uncertainties in integrated catchment models”, member of PhD examination committee, Delft University of Technology, Netherlands.
- 2019 Ly Duy Khiem “Water quality based real time control of combined sewer systems”, rapporteur, INSA Lyon, France.
- 2018 Christian Scheid “Gesamtkonzept einer GIS-basierten Starkregen-Risikoanalyse unter besonderer Berücksichtigung von Datenerfordernissen und methodisch erzielbaren Aussagefähigkeiten“, member of PhD examination committee, Kaiserslautern University of Technology, Germany.
- 2018 Marco van Bijnen “The impact of sewer condition on the performance of sewer systems”, member of PhD examination committee, Delft University of Technology, Netherlands.
- 2017 Petra van Daal-Rombouts “Performance evaluation of real time control in urban wastewater systems”, member of PhD examination committee, Delft University of Technology, Netherlands.
- 2017 Ramesh Saagi “Benchmark Simulation Model for Integrated Urban Wastewater Systems – Model Development and Control Strategy Evaluation”, member of PhD examination committee, Lund University, Sweden.
- 2016 Gerald Krebs “A Methodology for Urban Hydrological Modelling to Evaluate Low Impact Development Strategies at the City Scale “, opponent, Aalto University, Finland.
- 2016 Michael Mair „DynaVIBe - Dynamic Virtual Infrastructure Benchmarking”, external reviewer and member of PhD committee, University of Innsbruck, Austria.



- 2014 Roland Löwe „Probabilistic Forecasting for On-line Operation of Urban Drainage Systems“, Member PhD Evaluation Committee, Technical University of Denmark.
- 2014 Christian Urich „Modelling the Coevolution of Cities and their Infrastructure: Towards a virtual playground to test adaptation strategies under deeply uncertain conditions“, external reviewer and member of PhD committee, University of Innsbruck, Austria.
- 2014 Gregor Burger „Parallel Computing in Urban Water Management - A Model-Based Parallel Computing Approach to Reduce the Runtime of Applications in Urban Water Management“, external reviewer and member of PhD committee, University of Innsbruck, Austria.
- 2013 Majid Galoie “Rainfall-Runoff Modeling in a Small Catchment in Austria”, “, internal reviewer and member of PhD committee, Graz University of Technology, Austria.
- 2012 Pau Prat "Integrated management of urban wastewater systems: a model-based approach", member of PhD review committee, Universitat de Girona, Spain.
- 2011 Valentin Gameraith „High resolution online data in sewer water quality modelling“, co-supervisor, Graz University of Technology, Austria.
- 2007 Anne-Marie Solvi „Modelling the sewer-treatment-urban river system in view of the EU Water Framework Directive” member PhD Review Committee, Universiteit Gent, Belgium.

#### **Current Research Projects (selection)**

- *PeriSponge* - Developing potentials of peri-urban mobility spaces as sponge territories for climate change adaptation and mitigation
- *dNWB 4.0* - Nature-based stormwater management 4.0
- *RETFORST* – Retention, storage and drainage of rainwater in and along forest roads
- *BEJOND* - Stormwater management beyond design storms and planned operating conditions
- *Chianti* - Combining High resolution GCMS and convection permitting downscaling - a new approach to improve the representation of severe future weather
- Ecological and economic stormwater management in urban areas addressing first-flush phenomena - Technological Cooperation AUSTRIA - UKRAINE
- Investigation on Precipitation and Discharge in the Urban Research Basin Graz
- Maintenance and analysis of rain and flow gauges in the urban research basin Graz
- *Poellau* (1979 - running) - Hydrological and meteorological survey and measurement data analysis of Poellau catchment area

#### **Completed Research Projects (selection)**

##### *TU Graz*

- Real-Time Control of Integrated Stormwater Systems using a Model Predictive Control Approach – MITAC Action
- *Fuilo* - Future influent load of the wastewater treatment plant Graz
- *SiWaWi* - Future substances and microbiological challenges for municipal urban water management
- *CFD Kroisbach* - Detailed hydraulic assessment of the maximum flow capacity

- *TemPest* - Micropollutant and Microplastics emissions of urban catchments out of waste water treatment plants, stormwater discharges and combined sewer overflows
- *CSB-FRAK* - Determination of the fractionated COD content in the inflow to the Graz wastewater treatment plant and model scenario with changed inflow quantity and quality
- *KathEA* – Risk and Potential of thermal energy use in sewer systems – simulation study city of Graz
- *RAINMAN* – Integrated heavy rain risk management
- *FlexAdapt* - Development of flexible adaptation concepts for the future urban water management
- *Model Graz* – Development of a sustainable sewer modelling strategy for the City of Graz
- *iZSKMon* – Accompanying integrated water quality monitoring program for iZSK
- *TKalib* - Temperature based model calibration - field campaign Mariatrost
- *AZM* - Active Condition Monitoring of drinking water systems
- *CLEARWATER* - Wastewater Concept Borealis - Main Project
- *iZSK* - Integrated modelling and control of emissions from a central storage unit and the Graz waste water treatment plant
- *DATMOD* - An efficient way from data to model - renovation and adaptation planning for small and medium size sewer networks
- *AQUAdemia* - Competence based training and internship model for Innovation in Water related HEI educational offer
- *Split-Sewage-Charge-System* - Academic support for preparation introduction of split-sewage-charge-systems
- *EcoStorma* - Ökologische und ökonomische Maßnahmen der Niederschlagswasserbewirtschaftung (ecological and economical stormwater management)
- *SCHTURM* - Micropollutant emissions of urban catchments out of waste water treatment plants, stormwater discharges and combined sewer overflows
- *HouSui* - Hochwasserwasser- und Überflutungsschutz - Modellstudie Bründlbach Strategien für ein integrales Siedlungsentwässerungsmanagement (flood control measures case study Bründlbach (Graz) strategies for an integral urban drainage management)
- *IMW3* - Integrated water body quality assessment based on continuous high-resolution on-line monitoring data

*itwh, Hannover*

- Further development of the simulators HYSTEM-EXTRAN, HYSTEM-EXTRAN 2D and KOSIM as well as the GIS based information and planning system FOG

*Université Laval, Québec*

- *rivEAU* - Integrating river ecohydraulics in urban stormwater management – ecohydraulic-driven real-time control of stormwater basins

*TU Darmstadt*

- Leitfaden zur effizienten und sicheren Beurteilung von Schmutzfrachtberechnungen mit dem Modell SMUSI (guideline for the assessment of water quality simulations using the model SMUSI)
- Modifizierung des Leitfadens zum Erkennen kritischer Gewässerbelastungen durch Abwassereinleitungen - Entwicklung einer simulationsgestützten Analyse- und Planungsmethodik (Modification of the hessian guideline for analyzing impacts on water bodies)

due to waste water discharge – development of a simulation based assessment and design methodology)

- Odysseus – Diskret-kontinuierliche Optimierung komplexer wasserwirtschaftlicher Systeme (Discrete-continues optimization of complex water resources systems)
- Tool box BlueM - Coordination of the cross-project model and software development at the section of engineering hydrology and water management, TU Darmstadt
- Umstellung des Schmutzfrachtmodells SMUSI von repräsentativen Regenreihen auf langjährige synthetische Regenreihen nach Bárdossy (resetting the model SMUSI for the use of synthetic long-term rainfall time series instead of representative ones)
- Weiterentwicklung des Schmutzfrachtmodells SMUSI zu einer durchgängigen 32-Bit Anwendung (further development of the sewer hydraulics and water quality simulator SMUSI towards a state-of-the-art 32-bit application)

## Publications

### *Journals*

1. Reinstaller, S., M. Pichler, G. Krebs and D. Muschalla (2022). Identification of high impact uncertainty sources for urban flood models in hillside peri-urban catchments. *Water*, 14 (12), art. no. 1973, DOI: 10.3390/w14121973.
2. Zhuk, V M., M. S. Malovanyy, I. V. Mysak, I. S. Tymchuk, D. Muschalla and M. Pichler (2021) Часова та просторова нерівномірність випадання дощів при моделюванні поверхневого стоку з урбанізованих територій (Temporal and Spatial Unevenness of Rainfall in Modeling Surface Runoff from Urban Areas). *Scientific Bulletin of UNFU*, 31 (5), DOI: 10.36930/40310510.
3. Krebs, G., D. Camhy, D. and D. Muschalla (2021). Hydro-Meteorological Trends in an Austrian Low-Mountain Catchment. *Climate*, 9, 122, DOI: 10.3390/cli9080122.
4. Maier, R., S. Reinstaller and D. Muschalla (2021). Begriffe und Modelle der Überflutungsanalyse. *Österreichische Wasser- und Abfallwirtschaft*, 73 (3-4), pp. 76-84, DOI: 10.1007/s00506-021-00748-2.
5. Reinstaller, S. and D. Muschalla (2021). Modellbasierte urbane Überflutungsvorsorge. *Österreichische Wasser- und Abfallwirtschaft*, 73 (3-4), pp. 92-101, DOI: 10.1007/s00506-021-00746-4.
6. Muschalla, D. and S. Achleitner (2021). Pluviale Überflutung und Hangwasser. *Österreichische Wasser- und Abfallwirtschaft*, 73 (3-4), pp. 74-75, DOI: 10.1007/s00506-021-00760-6.
7. Maier, R., G. Krebs, M. Pichler, D. Muschalla and G. Gruber (2020). Spatial rainfall variability in urban environments - high-density precipitation measurements on a city-scale. *Water*, DOI: 10.3390/w12041157.
8. Ledergerber, J. M., L. Pieper, G. Binet, A. Comeau, T. Maruéjols, D. Muschalla and P.A. Vanrolleghem (2019). An efficient and structured procedure to develop conceptual catchment and sewer models from their detailed counterparts. *Water* 11 (10), art. no. 2000, DOI: 10.3390/w11102000.
9. Leimgruber, J., G. Krebs, D. Camhy, D. and D. Muschalla (2019). Model-Based Selection of Cost-Effective Low Impact Development Strategies to Control Water Balance. *Sustainability* 11 (8), art. no. 1838, DOI: 10.3390/su11082440.
10. Leimgruber, J., G. Krebs, G. and D. Muschalla (2019). Die Wasserbilanz im Fokus der Siedlungsentwässerung – Flexible Adaptionskonzepte für die Zukunft. *Wasserland Steiermark*, 1, pp. 15-17.

11. Leimgruber, J., G. Krebs, D. Camhy, D. and D. Muschalla (2018). Sensitivity of model-based water balance to low impact development parameters. *Water* 10 (12), art. no. 1838, DOI: 10.3390/w10121838.
12. Leutnant, D., D. Muschalla, M. Uhl (2018). Distribution-based calibration of a stormwater quality model. *Water* 10 (8), art. no. 1027, DOI: 10.3390/w10081027.
13. Leutnant, D., D. Muschalla and M. Uhl (2018). Statistical distribution of TSS event loads from small urban environments. *Water* 10 (6), art. no. 769; DOI: 10.3390/w10060769.
14. Leimgruber, J., D. B. Steffelbauer, G. Krebs, F. Tscheikner-Gratl and D. Muschalla (2018). Selecting a series of storm events for a model-based assessment of combined sewer overflows. *Urban Water Journal* 15 (5), pp. 453-460, DOI: 10.1080/1573062X.2018.1508601.
15. Hofer, T., A. Montserrat, G. Gruber, V. Gamerith, Ll. Corominas and D. Muschalla (2018). A robust and accurate low-cost method for monitoring the frequency and duration of combined sewer overflows. *Environmental Monitoring and Assessment* 190 (4), art. no. 209, DOI: 10.1007/s10661-018-6589-3.
16. van Daal, P., G. Gruber, J. Langeveld, D. Muschalla and F. Clemens (2017). Performance evaluation of real time control in urban wastewater systems in practice: review and perspective. *Environmental Modelling and Software*, 95, pp. 90-101, DOI: 10.1016/j.envsoft.2017.06.015
17. Krebs, G., Weidemann, S., Fuchs, R. and D. Muschalla (2017). Hydrologisches Versuchsgebiet Pöllau – Hydrometrische Lanzeitbeobachtungen. *Wasserland Steiermark*, 1.1, pp. 22-26.
18. Fricke, K. I., H. Hoppe, S. Kutsch, C. Massing, J. Ante, T. Gigl and D. Muschalla (2017). "Weiterentwicklung einer qualitätsabhängigen Kanalnetzsteuerung in Wuppertal". *KA Korrespondenz Abwasser, Abfall*, 64(6), pp. 507-514.
19. Montserrat, A., T. Hofer, M. Poch, D. Muschalla, Ll. Corominas (2017). Using the duration of combined sewer overflow events for the calibration of sewer hydrodynamic models. *Urban Water Journal* 14 (8), pp. 782-788, DOI: 10.1080/1573062X.2016.1254255.
20. Leutnant, D., D. Muschalla and M. Uhl (2016). Stormwater pollutant process analysis with long-term on-line monitoring data at micro scale sites. *Water*, 8 (7), art. no. 299, DOI: 10.3390/w8070299.
21. Fuchs-Hanusch, D., D. Steffelbauer, M. Günther and D. Muschalla (2016). Systematic failure mode and pipe section specific leakage outflow calculations by means of EPA-NET2. *Urban Water Journal*, 13 (2), pp. 108-118, DOI: 10.1080/1573062X.2014.994006.
22. Fuchs-Hanusch, D., M. Günther, M. Möderl and D. Muschalla (2015). Cause and effect oriented sewer degradation evaluation to support scheduled inspection planning. *Water, Science & Technology*, 72 (7), pp. 1176-1183, DOI: 10.2166/wst.2015.320.
23. Hauduc, H., M. B. Neumann, D. Muschalla, V. Gamerith, S. Gillot and P.A. Vanrolleghem (2015). Efficiency criteria for environmental model quality assessment: A review and its application to wastewater treatment. *Environmental Modelling & Software*, 68, pp. 196-204, DOI: 10.1016/j.envsoft.2015.02.004.
24. Muschalla, D. (2015). Urbane Überflutung. *Österreichische Wasser- und Abfallwirtschaft*, 67 (5-6), pp. 185-186, DOI: 10.1007/s00506-015-0244-9.

25. Sulzbacher, R., R. Scheucher and D. Muschalla (2015). Analyse und Bewertung von Überflutungen in urbanen Siedlungsgebieten am Beispiel der Modellstudie Bründlbach (Graz-West). *Österreichische Wasser- und Abfallwirtschaft*, 67 (5-6), pp. 203-213, DOI: 10.1007/s00506-015-0234-y.
26. Muschalla, D., B. Vallet, F. Anctil, G. Pelletier, P. Lessard and P.A. Vanrolleghem (2014). Ecohydraulic-driven Real-Time Control of Stormwater Basins. *Journal of Hydrology*, 511, pp. 82-91, DOI: 10.1016/j.jhydrol.2014.01.002.
27. Vallet, B., D. Muschalla, P. Lessard and P.A. Vanrolleghem (2014). "A new dynamic water quality model for stormwater basins as a tool for urban runoff management: Concept and validation". *Urban Water Journal*, 11 (3), pp. 211-220, DOI: 10.1080/1573062X.2013.775313.
28. Campisano, A., J. Cabot Ple, D. Muschalla, M. Pleau and P.A. Vanrolleghem (2013). Potential and limitations of modern equipment for real time control of urban drainage systems. *Urban Water Journal*, 10(5), pp. 300-311, DOI: 10.1080/1573062X.2013.763996.
29. Fuchs-Hanusch, D., F. Friedl, R. Scheucher, B. Kogseder und D. Muschalla (2013). "Effect of Seasonal Climatic Variance on Water Main Failures in Different Climate Regions of Austria". *Water, Science & Technology – Water Supply*, 13(2), pp. 435-446, DOI: 10.2166/ws.2013.033.
30. Gaborit, E., D. Muschalla, B. Vallet, P.A. Vanrolleghem and F. Anctil (2013). Improving the performance of stormwater detention basins by real-time control using rainfall forecasts. *Urban Water Journal*, 10(4), pp. 230-246, DOI: 10.1080/1573062X.2012.726229.
31. Gamerith V., M. B. Neumann, D. Muschalla (2013). "Applying Global Sensitivity Analysis to the Modelling of Flow and Water Quality in Sewers". *Water Research*, 47(13), pp. 4600-4611, DOI: 10.1016/j.watres.2013.04.054.
32. Leonhardt, G., K. Kleidorfer, W. Rauch, G. Gruber, D. Muschalla, A. Pressl and T. Ertl (2013). Fallbeispiel Schwechat - Identifikation von Auswirkungen der Siedlungsentwässerung im Gewässer. *Aqua & Gas*, (10) 2013, pp. 40-44.
33. Mollerup, A.L., M. Grum, D. Muschalla, E. van Velzen, P. Vanrolleghem, P. S. Mikkelsen and G. Sin (2013). Integrated control of the wastewater system: potential and barriers. *Water21*, 15.2, pp.39-41.
34. Sulzbacher, R.M., R. Scheucher, G. Gruber, H. Pilko and D. Muschalla (2012). Hochwasser- und Überflutungsschutz - Modellstudie Bründlbach, Strategien für ein integriertes Siedlungsentwässerungsmanagement. *Wasserland Steiermark*, 2, pp. 15-17.
35. Gamerith, V., G. Gruber and D. Muschalla (2011). "Single and multi-event optimization in sewer water quality model calibration". *Journal of Environmental Engineering*, 137(7), pp. 551-558, DOI: 10.1061/(ASCE)EE.1943-7870.0000356.
36. Gamerith, V., J. Veit, G. Gruber and D. Muschalla (2011). "Online Monitoring of Combined Sewer Systems: Experiences and Application in Modelling". *Journal of Water Management Modeling*, R241-10.
37. HSGSim (2010). „Integrierte Modellierung von Kanalnetz, Kläranlage und Gewässer“. *KA Korrespondenz Abwasser, Abfall*, 57(9), pp. 882-889.
38. Volcke, E., D. Muschalla, J.P. Steyer and L. Rieger (2010). "Instrumentation, control and automation in urban water management – state-of-the-art and future perspectives". *The Water and Sewerage Journal*, (4) 2010, pp. 33-35.

39. Brehmer, I., F. Reußner, M. Schütze, D. Muschalla and M. Ostrowski (2009). „Weiterentwicklung des hessischen Leitfadens zum Erkennen ökologisch kritischer Gewässerbelastungen durch Abwassereinleitungen“. KA Korrespondenz Abwasser, Abfall, 56(4), pp. 382-384.
40. Brehmer, I., F. Reußner, M. Schütze, D. Muschalla and M. Ostrowski (2009). „Weiterentwicklung des hessischen Leitfadens zum Erkennen ökologisch kritischer Gewässerbelastungen durch Abwassereinleitungen“. KW Korrespondenz Wasserwirtschaft, 2(4), pp. 215-217.
41. Gamerith, V., D. Muschalla, P. Könemann and G. Gruber (2009). “Pollution load modelling in sewer systems – An approach of combining long term online sensor data with multi-objective auto-calibration schemes”. Water, Science & Technology, 59(1), pp. 73–79.
42. Muschalla, D., M. Schütze, K. Schroeder, M. Bach, F. Blumensaat, G. Gruber, M. Pabst, A. Pressl, N. Schindler, A.-M. Solvi and J. Wiese (2009). “The HSG procedure for modelling of integrated urban wastewater systems”. Water, Science & Technology, 60(8), pp. 2065-2075.
43. Reußner, F., M. Bach, M. Schütze and D. Muschalla (2009). "Basin wide integrated modelling via OpenMI considering multiple urban areas". Water, Science & Technology, 60(5), pp. 1241–1248.
44. Borsányi, P., L. Benedetti, L. Dirckx, W. De Keyser, D. Muschalla, A.-M. Solvi, V. Vandenberghe, M. Weyand and P. A. Vanrolleghem (2008). "Modelling real time control options on benchmark sewer systems". Journal of Environmental Engineering and Sciences, 7(4), pp. 395–410.
45. Muschalla, D. (2008). "Optimization of integrated urban wastewater systems using multi-objective evolution strategies". Urban Water Journal, 5(1), pp. 59-67.
46. Muschalla, D, S. Schneider, K. Schröter, V. Gamerith and G. Gruber. (2008). "Sewer modelling based on highly distributed calibration data sets and multi-objective auto-calibration schemes". Water, Science & Technology, 57(10), pp. 1547–1554.

*Books, book sections and reports*

47. Kretschmer, F., N. Kreuzinger, G. Langergraber, K. Lenz, S. Lindtner, D. Muschalla, V. Parravicini, B. Polgar, H. Schaar, C. Steidl, J. Tauber, K. Svardal and M. Zessner (2021). Überarbeitung der Kommunalen Abwasserrichtlinie (91/271/EWG): Österreichische Zahlen, Daten und Fakten zu ausgewählten Überarbeitungsoptionen. Federal Ministry of Agriculture, Regions and Tourism.
48. Reinstaller, S., R. Maier, C. Jöbstl, R. Hornich and D. Muschalla (2020). Modellbasierte urbane Überflutungsvorsorge. Interreg Central Europe Project RAINMAN.
49. Kleidorfer, M., P. Zeisl, T. Ertl, L. Simperler, F. Kretschmer, G. Stöglehner, P. Himmelbauer, D. Muschalla, G. Krebs, J. Leimgruber (2019) Leitfaden Regenwasserbewirtschaftung - Praxisleitfaden aus dem Projekt Flexadapt -Entwicklung flexibler Adaptierungskonzepte für die Siedlungsentwässerung der Zukunft. Federal Ministry of Sustainability and Tourism.
50. Hofer, T. F., G. Gruber and D. Muschalla (2017) Quantifizierung der Schmutzfrachtdynamik des Zentralen Speicherkanals ZSK bei Mischwasserereignissen im Zulauf zur Kläranlage Graz. In D. Muschalla and G. Gruber (Eds.) Aqua Urbanica 2017: Urbanes Niederschlagswassermanagement zwischen zentralen und dezentralen Maßnahmen. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Band 75.

51. Sprung, W., G. Krebs, K. Beutle and D. Muschalla (2017) Maßnahmenkarte zur Grundwasseranreicherung – Stadt Graz. In D. Muschalla and G. Gruber (Eds.) *Aqua Urbanica 2017: Urbanes Niederschlagswassermanagement zwischen zentralen und dezentralen Maßnahmen*. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Band 75.
52. Leimgruber, J., M. Kleidorfer, F. Kretschmer, R. Neunteufel, R. Sulzbacher, F. Tscheikner-Gratl, T. Ertl, W. Rauch and D. Muschalla (2015). Von den Daten zum Modell zur Entscheidung. In T. Ertl (Ed.). *Kanalmanagement 2015*. Wiener Mitteilungen, Band 233. 11-135. ISBN: 978-3-85234-127-9.
53. Muschalla, D., J. Leimgruber, M. Kleidorfer, F. Kretschmer, R. Neunteufel, R. Sulzbacher, F. Tscheikner-Gratl, T. Ertl and W. Rauch (2015). *DATMOD - Sanierungs- und Anpassungsplanung von kleinen und mittleren Kanalnetzen – Endbericht*. Wien, BMLFUW, URL: <https://www.bmlfuw.gv.at/service/publikationen/wasser/DATMOD.html> [Date 12.04.2016].
54. Muschalla, D., J. Leimgruber, M. Kleidorfer, F. Kretschmer, R. Neunteufel, R. Sulzbacher, F. Tscheikner-Gratl, T. Ertl and W. Rauch (2015). *DATMOD - Sanierungs- und Anpassungsplanung von kleinen und mittleren Kanalnetzen – Leitfaden*. Wien, BMLFUW, URL: <https://www.bmlfuw.gv.at/service/publikationen/wasser/DATMOD.html> [Date 12.04.2016].
55. Scheucher, R., R. Sulzbacher, G. Gruber and D. Muschalla (2014). Bewertung dezentraler Niederschlagswasserbewirtschaftung in urbanen Bestandsgebieten. In T. Ertl (Ed.). *Kanalmanagement 2014*. Wiener Mitteilungen, Band 231. H1-H14. ISBN: 978-3-85234-125-5.
56. Scheucher, R., G. Gruber and D. Muschalla (2014). *ECOSTORMA - Ökologische und ökonomische Maßnahmen der Niederschlagswasserbewirtschaftung*. Wien, BMLFUW, URL: <https://www.bmlfuw.gv.at/service/publikationen/wasser/ECOSTORMA.html> [Date 12.04.2016].
57. Sulzbacher, R., R. Scheucher and D. Muschalla (2014). Überflutungsschutz urbaner Siedlungsgebiete am Beispiel der Modellstudie Bründlbach (Graz-West). In T. Ertl (Ed.). *Kanalmanagement 2014*. Wiener Mitteilungen, Band 231. 11-130. ISBN: 978-3-85234-125-5.
58. Muschalla, D., G. Gruber, R. Sulzbacher and R. Scheucher (2014). Schutz- und siedlungswasserwirtschaftliche Modellstudie Bründlbach (Graz-West). Wien, BMLFUW, URL: <https://www.bmlfuw.gv.at/service/publikationen/wasser/Schutz--und-siedlungswasserwirtschaftliche-Modellstudie-Bründlbach-Graz-West-.html> [Date 12.04.2016].
59. Kleidorfer, M., U. Tschiesche, F. Tscheikner-Gratl, R. Sitzenfrei, F. Kretschmer, D. Muschalla, T. Ertl and W. Rauch (2014). Von den Daten zum Model: Anforderungen an hydraulische Entwässerungsmodelle in kleinen und mittleren Gemeinden. In R. Haberl and T. Ertl (Eds.). *Kanalmanagement 2014*. Wiener Mitteilungen, Band 231. J1-J14. ISBN: 978-3-85234-101-9.
60. Camhy, D., Th. Ertl, R. Fuiko, V. Gamreith, G. Gruber, Th. Hofer, M. Höller, C. Kinzel, M. Kleidorfer, L. Kornfeind, G. Leonhardt, D. Muschalla, A. Pressl, W. Rauch, D. Steffelbauer, B. Steger, K. Svardal, Ch. Ulrich, A. Winkelbauer, St. Winkler (2013). Integrierte Betrachtung eines Gewässerabschnitts auf Basis kontinuierlicher und validierter Langzeitmessreihen. Wien, BMLFUW, URL: <https://www.bmlfuw.gv.at/service/publikationen/wasser/20130603.html> [Date 12.04.2016].

61. Gamerith, V., D. Muschalla, G. Gruber and H. Kainz (2011). Schmutzfrachtmodellierung auf Basis von hochaufgelösten Messdaten. In H. Kainz (Eds.) Aqua Urbanica 2011 – Niederschlags- und Mischwasserbewirtschaftung im urbanen Bereich. Schriftenreihe zur Wasserwirtschaft, Technische Universität Graz, Band 62, K1-K25, ISBN 978-3-85125-137-1.
62. Gamerith, V., J. Veit, G. Gruber and D. Muschalla (2011). Online Monitoring of Combined Sewer Systems: Experiences and Application in Modeling. In W. James (Eds.). Cognitive Modelling of Urban Water Systems, Monograph 19. Guelph, CHI: 167-183. ISBN 978-0-9808853-4-7.
63. Ostrowski, M., F. Reussner and D. Muschalla (2010). Integrale Simulationsansätze zur Erkennung kritischer Gewässerbelastungen durch urbane Einleitungen. In Pinnekamp, J. (Eds.). Gewässerschutz, Wasser, Abwasser, Aachen 2010, ISBN 978-3-938996-26-3.
64. HSGSim (2010). Leitfaden für integrale Modellierung urbaner Abwassersysteme der Hochschulgruppe Simulation. In Pinnekamp, J. (Eds.). Gewässerschutz, Wasser, Abwasser, Aachen 2010, ISBN 978-3-938996-26-3.
65. Bach, M., F. Froehlich, S. Heusch, C. Hübner, D. Muschalla, F. Reußner and M. Ostrowski (2009). BlueM – a free software package for integrated river basin management. In N. Fohrer, B. Schmalz, G. Hörmann, K. Bieger (Eds.). Forum für Hydrologie und Wasserbewirtschaftung. Heft 26.09. Salzgitter, Kiel, Fachgemeinschaft Hydrologisch Wissenschaften in der DWA: 109-115. ISBN: 978-3-941089-54-9.
66. HSGSim (2008). “Integrierte Modellierung von Kanalnetz, Kläranlage und Gewässer“ HSG-Leitfaden der Arbeitsgruppe Integrierte Modellierung. 1. Auflage 2008. Eds.: Hochschulgruppe „Erfahrungsaustausch Dynamische Simulation in der Siedlungswasserwirtschaft“ (HSGSim). Working group Integrierte Modellierung. URL: <http://www.hsgsim.org/> [Stand 25. 08. 2009].
67. Gamerith, V., D. Muschalla, S. Schneider, G. Gruber and W. Sprung (2008). Hydrologische Schmutzfrachtmodellierung des Einzugsgebiets Graz West. In R. Haberl und T. Ertl (Eds.). Kanalmanagement 2008 Betrieb und Mischwasser. Wiener Mitteilungen, Band 209. K1-K16. ISBN: 978-3-85234-101-9.
68. Muschalla, D., C. Pereira, S. Schneider and M. Ostrowski (2006). Dokumentation des Schmutzfrachtsimulationsmodells SMUSI Version 5.0. Darmstadt, Institut für Wasserbau und Wasserwirtschaft, Technische Universität Darmstadt.
69. Muschalla, D. (2006). Evolutionäre multikriterielle Optimierung komplexer wasserwirtschaftlicher Systeme. Mitteilungen des Instituts für Wasserbau und Wasserwirtschaft der Technischen Universität Darmstadt, Eds. M.W. Ostrowski und U. Zanke, Heft 137, XXIII, 237 S. ISBN: 3-936146-16-0.
70. Muschalla, D. and K. Schröter (2006). Immissionsorientierte Optimierung urbaner Entwässerungssysteme. In Hamburger Berichte zur Siedlungswasserwirtschaft, 18. Fachtagung Norddeutsche Tagung für Abwasserwirtschaft und Gewässerentwicklung in Lübeck, Vol. 54, pp. 53-64. ISBN: 3-930400-81-2.
71. Muschalla, D. and M. Ostrowski (2005). Case study: Urban stormwater drainage system in Addis Ababa, Ethiopia - present state and proposals for improvement. In J. Parkinson und O. Mark (Eds.). Urban Stormwater Management in Developing Countries. London, IWA Publishing: 133-134. ISBN: 1-843390-57-4.
72. Muschalla, D. (2004). Optimisation of water resources systems using Evolutionary Algorithms. In Shie-Yui Liong, Kok-Kwang Phoon und Vladan Babovic (Eds.). HYDROINFORMATICS, Proceedings of the 6th International Conference, Singapore, World Scientific Publishing Company: 826-833. ISBN: 978-981-238-787-5.



73. Muschalla, D. and M. Ostrowski (2004). Leitfaden zur effizienten und sicheren Beurteilung von Schmutzfrachtberechnungen mit dem Modell SMUSI, Hessisches Ministerium für Umwelt, ländlichen Raum und Verbraucherschutz. URL: "[http://www.hessen.de/irj/HMULV\\_Internet?cid=bb3a34e4450498cbad7aa85aa61e3796](http://www.hessen.de/irj/HMULV_Internet?cid=bb3a34e4450498cbad7aa85aa61e3796) [Date: 1.6. 2009].
74. Muschalla, D. and Schröter, K. (2004). Ansätze für eine immissionsorientierte integrierte Modellierung von Wasser- und Stoffströmen aus urbanen und landwirtschaftlichen Flächen. In Axel Bronstert, Annegret Thielen, Bruno Merz, Michael Rode, Lucas Menzel (Eds.). Wasser- und Stofftransport in heterogenen Einzugsgebieten, Forum für Hydrologie und Wasserbewirtschaftung, Heft 05.04. Salzgitter, Kiel, Fachgemeinschaft Hydrologisch Wissenschaften in der DWA. ISBN: 3-937758-18-6.

*Books as editor*

75. Shaher Zyoud (2017). Multi-criteria decision making techniques for water loss management in water supply networks of developing countries. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed.: D. Muschalla, D. Fuchs-Hanusch, Band 76, 175 S. ISBN: 978-3-85125-542-3
76. Muschalla, D. and G. Gruber (2017). Aqua Urbanica 2017 – Urbanes Niederschlagsmanagement im Spannungsfeld zwischen zentralen und dezentralen Maßnahmen. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed.: D. Muschalla, G. Gruber, Band 75. ISBN: 978-3-85125-534-8.
77. Regneri, M. (2015). „Modeling and multi-objective optimal control of integrated wastewater collection and treatment systems in rural areas based on fuzzy decision-making" Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed.: D. Muschalla, , Band 71, 243 S. ISBN: 978-3-85125-381-8.
78. Friedel, F. (2014). Vergleich von statistischen und physikalischen Modellen zur Berechnung der Auftrittswahrscheinlichkeit von Schadensarten auf Trinkwasser-Haupt- und Zubringerleitungen. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed.: D. Muschalla, Band 69, 236 S. ISBN: 978-3-85125-221-7.
79. Vicuini, R. (2013). Untersuchungen zur Dynamik der Feststoffsedimentation in Absetzbecken. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed. D. Muschalla, Band 66, 121 S. ISBN: 978-3-85125-221-7.
80. Aslam, T.M. (2013). Settling of solids in raw wastewater – primary settling tanks and stormwater tanks. Schriftenreihe zur Wasserwirtschaft der Technischen Universität Graz, Ed. D. Muschalla, Band 67, 149 S. ISBN: 978-3-85125-221-7.

*Conference proceedings*

81. Reinstaller, S., F. Funke, D. Muschalla and M. Kleidorfer (2022). Impact of model structure on analysing malfunctions in urban drainage systems. 12<sup>th</sup> International Conference of urban drainage modelling, Costa Mesa, USA.
82. Pichler, M., D. Camhy, A. W. König and D. Muschalla (2022). Integrated data management to prevent data loss and raise data quality. 12<sup>th</sup> International Conference of urban drainage modelling, Costa Mesa, USA.
83. Reinstaller, S. and D. Muschalla (2022). Qualitative techniques to evaluate an urban flood model. 12<sup>th</sup> International Conference of urban drainage modelling, Costa Mesa, USA.
84. Pichler, M., C. Fanjat, D. Camhy, R. Maier, G. Krebs, D. Muschalla, G. Lipeme Kouyi, LIPEME KOUYI and G. Gruber Guenter (2019). Model-based assessment of unavailable hydraulic CSO data. 10<sup>th</sup> International Conference NOVATECH Lyon 2019, Lyon, France.

85. Reinstaller, S., G. Krebs and D. Muschalla (2019). Integrated urban flash flood modelling in hillside catchments. 10th International Conference NOVATECH Lyon 2019, Lyon, France.
86. Krebs, G., J. Leimgruber, D. Camhy, R. Schatzl and D. Muschalla (2018). Hydro-meteorological trends in a small research basin. 17th Biennial Conference Euromediterranean Network of Experimental and Representative Basins (ERB), Darmstadt, Germany.
87. Krebs, G., S. Weidemann, R. Fuchs, J. Leimgruber, D. Camhy, E. Krall, R. Schatzl and D. Muschalla (2018). Hydrological trends in a small research basin. EGU General Assembly, Vienna, Austria.
88. Leimgruber, J., G. Krebs and D. Muschalla (2018). Sensitivity of water balance components to green roof parameters. 11<sup>th</sup> International Conference on Urban Drainage Modelling – UDM 2018, Palermo, Italy.
89. Leimgruber, J., G. Krebs, D. Steffelbauer and D. Muschalla (2018). Zurück zum Ursprung – Bewertung von Niederschlagswasserbewirtschaftungsmaßnahmen zur Annäherung an die natürliche Wasserbilanz. Aqua Urbanica 2018, Landau, Germany.
90. Leitner, S., R. Maier, A. Sauer, R. Ortlepp, C. Jöbstl and D. Muschalla (2018). Integrated urban flash flood risk assessment. 11<sup>th</sup> International Conference on Urban Drainage Modelling – UDM 2018, Palermo, Italy.
91. Hofer, T., G. Gruber and D. Muschalla (2017). Wet weather pollution load dynamics from a central storage tunnel and their effects on the wastewater treatment plant in Graz, Austria. 14<sup>th</sup> International Conference on Urban Drainage – ICUD 2017, Prague, Czech Republic.
92. Krebs, G., T. Kokkonen, D. Muschalla and H. Koivusalo (2017). An approach for green infrastructure assessment in large urban catchments. World Green Infrastructure Congress 2017, Berlin, Germany.
93. Krebs, G., T. Kokkonen, D. Muschalla and H. Koivusalo (2017). Urban Hydrological Modelling - From Small to Large Scale. 14<sup>th</sup> International Conference on Urban Drainage – ICUD 2017, Prague, Czech Republic.
94. Leimgruber, J., G. Krebs, D. Steffelbauer and D. Muschalla (2017). Back to the roots - A storm event-based assessment of LID performance to restore the natural water balance. World Green Infrastructure Congress 2017, Berlin, Germany.
95. Muschalla, D. (2017). Kalibrierung von Mischwassernetzen mit Surrogat-Messungen. ÖWAV Seminar Herausforderungen der Mischwasserbewirtschaftung - Erfahrungen aus 10 Jahren Anwendung des ÖWAV-Regelblattes 19, Innsbruck, Austria.
96. Fricke, K.I., H. Hoppe, M. Hellmig and D. Muschalla (2016). 10 years spectrometry based P-RTC in Wuppertal - experiences and enhancements. Novatech 2016, Lyon, France.
97. Hofer, T., R. Maier, L. Rieger, O. Schraa, G. Gruber and D. Muschalla (2016). Integrated assessment of a new central storage tunnel on treatment plant's performance in Graz (Austria). Novatech 2016, Lyon, France.
98. Hofer, T., G. Gruber, R. Maier and D. Muschalla (2016). Integral assessment of the urban drainage system of Graz (Austria) by combining integrated modelling and advanced online monitoring. 8th International Conference on Sewer Processes and Networks, Rotterdam, The Netherlands.
99. Leimgruber, J., D. Steffelbauer, M. Kaschutnig, F. Tscheikner-Gratl and D. Muschalla (2016). Optimizing a series of rainfall events to implement a combined verification of combined sewer systems. Novatech 2016, Lyon, France.

100. Leutnant, D., D. Muschalla and M. Uhl (2016). Stormwater pollutant process analysis with long-term on-line monitoring data at micro scale sites. 8th International Conference on Sewer Processes and Networks, Rotterdam, The Netherlands.
101. Maier, R., T. Hofer, G. Gruber and D. Muschalla (2016). A case study for integrated modeling in urban drainage facilitating the interface approach. Novatech 2016, Lyon, France.
102. Muschalla, D., T. Hofer and G. Gruber (2016). Monitoring frequency and duration of combined sewer overflows – application of a robust low-cost method. 8th International Conference on Sewer Processes and Networks, Rotterdam, The Netherlands.
103. Hofer, T., R. Maier, L. Rieger, O. Schraa, G. Gruber and D. Muschalla (2015). Integrated assessment of a new storage tunnel on treatment plant performance - Case study Graz, AUT. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
104. Hofer, T. F., G. Gruber, G., M. Clara and D. Muschalla (2015). Modelling of micro pollutant loads at combined sewer overflows. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
105. Leimgruber, J., D. Steffelbauer, M. Kaschutnig, F. Tscheikner-Gratl, and D. Muschalla (2015). Optimizing a series of rainfall events to reduce the computation time of hydrodynamic simulations. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
106. Leimgruber, J., D. Steffelbauer, M. Kaschutnig, F. Tscheikner-Gratl, and D. Muschalla (2015). Optimierung von Regenereignisserien zur Rechenzeitreduzierung von hydrodynamischen Simulationen. Aqua Urbanica 2015, Stuttgart, Germany.
107. Leutnant, D., T. Hofer, M. Henrichs, D. Muschalla and M. Uhl (2015). Model-based time drift correction of asynchronous measurement data in urban drainage applications. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
108. Leutnant, D., M. Henrichs, D. Muschalla and M. Uhl (2015). OSCAR - An online supervisory control and urban drainage data acquisition system with R. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
109. Maier, R., T. Hofer, G. Gruber and D. Muschalla (2015). Optimizing sediment removal in storage tunnels using emptying and flushing scenarios. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
110. Muschalla, D., T. Hofer, R. Maier, L. Rieger, O. Schraa and G. Gruber (2015). Development of an innovative concept for building integrated urban water models. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
111. Regneri, M., K. Klepiszewski, D. Muschalla, D. and P.A. Vanrolleghem (2015). Integrated Multi-Criteria Optimal Model Predictive Control of a Sewer Network in a Rural Catchment. 10th International Urban Drainage Modelling Conference - UDM 2015, Québec, Québec, Canada.
112. Camhy, D., G. Gruber, D. Steffelbauer, T. Hofer and D. Muschalla (2014). OpenSDM – an open sensor data management tool. 11th International Conference on Hydroinformatics 2014, New York City, USA.
113. Fuchs-Hanusch, D., M. Günther, D. Steffelbauer and D. Muschalla (2014). Impact of failure mode, crack area and pressure on leakage outflow. World Environmental & Water Resources Congress , Portland, Oregon, U.S.A.

114. Fuchs-Hanusch, D., M. Möderl, R. Sitzenfrei, F. Friedl und D. Muschalla (2014). Systematic estimation of discharge water due to transmission mains failure by the means of EPANET2. Water Loss 2014, Vienna, Austria.
115. Hofer, T., G. Gruber, V. Gamerith und D. Muschalla (2014). Detektion von Häufigkeit und Dauer von Mischwasserentlastungen mit Temperatursensoren. Aqua Urbanica 2014, Innsbruck, Austria.
116. Hofer, T., G. Gruber, V. Gamerith, A. Montserrat, Ll. Corominas und D. Muschalla (2014). Using Temperature Sensors to Detect Occurrence and Duration of Combined Sewer Overflows. 13th International Conference on Urban Drainage, Sarawak, Malaysia.
117. Haas, U. and D. Muschalla (2013). Entwerfen von Entwässerungsstrategien - aktueller Stand der Regelwerksarbeit der DWA AG ES-2.4 Integrale Abflusssteuerung. Aqua Urbanica 2013, Zürich, Schweiz.
118. Hofer, T, V. Gamerith, D. Muschalla, G. Windhofer und Günter Gruber (2013). A sampling approach for storm events with focus on micropollutants at combined sewer overflows. Novatech 2013, Lyon, France.
119. Hofer, T., G. Gruber, V. Gamerith and D. Muschalla (2013). Abschätzung des Sedimentationswirkungsgrades von Vorklär- und Mischwasserüberlaufbecken auf Basis zeitlich hoch aufgelöster Messdaten. Aqua Urbanica 2013, Zürich, Schweiz.
120. Leonhardt, G., M. Kleidorfer, G. Gruber, A. Pressl, T. Ertl, D. Muschalla and W. Rauch (2013). Identifikation von Auswirkungen der Siedlungsentwässerung im Gewässer durch Monitoring und Modellierung - Fallbeispiel eines voralpinen Flusses. Aqua Urbanica 2013, Zürich, Schweiz.
121. Scheucher, R., R. Sulzbacher, G. Gruber and D. Muschalla (2013). Strategien zur dezentralen Niederschlagswasserbewirtschaftung. Aqua Urbanica 2013, Zürich, Schweiz.
122. Scheucher R., R. Sulzbacher, V. Gamerith, G. Gruber, H. Pilko und D. Muschalla (2013). Using citizen survey data in planning stormwater management measures. Novatech 2013, Lyon, France.
123. Sulzbacher, R, R. Scheucher, V. Gamerith and D. Muschalla (2013). 1D-2D Modellierung im urbanen Überflutungsschutz - Möglichkeiten und Grenzen. Aqua Urbanica 2013, Zürich, Schweiz.
124. Camhy, D., V. Gamerith, D. Steffelbauer, D. Muschalla und Günter Gruber (2012). Scientific Data Management with Open Source Tools – An Urban Drainage Example. 9th International Conference on Urban Drainage Modelling, Belgrad, Serbien.
125. Gamerith, V., M.B. Neumann and D. Muschalla (2011). Applied Global Sensitivity Analysis in Sewer Flow and Water Quality Modelling. 12nd International Conference on Urban Drainage, Porto Alegre, Brazil.
126. Hauduc, H., M. B. Neumann, D. Muschalla, V. Gamerith, S. Gillot, and P.A. Vanrolleghem (2011). Towards quantitative quality criteria to evaluate simulation results in wastewater treatment – A critical review. WATERMATEX 2011, St. Sebastian, Spain.
127. Corominas, Ll., X. Flores-Alsina, D. Muschalla, M.B. Neumann and P.A. Vanrolleghem (2010). Verification of WWTP Design Guidelines With Activated Sludge Process Models. Weftec 2010, New Orleans, Louisiana, U.S.A.
128. Flores-Alsina, X., Ll. Corominas, D. Muschalla, M.B. Neumann and P.A. Vanrolleghem (2010). How do Initial Design Assumptions Determine Plant Sizing? Assessing Activated Sludge Process Design using Monte-Carlo Simulation and Global Sensitivity Analysis. IWA World Water Congress, Montreal, Québec, Canada.

129. Vallet B., D. Muschalla D., P.A. Vanrolleghem and P. Lessard (2010). A New Dynamic Stormwater Basin Model as a Tool for Management of Urban Runoff. Novatech 2010, Lyon, France.
130. Muschalla, D., G. Pelletier, É. Berrouard, J.-F. Carpenter, B. Vallet, P. Lessard and P.A. Vanrolleghem (2009). Ecohydraulic-driven Real-Time Control of Stormwater Ponds. 8th International Conference on Urban Drainage Modelling, Tokyo, Japan.
131. Reussner, F., M. Schütze and D. Muschalla (2009). OpenMI compliant real-time analyser for integrated modelling. 8th International Conference on Urban Drainage Modelling, Tokyo, Japan.
132. Vanrolleghem, P.A., B. Kamrath A.-M. Solvi and D. Muschalla (2009) Making the best of two Hydrological Flow Routing Models: Nonlinear Outflow-Volume Relationships and Backwater Effects Model. 8th International Conference on Urban Drainage Modelling, Tokyo, Japan.
133. Froehlich, F., R. Dittmann, D. Muschalla, M. Ostrowski and R. Pohl (2008). Re-operation of multi-purpose reservoirs for economic and environmental benefits. USSD's 28th Annual Meeting and Conference, Portland, Oregon, USA.
134. Gamerith, V., D. Muschalla, P. Könemann and G. Gruber (2008). Pollution load modelling in sewer systems – An approach of combining long term online sensor data with multi-objective auto-calibration schemes. World Water Congress, Vienna, Austria.
135. Gamerith, V., D. Muschalla, K. Schröter, P. Könemann and G. Gruber (2008). Application of multi-objective auto-calibration schemes in pollution load modelling based on high-resolution calibration data sets. 11th International Conference on Urban Drainage, Edinburgh, Scotland.
136. Hübner, C., D. Muschalla and M. Ostrowski (2008). Mixed-integer optimization of flood control measures using evolutionary algorithms. 4th International Symposium on Flood Defence: Managing Flood Risk, Reliability and Vulnerability. Toronto, Ontario, Canada.
137. Muschalla, D., M. Schütze, K. Schroeder, M. Bach, F. Blumensaat, K. Klepiszewski, M. Pabst, A. Pressl, N. Schindler, J. Wiese and G. Gruber (2008). The HSG Guideline Document for Modelling of Integrated Urban Wastewater Systems. 11th International Conference on Urban Drainage, Edinburgh, Scotland.
138. Reußner, F., D. Muschalla, J. Alex and M. Schütze (2008). OpenMI Based Basin Wide Integrated Modelling Considering Multiple Urban Areas. 11th International Conference on Urban Drainage, Edinburgh, Scotland.
139. Schröter, K., X. Llort, C. Velasco, D. Muschalla, M. Ostrowski and D. Sempre (2008). Radar-based distributed hydrologic observation and modelling. International Symposium Weather Radar and Hydrology WraH2008, Grenoble, France.
140. Bach, M., D. Muschalla, K. Schröter and M. Ostrowski (2007). Integrated model approaches for urban waste water systems and diffuse sources. 6th international conference on sustainable techniques and strategies in urban water management, NOVATECH 2007, Lyon, France.
141. Froehlich, F., R. Dittmann, D. Muschalla, M. Ostrowski and R. Pohl (2007). Can we improve dam safety and ecological dam performance at the same time? International Symposium Dam Safety Management. Role of State, Private Companies and Public in Designing, Constructing and Operation of Large Dams. St. Petersburg, Russia.
142. Muschalla, D., G. Gruber, V. Gamerith, S. Schneider and K. Schröter (2007). Sewer modelling based on highly distributed calibration data sets and multi-objective auto-calibration schemes. 5th International Conference on Sewer Processes and Networks, Delft, Netherlands.

143. Muschalla, D., M. Ostrowski and A. Klawitter (2007). Innovative simulation and optimisation tools for basinwide urban stormwater management. International Symposium on New Directions in Urban Water Management, Paris, France.
144. Muschalla, D. (2006). Optimization of water resources systems using multi-objective Evolution Strategies. International Conference on the Applications of Computer Sciences and Mathematics in Architecture and Civil Engineering, Weimar, Germany.
145. Muschalla, D. (2006). Optimization of Integrated Urban Water Systems using Multi-Objective Evolution Strategies. 2nd International IWA Conference on Sewer Operation and Maintenance SOM 2006, Vienna, Austria.
146. Muschalla, D., M. Bach and M. Ostrowski (2006). Integrierte Modellierung als Werkzeug zur Beurteilung von Mischwasserentlastungen. Fachtagung zu Abflusssteuerung - Schwallspülung - Gewässerschutz, Osnabrück, Germany.
147. Muschalla, D., K. Schröter and M. Schütze (2006). Multi-objective algorithms in the field of urban drainage. 7th International Conference on Hydroinformatics HIC 2006, Nice, France.
148. Schröter, K., D. Muschalla and M. Ostrowski (2006). Assessment of parameter uncertainty in rainfall runoff modelling. 7th International Conference on Hydroinformatics HIC 2006, Nice, France.
149. Schröter, K., D. Muschalla and M. Ostrowski (2006). Determination of parameter uncertainty and evaluation of the predictive significance of an urban hydrological model. 7th International Conference on Urban Drainage Modelling, Melbourne, Australia.
150. Muschalla, D., M. Ostrowski, K. Schröter and S. Wörsching (2005). Integrated modelling and multi-objective evolution strategy as a method for water quality oriented optimization of urban drainage systems. 10th International Conference on Urban Drainage, Copenhagen, Denmark.
151. Muschalla, D. (2004). Optimization potential of sewage systems. British Hydrological Society Conference Science and Practice for the 21st Century, London, Great Britain.
152. Muschalla, D. and K. Schröter (2004). Parameter identification and stochastic pollutant load modelling. 6th International Conference on Urban Drainage Modelling, Dresden, Germany.
153. Muschalla, D., M. Ostrowski and W. James. (2003). International graduate course on sustainable urban water systems modelling using asynchronous-learning on the web. Neue Medien in der Aus- und Weiterbildung von Bauingenieuren und Architekten, Darmstadt, Germany.
154. Muschalla, D. (2002). Optimisation of combined sewer systems using evolution strategies. 16th European Junior Scientist Workshop - Real Time Control and Measurement in Urban Drainage Systems, Valle dei Margi, Grammichele, Catania, Italy.
155. Muschalla, D. and M. Ostrowski (2002). Urban storm water drainage system in the central part of Addis Ababa, Ethiopia - present state and proposals for the improvement. 9th International Conference on Urban Drainage, Portland, USA.