



## Peter Marcus Bach, Ph. D.

Eawag, Swiss Federal Institute of Aquatic Science & Technology

Urban Water Management Department

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📄 ResearchGate: [researchgate.net/profile/Peter\\_Bach](https://researchgate.net/profile/Peter_Bach)

📺 YouTube: [youtube.com/c/PeterMarcusBach](https://youtube.com/c/PeterMarcusBach)

### EDUCATION

- |          |  |
|----------|--|
| Oct 2014 | <b>Ph. D. Water Systems Modelling,</b><br>Dept. Civil Engineering, Monash University, VIC Australia<br>Principal Advisor: Ana Deletic<br><i>"UrbanBEATS: A virtual urban water system tool for exploring strategic planning scenarios"</i> |
| Dec 2009 | <b>B.E. Civil (First Class Honours – Top Graduate)</b><br>Monash University, VIC Australia   |

### PROFILE

- Execution and international collaboration on major research projects in diverse multi-disciplinary topics within the fields of Blue Green Systems and Sustainable Urban Water Management
- Integrated modelling, geo-spatial and data analytics – combining models in different fields to simulate impacts of urbanisation, population growth and climate change on humans and the environment
- Application of qualitative research methods to investigate urban water governance aspects – bridging scientific evidence-based knowledge with practical implementation
- Communication to a diverse and international audience comprising industry stakeholders and general public – high-level presentation skills, delivery of scientific publications, modelling software, audio-visual media and stakeholder reports

### RESEARCH & EXPERIENCE

**Eawag, Swiss Federal Institute of Aquatic Science and Technology (& ETH Zürich)**

**2017 – Present**

Dübendorf ZH, Switzerland

*Research Scientist & Lecturer (2020 – Present)*

- Refinement of existing modelling approaches and tools (UrbanBEATS) to support planning of multi-functional Blue Green Systems in cities – particularly in areas of urban amenity, biodiversity enhancement and urban heat mitigation
- Scoping and leading a National benchmarking study on opportunities for multi-functional Blue Green Systems to support adaptation to climate change, rapid urbanisation and population growth in major Swiss Agglomerations
- Developing and lecturing a *Masters in Advanced Studies* course at ETH Zurich titled '*Nature-based solutions and Blue Green Infrastructure*' – autumn semester 2021
- Engagement of stakeholders in the City of Bern in the development of an urban living lab, a multi-year research endeavour for a greenfield development Viererfeld/Mittelfeld to assess how Blue Green Infrastructure can offset the adverse impacts of urbanisation
- (Co)-supervision of Bachelor, Masters, PhD theses and mentorship of a postdoctoral researcher in the fields of Blue Green Systems and integrated geo-spatial modelling and water infrastructure transitions

*Postdoctoral Research Fellow (2017 – 2019)*

- Adaptation of Australian-centric approaches to modelling Blue Green Systems to the Swiss and other international contexts, development of scalable geo-spatial integrated models
- Structured decision-making approach to water infrastructure transitions in regard to centralised vs. decentralised water management
- Modelling urban development and land use change in Swiss and Australian cities

**Department of Civil Engineering, Monash University**

Clayton VIC, Australia

2014 – 2020

*Honorary Adjunct Research Fellow (2020)*

- Continued supervision of PhD students and participation in Australian Research Council and other funded research projects as project partner
- Ongoing engagement with the Australian Water Industry in improving the planning and adoption of Blue Green Systems in urban cities and rural towns – facilitating adoption of new modelling tools

*Australian Research Council Discovery Early Career Researcher Fellow (2017-2019)*

- Leading an interdisciplinary research project on using virtual reality and integrated modelling for improving the planning of Blue Green Systems in cities
- Development of international collaboration in supporting the planning of Blue Green Systems

*Postdoctoral Research Fellow (2014 – 2016)*

- Ongoing development of integrated modelling approaches for planning Blue Green Systems in cities for sustainable urban water management – in particular stormwater quality and stormwater harvesting
- Industry engagement, research funding procurement and student supervision in interdisciplinary topics around integrated urban water management
- Provision of research, grant, teaching and administrative support to the Associate Dean of Engineering

**Cooperative Research Centre (CRC) for Water Sensitive Cities**

Clayton VIC, Australia

2015 - 2017

*Lead Researcher – Project D1.5 – The Water Sensitive Cities Modelling Toolkit*

- Development of a modelling software for assessing multiple benefits of Blue Green Systems in cities – coordination with software developers and researchers
- Coordination with researchers in urban climatology, atmospheric science, economics, stream health and ecology in packaging research outputs into usable software widgets
- Supervision of a postdoctoral researcher
- Engagement with industry stakeholders in four National Australian software training workshops
- Coordination with South Australian government (Department of Environment and Natural Resources) on pilot studies in trialling the modelling tool in real-world projects
- Publication of scientific articles and industry reports on outcomes of the project

**Unit of Environmental Engineering, Innsbruck University**

Innsbruck, Austria

2010 – 2012

*Visiting Researcher (Apr – Jul 2010, Jun – Aug 2011, Jul – Aug 2012)*

- Research collaboration on the European 7<sup>th</sup> Framework Programme Project *PREPARED enabling change*, numerical model development, co-publication of scientific journal papers
- Promotion of Blue Green Systems technologies in Austria, seminars and attendance of the 1<sup>st</sup> Austrian Young Water Professionals Conference
- Supporting research team through proof-reading assistance, participation in site visits to wastewater treatment plants around Tirol

**Institute for Sustainable Water Resources, Monash University**

Clayton VIC, Australia

2008 – 2009

*Casual Research Assistant*

- Data analysis and publication of scientific papers on the ‘First Flush Phenomenon’
- Assist laboratory and field experiments on stormwater bioretention systems and ponds
- Co-authored a literature review on conducting a ‘bacterial budget’ – microbial source tracking using indicator organisms in urban stormwater runoff

## RESEARCH FUNDING PROCUREMENT

Nationally competitive grants (Swiss National Science Foundation – SNF; Australian Research Council – ARC) and grant programs at various institutions (Eawag, Monash University, CRC for Water Sensitive Cities - CRCWSC).

**Bold:** Lead Investigator

Year	Funding	Title ( <i>Funding Scheme</i> )	PIs, CoIs	Duration	Amount
2022	ETH Board Joint Initiative	Joint Initiative UrbanTwin in the Strategic Area Energy, Climate and Sustainable Environment: An urban digital twin for climate action: Assessing policies and solutions for energy, water and infrastructure	Atienza, Maréchal, Bach, Wasmer, Lehning, Čapkun, Nobile, Falsafi, Kamgarpour, Paolone, Perona, Port-Agel et al.	3 years	CHF 5,302,800
2021	Eawag	BGI Living Lab Bern: Establishing a pre-urbanisation baseline	Maurer, Leitão, Cook, Bach	1 year	CHF 127,000
2021	Eawag/WSL	BlueGreenNET: Social-ecological networks to enhance blue-green biodiversity in peri-urban regions	Fischer, Bolliger, Bach, Grêt-Regamey, Hoffmann, Pellissier, Psomas	3 years	CHF 342,427
2021	SNF	Heat-Down: Integrated Modelling of Stormwater and Urban Heat for cooling Cities	Leitão, Bach, Nice, van de Ven, Dotto	4 years	CHF 453,764
2020	Eawag/WSL	Connect-HDL: Blue-Green Infrastructure for Biodiversity Enrichment in Human-Dominated Landscapes ( <i>Blue Green Biodiversity 2020 Project Call</i> )	Maurer, Bolliger, Bach, Psomas	1 year	CHF 103,000
2020	ARC	Urban flood modelling at speed and scale ( <i>Discovery Projects</i> )	Deletic, Ignjatovic, Jamali, Raissi, Haghghat, Bach, Leitão	4 years	AUD\$ 390,000
2020	Observatoire Ivanhoé Cambridge Université de Montréal	Mise à l'épreuve et adaptation de l'outil multicritères techniques et sociaux de planification de l'implantation des infrastructures vertes de gestion des eaux pluviales SSANTO pour les municipalités du Québec (cas de Trois-Rivières)	Dagenais, Bichai, Bach, Kuller, Vanrolleghem	1 year	CAD\$ 10,000
2018	Monash	Regional cities of the future: A “deep dive” towards a novel integrated approach to future-proofing small towns	Lintern, Farrelly, Grodach, Kessler, Bach	1 year	AUD\$ 99,539
<b>2017</b>	<b>ARC</b>	<b>Virtual Reality for Planning of Green Urban Water Infrastructure (<i>Discovery Early Career Researcher Award – DECRA</i>)</b>	<b>Bach</b>	<b>3 years</b>	<b>AUD\$ 360,000</b>
2017	CRCWSC	ABC Waters Evaluation and Modelling: Punggol New Town – C39 Precinct (Singapore) ( <i>Project Funding</i> )	Deletic, McCarthy, Bach, Zhang	3 years	AUD\$ 289,212
2016	ARC	Advancing water pollution emissions modelling in cities of the future ( <i>ARC Linkage Projects</i> )	Deletic, Bach, McCarthy, Rauch, Metzeling, Coleman	3 years	AUD\$ 484,052
<b>2015</b>	<b>CRCWSC</b>	<b>Project D1.5 – The Water Sensitive Cities Modelling Toolkit (<i>Project Funding</i>)</b>	<b>Bach, Deletic</b>	<b>2 years</b>	<b>AUD\$ 344,000</b>
<b>2015</b>	<b>Monash</b>	<b>Linking policy, water recycling and centralised urban water supply infrastructure in an integrated model</b>	<b>Bach</b>	<b>1 year</b>	<b>AUD\$ 20,000</b>
2015	VIC State Government	Stormwater Treatment Requirements for Dual Pipe Use	McCarthy, Deletic, Henry, Chandrasena, Bach	3 years	AUD\$ 325,000

## SUPERVISED POSTDOCS, PHD AND MASTERS THESES

Students undertaking a Masters or Doctoral thesis where I was primary or co-supervisor

Name	Degree/ Position	Year	Thesis/Main Project Title	Institution
Kefeng Zhang	Postdoc	2015-2017	Project D1.5 – The Water Sensitive Cities Modelling Toolkit – Cooperative Research Centre for Water Sensitive Cities	Monash University
Giulia Donati	Postdoc	2020-2021	Connect-HDL: Blue-Green Infrastructure for Biodiversity Enrichment in Human-Dominated Landscapes (Eawag-WSL Blue Green Biodiversity 2020)	Eawag / ETH Zurich
Martijn Kuller	Ph. D.	2018	SSANTO: Planning Support for Water Sensitive Urban Design	Monash University
Behzad Jamali	Ph. D.	2019	Integrated Modelling for Urban Flood Management and Planning	Monash University
Baiqian Shi	Ph. D.	2022	Detecting and understanding urban illicit discharges by utilising newly developed low-cost and IoT-based technologies	Monash University
Yannick Back	Ph. D.	Ongoing	Analysis of multiple benefits from implementing decentralised stormwater technologies – adapting to the impacts of climate change	University of Innsbruck
Jixuan Chen	Ph. D.	Ongoing	Urban water management for urban heat mitigation – investigation of different water sources and Blue-Green Infrastructures	ETH Zurich
Lucas Gobatti	Ph. D.	Start 07/2022	Integrated Modelling of Stormwater and Urban Heat for Cooling Cities (exact thesis title yet to be determined)	ETH Zurich
Emily Salvisberg	MSc.	2019	The potential of local planning instruments to unlock blue-green solutions for decentralised stormwater management	HafenCity University
Shuchen Hsu	MSc.	2020	Hex-Urban: Investigating the adoption of hexagonal grids to represent the total urban water cycle within a distributed water balance model	TU Delft
Morgane Bousquet	MSc.	2020	Application d'un outil d'aide à la planification intégrant une gestion de l'eau plus durable en milieu urbain dans un contexte en climat froid	INSA Toulouse
Romain Cottet	MSc.	2021	Investigating landscape resistance using a connectivity modelling method	ETH Zurich
Lucie Roth	MSc.	2021	Modelling of suitable amphibian habitats in urban areas	ETH Zurich
Jixuan Chen	MSc.	2021	Planning-support Systems for Urban Microclimate Improvement	ETH Zurich
Francesc Molné	MSc.	2021	Green Blue Infrastructure in urban areas (CONNECT-HDL) – tentative title	EPFL
Florence Lemieux-Chalifour	MSc.	Ongoing	Strategic Planning of Green Infrastructure in Montreal: Integrated Modelling of Stormwater Control and Ecological Connectivity Benefits	Polytechnique Montreal
Raphael Erhardt	MSc.	Start 10/2022	Spatial suitability assessment of Blue-Green Infrastructure opportunities in Switzerland – adaptation of a GIS-MCDA approach to Zurich and Bern	ETH Zurich
Victoria Kunz	MSc.	Start 10/2022	(Thesis title to be determined)	ETH Zurich
Alina Stutz	MSc.	Start 10/2022	(Thesis title to be determined)	ETH Zurich

## OTHER SUPERVISION AND MENTORSHIP

- (Co)supervised 9 ETH Zurich coursework Masters Projects
- (Co)supervised over 50 undergraduate Bachelor projects
- Mentor for Young Water Professionals within IWA Specialist Group: Modelling and Integrated Assessment

## EXTERNAL EXAMINER OR CO-CHAIR OF PH. D. THESES

**2019** Chong, Natalie. *Beyond Evidence-Based Decision Support: Exploring the Multi-Dimensional Functionality of Environmental Modelling Tools – Comparative Analysis of Tools and Practices in France and Australia in the Context of Water Resources Management*. École des Ponts, ParisTech. (Supervisors: Céline Bonhomme, José-Frédéric Deroubaix)

## TEACHING EXPERIENCE

**2021 – Present** **Nature-based Solutions and Blue Green Infrastructure** (Course Lecturer/Coordinator 50%)  
ETH Zurich, Switzerland

- Course code 118-0114-00L – MAS in Sustainable Water Resources - 3 credits course
- Co-organised and co-designed the course including examination with Dr. Darcy Molnar

- 2021 – 2022 **Guest Teaching Assistant – “Groundworks” and “Nothing But Flowers” Studios**  
*Department of Architecture, ETH Zurich, Switzerland*
- Discussion with student on incorporation of Blue Green Infrastructure into architectural design
  - Jury member for final Critique & Review for “Nothing But Flowers”
- 2020 **Sustainable Water Systems** (Guest Lecture: “Urban Water Management – An Overview”)  
*University of British Columbia School of Public Policy & Global Affairs*
- 2017 **Integrated Urban Water Management** (Course coordinator: Feb – Jun 2017)  
*Monash University Australia Department of Civil Engineering*
- Course Code CIV4261: 12-week course, lectured for 4 weeks
  - Coordinated course tutors and assignments, facilitated tutorial sessions
  - Organised and invited guest lectures
- 2014 – 2016 **Integrated Urban Water Management** (Guest Lecture: “Economics & Multi-Criteria Assessment”)  
*Monash University Australia Department of Civil Engineering*
- 2015 **Alpine Urban Water Management** (Guest Lecture: “Urban Water Management in Australia”)  
*Innsbruck University Austria, Unit of Environmental Engineering, Institute for Infrastructure*
- 2014 **Water for Liveable and Resilient Cities** (Guest Lecture: “Integrated Urban Water Management”)  
*Cooperative Research Centre for Water Sensitive Cities Australia*
- Lecture for a Winter School programme
  - Contribution to a Massive Open Online Course (MOOC) hosted by “Future Learn”
- 2008 – 2013 **Undergraduate Civil Engineering** (Teaching Assistant)  
*Monash University Australia Department of Civil Engineering*
- Tutored for 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>-year undergraduate Civil Engineering units
  - Courses included: “Computing and Water Systems Modelling”, “Bridge Design & Assessment”, “Urban Water & Wastewater Systems” and “Integrated Urban Water Management”
  - Designed and revised course material for water-related units

## CONFERENCE & WORKSHOP ORGANISATION

- 2022 **IWA World Water Congress 2022** – Co-organiser of Special Workshop Session: *Evaluation Criteria And Approaches For Tools In NBS Planning*
- 2022 **World Biodiversity Forum, Davos Switzerland** – Organiser and Chair of Special Session: *Towards Blue Green Cities: nature-based solutions for enhancing urban ecology*
- 2021 **WRRMod, Switzerland** – Co-organiser of workshop: *Quo vadis integrated modelling?*
- 2021 **15<sup>th</sup> IWA International Conference on Urban Drainage, Melbourne Australia** – Organising Committee Member
- 2019 **IWA International Young Water Professionals Conference, Toronto Canada** – Co-organiser of a workshop titled *Understanding the benefits of integrated urban water system assessment*
- 2017 **SETAC Europe 27<sup>th</sup> Annual Meeting** – Co-organiser of a workshop titled *Looking across organizational boundaries: exchanging ideas on mechanistic modelling between SETAC and the International Water Association (IWA)*
- 2015 **10<sup>th</sup> International Urban Drainage Modelling Conference, Quebec Canada** – Organising Committee Member
- 2015 **10<sup>th</sup> International Urban Drainage Modelling Conference, Quebec Canada** – Co-organiser of a workshop on *Integrated urban wastewater and stormwater modelling and management*
- 2015 **9<sup>th</sup> IWA Symposium on Systems Analysis and Integrated Assessment (Watermatex) Gold Coast, Australia** – Lead Organiser of a workshop on *Integrated urban drainage modelling – revisiting ‘age-old’ barriers*

## CHAIR CONFERENCE SESSIONS

- **Blue Green Systems Special Session.** 15<sup>th</sup> IWA International Conference on Urban Drainage, Melbourne Australia, October 2021
- **Urban Retrofit.** 10<sup>th</sup> Conférence Internationale NOVATECH, Lyon France, July 2019

- **Integrated Modelling for evaluation of strategies for improving receiving water ecological quality.** 14<sup>th</sup> International Conference on Urban Drainage (ICUD2017), Prague Czech Republic, September 2017
- **Integrated Urban Water Systems Approach.** 10<sup>th</sup> International Urban Drainage Modelling Conference, Quebec Canada, September 2015
- **System Analysis and Data Management.** 9<sup>th</sup> IWA Symposium on Systems Analysis and Integrated Assessment (Watermatex), Gold Coast Australia, June 2017

## EDITORIAL WORK

### ► Blue Green Systems (International Water Association)

Managing Editor, Journal Founding Member

### ► Water (MDPI)

Guest Editor for Special Issue – *Green Infrastructures for Water Systems: Balance between Cities and Nature*

### ► ISPRS International Journal of Geo-Information (MDPI)

Lead Guest Editor for Special Issues – *Advancements in Geospatial Planning and Assessment of Green Infrastructure in Cities of the Future*

## ACTING REVIEWER FOR PEER-REVIEWED JOURNALS (SELECTION) AND FUNDING AGENCIES

Full reviewer profile available at: <https://publons.com/researcher/1314503/peter-marcus-bach>

- Reviewer of over 70 journal manuscripts
- **Selected Journals reviewed for:** Water Research; Journal of Hydrology; Environmental Modelling & Software; Science of the Total Environment; Sustainable Cities & Society; Landscape and Urban Planning; Water Resources Management; Urban Water Journal; Journal of Environmental Management; Computers, Environment and Urban Systems; Ecological Engineering, Nature Scientific Reports

**Funding Agencies reviewed for:** Australian Research Council; Natural Sciences and Engineering Research Council (NSERC) Canada; Sultan Qaboos University, Oman

### Reviewer for International Conferences:

- 2022 – 12<sup>th</sup> International Conference on Urban Drainage Modelling, Costa Mesa, California USA
- 2021 – 15<sup>th</sup> International Conference on Urban Drainage, Melbourne, Australia
- 2019 – 10<sup>th</sup> IWA Symposium on Modelling and Integrated Assessment (Watermatex), Copenhagen Denmark
- 2017 – 14<sup>th</sup> IWA/IAHR International Conference on Urban Drainage, Prague Czech Republic
- 2015 – 10<sup>th</sup> International Urban Drainage Modelling Conference (10UDM), Quebec Canada
- 2012 – 7<sup>th</sup> International Conference on Water Sensitive Urban Design, Melbourne Australia
- 2012 – 9<sup>th</sup> International Urban Drainage Modelling Conference (9UDM), Belgrade Serbia

## AFFILIATIONS / MEMBERSHIPS

- 2016 – cont.** Management Committee of the International Water Association (IWA) Specialist Group on Modelling and Integrated Assessment (MIA)
- 2012 – cont.** Management Committee of the IWA International Working Group on Modelling Integrated Urban Water Systems (MIUWS) – **Chair from 2017 – present**
- Since 2010** International Water Association (IWA) Member

## HONOURS AND AWARDS

- 2022** **1<sup>st</sup> Prize (2<sup>nd</sup> Rank): Architectural Ideas Competition for Oiken District, Ronquoz 21 Sion, CH**  
Design “COPERNICUS” – in collaboration with Studio Djurdjevic & Florean (Sion)
- 2021** **5<sup>th</sup> Prize (7<sup>th</sup> Rank): City of Bern Architectural Ideas Competition for the Gaswerkareal & Brückenkopf West**  
Design “HABITATE” – in collaboration with TEN Studio (Zurich), Studio Urban Strategies (Stuttgart)

- 2016 Australian Research Council (ARC) Discovery Early Career Researcher Award (DECRA)**  
A 3-year fellowship awarded to an early career researcher by the Australian Research Council
- 2015 Eric Laurenson Medal** – Awarded by Monash University and the CRC for Water Sensitive Cities to the Top Water PhD Graduate each year. Awarded based on outcomes thesis examination.
- 2014 Poul Harremoes Award Finalist** – One of three best papers by a young researcher (under 35) at the 13th International Conference on Urban Drainage (13ICUD), Malaysia – Paper titled: “Modelling the Dynamics of Water Sensitive Planning for a suburban area in Melbourne, Australia”.
- 2014 Trevithick Prize** – Awarded to the authors of the best paper in the journal Proceedings of the Institution of Civil Engineers (ICE), the paper was titled “Modelling cities and water infrastructure dynamics.”
- 2013 Best Podium Presentation for a Young Researcher** – Awarded at the 8th International Water Sensitive Urban Design Conference, Gold Coast, Australia – Presentation title: “UrbanBEATS: An exploratory model for planning urban water futures”.
- 2013 Best Departmental Seminar by a Postgraduate Student** – Awarded at the 4th Annual Monash Civil Engineering Postgraduate Conference
- 2012 Best Departmental Seminar** – Awarded by the Department of Civil Engineering, Monash University
- 2010 Sir James McNeil Foundation Postgraduate Research Scholarship** – A prestigious PhD stipend scholarship awarded for postgraduate research based on academic merit and extra-curricular involvement
- 2010 Victorian International Research Scholarship** – A prestigious PhD stipend scholarship awarded to one top student from various Victorian Universities (was returned due to changes in Australian Visa status)
- 2009 GHD Prize for Civil Engineering** - Awarded to the top Civil Engineering graduate from Monash University
- 2009 Thiess Prize for Civil Engineering Design** – Awarded to the best team of 4th year Civil Engineering Design
- 2009 GHD Water Engineering Prize** – Awarded to the top student of 4th year Integrated Urban Water Management course unit
- 2008 Monash University International Scholarship for Excellence** – 2-year award based on academic merit
- 2008 Fred Green Memorial Prize** – Awarded to the top Civil Engineering student after 3rd year
- 2008 GHD Highway Design Prize** – Group prize for the best road engineering design in 3rd year
- 2008 Australian Steel Institute Prize** – Awarded to the top student of 3rd year structural engineering
- 2007 SRIA Award for Excellence in Reinforced Concrete Design** – Awarded by Steel Reinforcement Institute of Australia for top student in 2nd year concrete design
- 2007 Monash University Alumni Scholarship** – 1-year award based on academic merit

## SEMINARS, KEYNOTES AND OTHER PROFESSIONAL ACTIVITIES

- **June 2022:** Heat island assessment and mitigation study for a building redevelopment, Nauentor, main train station, Basel, Switzerland in collaboration with TEN Studio (Zurich)
- **May 2022:** Test planning for a residential development in Sirnach TG Switzerland, full-scale integrated assessment of Blue-Green Solutions informing co-habitation design in collaboration with TEN Studio (Zurich)
- **March 2022:** Flood hazard assessment for a site redevelopment, former Hospital Site CHU, Nantes France together with Studio 51N4E (Brussels).
- **January 2022:** Participant in project team for a Swiss architectural design competition OIKEN District *Ronquoz 21, Sion* together with Studio Djurdjevic & Florean (awarded 1<sup>st</sup> Prize, 2<sup>nd</sup> Rank)
- **September 2021:** Test planning for a redevelopment site *Campo* in the City of Winterthur in collaboration with studios 51N4E (Belgium), TEN Studio (Zurich) and Urban Strategies (Stuttgart)

- **September 2021:** Invited Speaker, EPFL Public Seminar on Sustainable Urban Systems and Climate Mitigation Strategies, seminar titled *Supporting the planning of multi-functional Blue Green Systems for climate-adaptive, liveable and ecological cities*. (online: coming soon)
- **June 2021:** Participant in a project team for the Swiss urban design competition *Gaswerkareal & Brückenkopf West*, Bern with TEN Studio (<https://ten.studio/>) and Studio Urban Strategies (<https://www.urbane-strategien.com/>)
- **March 2021:** Invited speaker University of British Columbia WESTalks Seminar Series, seminar titled *Transitioning to Blue Green Cities – Harmonising nature-based approaches with smart urban water management and multi-functional planning*. (online: <https://youtu.be/DzLnhxkdDVw>)
- **November 2019:** Invited speaker at event, *Model-based digitalization methods for urban water systems: from concept to practice, International Seminar on Modelling Integrated Urban Water Systems* (2019), Quzhou China, title of presentation: *Next generation integrated modelling for sponge cities planning*.
- **November 2019:** Invited Speaker on *Integrated Modelling in the Urban Environment, Planning, coupling with Sponge Cities and Water Infrastructure Management* at the School of Environment, Nanjing University, China and a practitioners' workshop organised by GL Environment, Quzhou, China.
- **July 2019:** Invited participant and collaborator at the International Workshop on *Benchmarking of new urban flood modelling tools* at the Novatech 2019 Conference, Lyon, France
- **December 2018:** Organiser of a water industry practitioners' workshop on *User Experience Design for the integrated planning-support model UrbanBEATS*, hosted by Monash University in collaboration with University of New South Wales
- **November 2018:** Invited seminar at the Swiss Federal Institute of Technology (ETH) Zurich Institute of Environmental Engineering, titled: *Stormwater Green Infrastructure: snapshots of an ongoing interdisciplinary journey*
- **March 2018:** Invited participant at the International Workshop on *Non-grid solutions for the future of urban water management?*, Congressi Stefano Franscini at Monte Verità, Ascona Switzerland.
- **Sept 2017:** Presenter at International Water Association (IWA) Joint Webinar on “*Modelling and Integrated Assessment, Overcoming data issue and barriers to integrated modelling in practice*”
- **July 2016:** Invited seminar at Eawag Aquatic Research, Swiss Federal Institute of Technology (ETH) Zurich. Seminar titled: “*Supporting the Planning of Sustainable Urban Water Infrastructure – an integrated modelling experience*”
- **June 2016:** Invited presentation at the China-Australia Water Sensitive City Summit, Jiangsu, China, titled: “*Australian water sensitive planning modelling in the San Francisco Bay Area: challenges and implications for model transferability*”
- **Mar 2016:** Promotional Video Script and Mock-up for marketing the research of the Monash University Urban Water Group
- **Sept 2015:** Invited seminar at University of California, Berkeley CA, hosted by Berkeley Water Centre. Seminar titled: “*Exploring water sensitive futures through integrated modelling, planning-support tools for urban water management*”
- **Sept 2015:** Invited seminar at University of Illinois, Urbana-Champaign, jointly hosted by the Environmental Engineering & Science and Sustainable and Resilient Infrastructure Systems Groups, seminar was titled “*Exploring water sensitive futures through integrated modelling, planning-support tools for urban water management*”
- **June 2015:** Presented outcomes of the “*Integrated modelling in practice, revisiting ‘age-old’ barriers*” workshop at the plenary session of the *9<sup>th</sup> IWA Watermatex Conference*, June 14-17, Gold Coast Australia
- **Oct 2012:** Presented at the *Australia Go8-China C9 Universities Higher Degree by Research Forum. Water, water management and global sustainable futures – Graduate Perspectives from Australia and China* (2 candidates per University were selected)
- **Feb 2012:** Presented at the *7<sup>th</sup> International Conference on Water Sensitive Urban Design, Melbourne, Australia* special session: *DAnCE4Water*
- **Dec 2010:** Presented at *European FP7 Prepared Enabling Change Workshop Area 6* in Obergurgl, Austria
- **Sep 2009:** “*Conducting a bacterial budget*”. Presented at Melbourne Water Head Office, Melbourne, Australia
- **Aug 2008:** “*CCTV Headquarters, Beijing – A structural design overview*”. Presented at the Departmental Seminar, Department of Civil Engineering, Monash University



## MEDIA FEATURES

- **2022:** *Abandoned Mines*. Australian Geographic. July-August 2022
- **2020:** *From Pit to Pit Lakes: Could abandoned sites be reborn?* Quarry Magazine. November 2020
- **2020:** *80,000 Australian mines need rehabilitation*. Mining Weekly. September 25<sup>th</sup> 2020 [ [Link](#) ]
- **2020:** *Regen- und Abwasser besser nutzen*. Unterhalt Plus 2 | 2020 pg. 24-25.
- **2018:** *Going Virtual: How virtual reality can benefit water sector infrastructure design*. Water and Wastewater International April/May 2018 pg. 22-25
- **2017:** *It's virtually water*. Ideanthro Episode 167. July 4<sup>th</sup> 2017. [ [Link](#) ]
- **2017:** *Modelling best placement of green infrastructure to reduce urban heat*. Sustainability Matters. April 1<sup>st</sup> 2017. [ [Link](#) ]

## SOFTWARE DEVELOPMENT PORTFOLIO

- **UrbanBEATS – the Urban Biophysical Environment and Technologies Simulator ([www.urbanbeatsmodel.com](http://www.urbanbeatsmodel.com))**  
A spatial integrated model for supporting the planning of sustainable urban water infrastructure in cities of the future.  
*OS Supported: Windows, License: GNU General Public License, Language: Python*
- **Da Capo – Water Sensitive Urban Design Performance Curve Generator ([www.petermbach.com/dacapo](http://www.petermbach.com/dacapo))**  
A software that links with eWater's MUSIC software to generate performance curves for different urban stormwater treatment technologies  
*OS Supported: Windows, License: pending, Language: Python*

## SKILL SETS

- Programming: Python, C#, MATLAB, JavaScript (beginner), VBA
- Geographic Information Systems: ArcMap, ArcScene, QGIS, Python GDAL, Shapely, rasterio, geopandas libraries
- Numerical Modelling: MUSIC, SWMM, EPANET, Circuitscape
- 3D: Unity3D Game Engine, Blender (Beginner)
- Quantitative Data Analysis: SPSS, Excel, Python Libraries (pandas, matplotlib)
- Qualitative Data Analysis: QSR NVivo Qualitative Data Analysis Software
- Multimedia: Adobe Premiere Pro, Adobe AfterEffects (Beginner), Adobe Photoshop, Adobe Audition

## REFERENCES

### **Ana Deletic**

*Professor, Executive Dean*

Faculty of Engineering

Queensland University of Technology (QUT)

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### **Megan Farrelly**

*Associate Professor*

Human Geography, School of Social Sciences

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## PUBLICATIONS

Number of published peer-reviewed journal articles: 46

h-index: 25 (Google Scholar), 21 (Scopus)

Total citations: 2,042 (Google Scholar July 2022), 1314 (Scopus, July 2022)

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Underlined: Corresponding Author

### Papers In Preparation

1. **Bach, P. M.**, Logar, I., Bragge, H., Saber, M. (in prep.) Virtual Reality for investigating human perceptions of Blue Green Infrastructure: playful participation or novel data source?. To be submitted to Landscape and Urban Planning or Computers, Environment and Urban Systems
1. Back, Y., **Bach, P. M.**, Rauch, W., Kleidorfer, M. (in prep.) Evidence for a shift in focus to surface energy fluxes for urban heat studies. To be submitted to Science of the Total Environment
2. Back, Y., Kumar, P., **Bach, P. M.**, Rauch, W., Kleidorfer, M. (in prep.) Coupled CFD/GIS modelling refines urban heat and thermal comfort assessment. To be submitted to Sustainable Cities & Society
3. Back, Y., **Bach, P. M.**, Jasper-Tönnies, A., Rauch, W., Kleidorfer, M. (in prep.) Surface energy and water fluxes are key to urban climate change adaptation.
4. Chen, J., **Bach, P. M.**, Nice, K. A., Leitao, J. P. (in prep.) Too hot to handle? Modelling urban heat to support the spatial planning of liveable cities. To be submitted to Sustainable Cities and Society
5. Holt, O., Tully G. N., Yellishetty, M., Whittle, D., **Bach, P. M.** (in prep.) Evaluating the suitability of repurposing options for abandoned mines and quarries. To be submitted to Resources Conservation & Recycling
6. Molne, F., Donati, G., Bolliger, J., Fischer, M., Maurer M., **Bach, P. M.** (in prep.) Circuit theory identifies Blue Green Infrastructure priorities to enhance urban ecological networks. To be submitted to Landscape & Urban Planning or Ecological Indicators.
7. Probst, N., **Bach, P. M.**, Cook, L., Maurer, M., Leitão, J. P. (under review) Blue Green Systems for cooler cities: Do they work?. To be submitted to Blue Green Systems.

### Papers Submitted and in Review

1. Tully G. N., Holt, O., Yellishetty, M., Farrelly, M. F., Whittle, D., **Bach, P. M.** (under review) Opportunities for social sustainability through local governance of mine and quarry restoration. submitted to Journal of Cleaner Production
2. McFadden, I., Sendek A., Brosse, M., **Bach, P. M.**, Baity-Jesi, M., Bolliger, J. et al. (under review) Linking human impacts to community processes in terrestrial 1 and freshwater ecosystems. Submitted to Ecology Letters
3. Pakizer, K., Lieberherr, E., Farrelly, M., **Bach, P. M.**, Sauri, D., March, H., Hacker, M., Binz, C. (under review) Policy sequencing from the bottom-up – Transitions toward sustainable urban water systems. submitted to Research Policy.

### Papers in Peer-Reviewed Journals, Published and in Press

1. Donati, G. F. A., Bolliger, J., Maurer, M., **Bach, P. M.** (2022) Reconciling cities with nature: Identifying local Blue-Green Infrastructure interventions for regional biodiversity enhancement. Journal of Environmental Management 316, 115254. DOI: 10.1016/j.jenvman.2022.115254

2. Nguyen, T. T., **Bach, P. M.**, Pahlow, M. (2022) Multi-scale stormwater harvesting to enhance urban resilience to climate change impacts and natural disasters. *Blue Green Systems* 4(1). 58-74. DOI: 10.2166/bgs.2022.008.
3. Kuller, M. Farrelly, M., Deletic, A., **Bach, P. M.** (2022) Planning support systems for strategic implementation of nature-based solutions in the global south: Current role and future potential in Indonesia. *Cities*. 126, 103693. DOI: 10.1016/j.cities.2022.103693
4. Prodanovic, V., Jamali, B., Kuller, M., Wang, Y., **Bach, P. M.**, Coleman, R., Metzeling, L., McCarthy, D. T., Shi, B., Deletic, A. (2022) Calibration and sensitivity analysis of a novel water flow and pollution model for future city planning: Future Urban Stormwater Simulation (FUSS). Submitted to *Water Science & Technology* 85(4), 961-969. DOI: 10.2166/wst.2022.046
5. Shi, B., Catsamas, S., Deletic, B., Wang, M., **Bach, P. M.**, Lintern, A., Deletic, A., McCarthy, D. T. (2022) Illicit discharge detection in stormwater drains using an Arduino-based low-cost sensor network. Submitted to *Water Science & Technology* 85(5). 1372-1383. DOI: 10.2166/wst.2022.034
6. Duque, N., **Bach, P.M.**, Scholten, L., Fappiano, F. and Maurer, M. (2022) A Simplified Sanitary Sewer System Generator for Exploratory Modelling at City-Scale. *Water research*, 209, p.117903.
7. Shi, B., Catsamas, S., Kolotelo, P., Wang, M., Lintern, A., Jovanovic, D., **Bach, P. M.**, Deletic, A., McCarthy, D. T. (2021) A Low-Cost Water Depth and Electrical Conductivity Sensor for Detecting Inputs into Urban Stormwater Networks. *Sensors*, 21, 3056. DOI: 10.3390/s21093056.
8. Browne, S., Lintern, A., Jamali, B., Leitão, J. P., **Bach, P. M.** (2021) Stormwater management impacts of small urbanising towns: the necessity of investigating the ‘devil in the detail’. *Science of the Total Environment*, 757, 143835, DOI: 10.1016/j.scitotenv.2020.143835.
9. Joshi, P., Leitão, J. P., Maurer, M., **Bach, P. M.** (in press) Not all SuDS are created equal: Impact of different approaches on Combined Sewer Overflows. *Water Research*. DOI: 10.1016/j.watres.2020.116780
10. Back, Y., **Bach, P. M.**, Jasper-Tönnies, Rauch, W., Kleidorfer, M. (2021) A rapid fine-scale approach to modelling urban bioclimatic conditions. *Science of the Total Environment*, 756, 143732, DOI: 10.1016/j.scitotenv.2020.143732
11. **Bach, P. M.**, Kuller, M., McCarthy, D. T., Deletic, A. (2020) A spatial planning-support system for generating decentralised urban stormwater management schemes. *Science of the Total Environment*, 726, 138282, DOI: 10.1016/j.scitotenv.2020.138282
12. Zhang, K., Deletic, A., Dotto, C. B. S., Allen, R., **Bach, P. M.** (2020) Modelling a ‘business case’ for blue-green infrastructure: lessons from the Water Sensitive Cities Toolkit. *Blue Green Systems* 2(1): 383-403, DOI: 10.2166/bgs.2020.018
13. Werner, T., **Bach, P. M.**, Yellishetty, M., Amirpoorsaeed, F., Walsh, S., Miller, A., Roach, M., Schnapp, A., Solly, P., Tan, Y., Lewis, C., Hudson, E., Heberling, K., Richards, T., Chia, H. C., Truong, M., Gupta, T., Wu, X. (2020) A Geospatial Database for Effective Mine Rehabilitation in Australia. *Minerals*, 10(9), 745, DOI: 10.3390/min10090745.
14. Sitzenfrey, R., Kleidorfer, M., **Bach, P. M.**, Bacchin, T. K. (2020) Green infrastructures for urban water system: balance between cities and nature. *Water* 12(5), 1456, DOI: 10.3390/w12051456
15. Deletic, A., Qu, J., **Bach, P. M.**, Liu, G., Wang, A., Zhang, K. (2020) The multi-faceted nature of Blue-Green Systems coming to light. *Blue-Green Systems* 2(1), 186-187. DOI: 10.2166/bgs.2020.002
16. Hoffmann, S., Feldmann, U., **Bach, P. M.**, Binz, C., Farrelly, M., Frantzeskaki, N., Hiessl, H., Inauen, J., Larsen, T. A., Lienert, J., Londong, J., Lüthi, C., Maurer, M., Mitchell, C. Morgenroth, E., Nelson, K. L., Scholten, L., Truffer, B., Udert, K. M. (2020) A research agenda for the future of urban water management: exploring the potential of nongrid, small-grid, and hybrid solutions. *Environmental Science & Technology*, 54(9) 5312-5322, DOI: 10.1021/acs.est.9b05222
17. Zhang, K., **Bach, P. M.**, Mathios, J., Dotto, C. B. S., Deletic, A (2020) Quantifying the benefits of stormwater harvesting for pollution mitigation. *Water Research*, 171, DOI: 10.1016/j.watres.2019.115395

18. Jamali, B., **Bach, P. M.**, Deletic, A. (2020) Rainwater harvesting for urban flood management – An integrated modelling framework. *Water Research* 171, DOI: 10.1016/j.watres.2019.115372
19. Tscheikner-Gratl, F., Caradot, N., Cherqui, F., Leitao, J. P., Ahmadi, M., Langeveld, J. G., Gat, Y. L., Scholten, L., Roghani, B., Rodriguez, J. P., Lepot, M., Stegeman, B., Heinrichsen, A., Kropp, I., Kerres, K., Almeida, M. d. C., **Bach, P. M.**, Moy de Vitry, M., Marques, A. S., Simoes, N. E., Rouault, P., Hernandez, N., Torres, A., Wery, C., Rulleau, B., Clemens, F. (2019) Sewer asset management – state of the art and research needs, *Urban Water Journal*, DOI: 10.1080/1573062X.2020.1713382
20. Shi, B., **Bach, P. M.**, Lintern, A., Zhang, K., Coleman, R. A., Metzeling, L., McCarthy, D. T., Deletic, A. (2019) Understanding spatiotemporal variability of in-stream water quality in urban environments – A case study of Melbourne, Australia. *Journal of Environmental Management*. 246. 203-213. DOI: 10.1016/j.jenvman.2019.06.006
21. Jamali, B., **Bach, P. M.**, Cunningham, L., Deletic, A. (2019) A Cellular Automata Fast Flood Evaluation (CA-ffé) Model. *Water Resources Research*. 55. 4936-4953. DOI: 10.1029/2018WR023679
22. Kuller, M., **Bach, P. M.**, Roberts, S., Browne, D., Deletic, A. (2019) A planning-support tool for spatial suitability assessment of green urban stormwater infrastructure. *Science of the Total Environment* 686. 856-868. DOI: 10.1016/j.scitotenv.2019.06.051
23. Zhang, K., Deletic, A., **Bach, P. M.**, Shi, B., Hathaway, J. M., McCarthy, D. T. (2019) Testing of new stormwater pollution build-up algorithms informed by a genetic programming approach, *Journal of Environmental Management*, 171, 12-21. DOI: 10.1016/j.jenvman.2019.04.009
24. Zhang, K., Manuelpillai, D., Raut, B., Deletic, A., **Bach, P. M.** (2019) Evaluating the reliability of stormwater treatment systems under various future climate conditions, *Journal of Hydrology*, 568, 57-66. DOI: 10.1016/j.jhydrol.2018.10.056
25. Kuller, M., Farrelly, M., Deletic, A., **Bach, P. M.** (2018) Building effective Planning Support Systems for green urban water infrastructure – Practitioners’ perceptions, *Environmental Science & Policy*, 89, 153-162. DOI: 10.1016/j.envsci.2018.06.011
26. Castonguay, A. C., Iftekhar, MS., Urich, C., **Bach, P. M.**, Deletic, A. (2018) Integrated modelling of stormwater treatment systems uptake, *Water Research*, 142, 301-312. DOI: 10.1016/j.watres.2018.05.037
27. Jamali, B., Löwe, R., **Bach, P. M.**, Urich, C., Arnbjerg-Nielsen, K., Deletic, A. (2018) A rapid urban flood inundation and damage assessment model, *Journal of Hydrology*, 564, 1085-1098. DOI: 10.1016/j.jhydrol.2018.07.064
28. **Bach, P. M.**, Deletic, A., Urich, C., McCarthy, D. T. (2018) Modelling characteristics of the urban form to support water systems planning, *Environmental Modelling & Software*, 104 pp. 249-269. DOI: 10.1016/j.envsoft.2018.02.012
29. Zeisl, P., Mair, M., Kastlunger, U., **Bach, P. M.**, Rauch, W., Sitzenfrei, R., Kleidorfer, M. (2018) Conceptual urban water balance model for water policy testing: An approach for large scale investigation. *Sustainability*, 10(3), 716. DOI: 10.3390/su10030716
30. Kuller, M., **Bach, P. M.**, Ramirez-Lovering, D., Deletic, A. (2018) What drives the location choice for water sensitive infrastructure in Melbourne, Australia?, *Landscape and Urban Planning*, 175, pp. 92-101. DOI: 10.1016/j.landurbplan.2018.03.018
31. **Bach, P. M.**, Kodikara, J. K. (2017) Reliability of Infrared Thermography in Detecting Leaks in Buried Water Reticulation Pipes, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. 10(9), 7946278, pp. 4210-4224. DOI: 10.1109/JSTARS.2017.2708817
32. Chong, N., **Bach, P. M.**, Moilleron, R., Bonhomme, C., Deroubaix, J.-F. (2017) Use and Utility: Exploring the Diversity and Design of Water Models at the Science-Policy Interface. *Water*, 9(12) 983. DOI: 10.3390/w9120983
33. Sitzenfrei, R., Zischg, J., Sitzmann, M., **Bach, P. M.** (2017) Impact of hybrid water supply on the centralised water system, *Water*, 9(11), 855. DOI: 10.3390/w9110855
34. Kuller, M., **Bach, P. M.**, Ramirez-Lovering, D., Deletic, A. (2017) Framing water sensitive urban design as part of the urban form: A critical review of tools for best planning practice. *Environmental Modelling & Software*, 96, pp. 265-282. DOI: 10.1016/j.envsoft.2017.07.003.

35. Rauch, W., Urich, C., **Bach, P. M.**, Rogers, B. C., de Haan, F. J., Brown, R. R., Mair, M., McCarthy, D. T., Kleidorfer, M., Sitzenfrei, R., Deletic, A. (2017) Modelling transitions in urban water systems, *Water Research*, 126, pp. 501-514. DOI: 10.1016/j.watres.2017.09.039
36. Burger, G., **Bach, P. M.**, Urich, C., Leonhardt, G., Kleidorfer, M., Rauch, W. (2016) Document Designing and implementing a multi-core capable integrated urban drainage modelling Toolkit: Lessons from CityDrain3. *Advances in Engineering Software*, 100, pp. 277 – 289.
37. **Bach, P. M.**, Staalesen, S., McCarthy, D.T., Deletic, A. (2015), Revisiting land use classification and spatial aggregation for modelling integrated urban water systems, *Landscape and Urban Planning*, 143, pp. 43 – 55. DOI: 10.1016/j.landurbplan.2015.05.012
38. **Bach, P. M.**, McCarthy, D.T., Deletic, A. (2015), Can we model the implementation of water sensitive urban design in evolving cities?, *Water Science and Technology*, 71 (1), pp. 149 – 156. DOI: 10.2166/wst.2014.464
39. Daly, E., **Bach, P. M.**, Deletic, A. (2014), Stormwater pollutant runoff: A stochastic approach. *Advances in Water Resources*, 74, pp. 148 – 155. DOI: 10.1016/j.advwatres.2014.09.003
40. **Bach, P. M.**, Rauch, W., Mikkelsen, P. S., McCarthy, D. T., Deletic, A. (2014), A Critical Review of Integrated Urban Water Modelling – Urban Drainage and Beyond, *Environmental Modelling & Software*. 54, pp. 88 – 107. DOI: 10.1016/j.envsoft.2013.12.018
41. **Bach, P. M.**, Deletic, A., Urich, C., Sitzenfrei, R., Kleidorfer, M., Rauch, W., McCarthy, D. T. (2013), Modelling Interactions Between Lot-Scale Decentralised Water Infrastructure and Urban Form – a Case Study on Infiltration Systems, *Water Resources Management*, 27, pp. 4845 – 4863. DOI: 10.1007/s11269-013-0442-9
42. **Bach, P. M.**, McCarthy, D. T., Urich, C., Sitzenfrei, R., Kleidorfer, M., Rauch, W., Deletic, A. (2013), A planning algorithm for quantifying decentralised water management opportunities in urban environments, *Water Science & Technology*, 68(8), pp. 1857 – 1865. DOI: 10.2166/wst.2013.437
43. Urich, C., **Bach, P. M.**, Sitzenfrei, R., Kleidorfer, M., McCarthy, D. T., Deletic, A., Rauch, W. (2013), Modelling cities and water infrastructure dynamics, *Proceedings of the Institution of Civil Engineers-Engineering Sustainability*, 166(5), pp. 301 – 308. DOI: 10.1680/ensu.12.00037
44. **Bach, P. M.**, McCarthy, D., Deletic, A. (2010), Redefining the Stormwater First Flush Phenomenon, *Water Research*, 44(8), pp. 2487 – 2498. DOI: 10.1016/j.watres.2010.01.022
45. **Bach, P. M.**, McCarthy, D., Deletic A. (2010), The development of a novel approach for assessment of the first flush in urban stormwater discharges, *Water Science & Technology*. 61(10), pp. 2681 – 2688. DOI: 10.2166/wst.2010.209
46. de Moel, M., **Bach, P. M.**, Bouazza, A., Singh, R. M., Sun, J. O. (2010), Technological advances and applications of geothermal energy pile foundations and their feasibility in Australia, *Renewable and Sustainable Energy Reviews*, 14, pp. 2683 – 2696. DOI: 10.1016/j.rser.2010.07.027

### Peer-Reviewed Conference Papers

1. Guo, D., Lintern, A., Prodanovic, V., Kuller, M., **Bach, P. M.**, Deletic, A., Shi, B., McCarthy, D. T., Ryu, D., Webb, J. A., Liu, S., Western, A. W. (2019) Future Water: Comparing and contrasting approaches to predicting water quality. Modelling and Simulation Society of Australia and New Zealand. DOI: 10.36334/modsim.2019.k15.guo.
2. Sitzenfrei, R., Zischg, J., Sitzmann, M., Rathnayaka, S., Kodikara, J., **Bach, P. M.** (2017) Effects of implementing decentralized water supply systems in existing centralized systems. *World Environmental and Water Resources Congress (EWRI) 2017*, Sacramento CA, United States, Available online: <http://ascelibrary.org/doi/abs/10.1061/9780784480625.064>
3. **Bach, P. M.**, Eisenstein, W., McCarthy, D. T., Hatt, B., Sedlack, D., Deletic, A. (2016) Australian water sensitive planning modelling in the San Francisco Bay Area: challenges and implications for model transferability. *2016 International Low Impact Development Conference (LID2016)*, Beijing, China.
4. Zhang, K., **Bach, P. M.**, Dotto, C. B. S., Allen, R., Wong, T. H. F., Deletic, A. (2016) Quantifying stormwater management impacts using the Water Sensitive Cities Modelling Toolkit. *2016 International Low Impact Development Conference (LID2016)*, Beijing, China.

5. Kuller, M., **Bach, P. M.**, Ramirez-Lovering, D., Deletic, A. (2016) The location choice of Water Sensitive Urban Design within a city: A case study of Melbourne. *IWA World Water Congress and Exhibition*, Brisbane, Australia
6. Zeisl, P., Mair, M., **Bach, P. M.**, Urich, C., Rauch, W., Sitzenfrei, R., Kleidorfer, M. (2016) Modelling a city's water balance on large scale: An approach based on spatial distributed demand curves. *Computing and Control for the Water Industry (CCWI) 2016 Conference*, Amsterdam, The Netherlands.
7. **Bach, P. M.**, Dotto, C. B. S., McCarthy, D. T., Deletic, A. (2015). Exploring multi-objective water sensitive urban design through integrated modelling. *10<sup>th</sup> International Urban Drainage Modelling Conference (UDM2015)*, Mont-Sainte-Anne, Canada.
8. Norris, T., Shucksmith, J., Blacksell, J., Dotto, C.B.S., **Bach, P.M.**, Deletic, A. (2015) Evaluating the performance of EMC models using case study data, *10<sup>th</sup> International Urban Drainage Modelling Conference (10UDM)*, Mont-Sainte-Anne, Canada.
9. **Bach, P. M.**, McCarthy, D. T., Deletic, A. (2015), Exploring greenfield water sensitive options with the integrated planning-support model UrbanBEATS, *9<sup>th</sup> IWA Symposium on Systems Analysis and Integrated Assessment (Watermatex 15)*, Gold Coast, Australia. (<http://www.awmc.uq.edu.au/conf/watermatex2015>)
10. **Bach, P. M.**, McCarthy, D. T., Deletic, A. (2014). Modelling the dynamics of water sensitive planning for a suburban area in Melbourne, Australia. *13<sup>th</sup> International Conference on Urban Drainage (13ICUD)*, Kuching, Malaysia.
11. Dotto, C. B. S., **Bach, P. M.**, Allen, R. Wong, T., Deletic, A. (2014). Towards Water Sensitive Urban Precincts: Modelling Stormwater Management Opportunities. *13<sup>th</sup> International Conference on Urban Drainage (13ICUD)*, Kuching, Malaysia.
12. Urich, C., Sitzenfrei, R., **Bach, P. M.**, Kleidorfer, M., Mair, M., McCarthy, D. T., Deletic, A., Rauch, W. (2014). Modelling the Co-evolution of Cities and Their Water Infrastructures. *13<sup>th</sup> International Conference on Urban Drainage (13ICUD)*, Kuching, Malaysia.
13. **Bach, P. M.**, McCarthy, D. T., Deletic, A. (2013). UrbanBEATS: A strategic planning tool for exploring water sensitive futures. *8<sup>th</sup> International Water Sensitive Urban Design Conference (WSUD 2013)*. Gold Coast, Australia
14. **Bach, P. M.**, McCarthy, D. T., Urich, C., Sitzenfrei, R., Kleidorfer, M., Rauch, W. & Deletic, A. (2012). DAnCE4Water's BPM: A planning algorithm for decentralised water management strategic options. *9<sup>th</sup> International Conference on Urban Drainage Modelling (9UDM)*. Belgrade, Serbia
15. Rauch, W., **Bach, P. M.**, Brown, R., Deletic, A., Ferguson, B., De Haan, J., McCarthy, D. T., Kleidorfer, M., Tapper, N., Sitzenfrei, R. & Urich, C. (2012). Modelling transition in urban drainage management. *9<sup>th</sup> International Conference on Urban Drainage Modelling (9UDM)*. Belgrade, Serbia.
16. Urich, C., Sitzenfrei, R., Kleidorfer, M., **Bach, P. M.**, McCarthy, D. T., Deletic, A. & Rauch, W. (2012). Evolution of Urban Drainage Networks in DAnCE4Water. *9<sup>th</sup> International Conference on Urban Drainage Modelling*. Belgrade, Serbia.
17. **Bach, P.M.**, Urich, C., McCarthy, D.T., Sitzenfrei, R., Kleidorfer, M., Rauch, W., Deletic, A., (2011). Characterising a city for integrated performance assessment of water infrastructure in the DAnCE4Water model. *12<sup>th</sup> International Conference on Urban Drainage*. Porto Alegre, Brazil.
18. Urich, C., **Bach, P. M.**, Hellbach, C., Sitzenfrei, R., Kleidorfer, M. K., McCarthy, D.T., Deletic, A., Rauch, W., (2011). Dynamics of cities and water infrastructure in the DAnCE4Water model. *12<sup>th</sup> International Conference on Urban Drainage*. Porto Alegre, Brazil.
19. **Bach, P. M.**, Daly, E., McCarthy, D. T. & Deletic, A. (2010). Investigating pollutant variability for the development of a semi-stochastic water quality model of urban stormwater runoff. *6<sup>th</sup> International Conference on Sewer Processes and Networks*. Surfers Paradise, Gold Coast, Australia.
20. **Bach, P. M.**, McCarthy, D.T., Deletic, A. (2009). Debugging the myth behind the First Flush Phenomenon, *8<sup>th</sup> International Conference on Urban Drainage Modelling*, Tokyo, Japan.

### Scholarly Book Chapters

1. Deletic, A., Zhang, K., Jamali, B., Charette-Castonguay, A., Kuller, M., Prodanovic, V., **Bach, P. M.**, (2019) Modelling to support the planning of sustainable urban water systems in Mannina, G. (eds), UDM2018. Green Energy and Technology, Springer, Cham, pp. 10-19. ISBN 978-3-319-99866-4

2. Nopens, I. Laurent, J., Villez, K., Corominas, L., **Bach, P. M.**, Benedetti, L., Kleidorfer, M., Belia, L., Pons, M.-N., Jeppsson, U., Wang, X., Flores-Alsina, X., Porro, J., Guisasola, A., Santoro, D., Rodriguez-Roda, I., Shaw, A., Grau, P., Torfs, E. (2016) Modelling and Integrated Assessment (MIA). in Li, H. (eds), *Global Trend & Challenges in Water Science, Research and Management 2nd Edition*, International Water Association, IWA Publishing, London, UK, pp. 86-91. ISBN 9781780408378
3. Rauch, W., **Bach, P.M.**, Brown, R., Rogers, B., de Haan, F.J., McCarthy, D.T., Kleidorfer, M., Mair, M., Sitzenfrei, R., Urich, C. and Deletic, A. (2015), Enabling change: Institutional adaptation, in Hulsmann, A., Grützmaker, G., van den Berg, G. Rauch, W., Jensen, A. L., Popovych, V., Rosario, M., Vamvakeridou-Lyroudia, L. S., Savic, D. A. (eds), *Climate Change, Water Supply and Sanitation*, IWA Publishing, London, UK, pp.355 – 74. ISBN 9781780404998

### Books & Theses

1. **Bach, P. M.** (2014). UrbanBEATS: A virtual urban water tool for exploring strategic planning scenarios. PhD Thesis. Monash University, Australia.
2. **Bach, P. M.** (2009). Applications of Infrared Thermography in Civil Engineering. Undergraduate Thesis. Monash University, Australia
3. **Bach, P. M.** (2007). “MATLAB, The Fundamentals”, (self-published), ISBN: 978-983-43679-0-9 (revised in conjunction with Dr. Kris Ryan of the Department of Mechanical & Aerospace Engineering at Monash University for a 2<sup>nd</sup> Edition, which has become one of the recommended texts for First Year Engineering unit ENG1060: “Computing for Engineers” in Semester 1, 2009)

### Reports & Others

1. **Bach, P. M.**, Probst, N., and Maurer, M., 2022. Strategien zur Hitzeminderung in der Stadt. DerGartenBau. Grünräume 1/2022. pp. 6-9
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