



IAHR/IWA Joint Specialist Group on URBAN DRAINAGE

Newsletter No. 29

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For updated information, please regularly visit our website at:
http://www.iwa-network.org/specialist_groups.php and
<http://www.jcud.org>

CONTENTS

1. Joint committee contacts	2
2. Chairman's thoughts	3
3. From the secretary's desk	5
4. JCUD management committee: call for New member nominations.....	7
5. Call for proposals to organise the 15th International Conference on Urban Drainage in 2020, on behalf of the IAHR and IWA Joint Committee on Urban Drainage	8
6. Working group reports	9
7. News from IAHR	14
8. News from IWA Headquarters and IWA Publishing	15
9. News from around the world.....	18
10. Future meetings and conferences	49
11. Working group contacts.....	53

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2. CHAIRMAN'S THOUGHTS

Magdeburg, January 2016

Dear friends and colleagues,

Again, a new year has commenced and this newsletter provides a good opportunity to reflect on the year 2015 and on the tasks ahead of us in 2016.

The past year has seen some changes on the Joint Committee itself – whoever compares carefully the list of Joint Committee members (see page 2) with previous editions of the list, will note that we had the chance to welcome three new members to the Committee, thus extending the committee and its activities. We are grateful to Lian Lundy from the UK, Tone Muthanna from Norway and Kevin Winter from South Africa that they are willing to serve the urban drainage community by contributing with their expertise and representing their geographical regions.

Serving the drainage committee – this is what each member of the Joint Committee and the Working Group leaders (see Section 11, Working Group Contacts, for a full list, including updated contact information) is committed to. Some of the working groups have been very active, e.g., “Data and Models” having organised the “Urban Drainage Modelling Conference” in Québec last September; and “Sewer Systems and Processes” working hard on preparing the “Sewer Processes and Networks” SPN8 conference in summer 2016 (see Section 10). In any case, any individual is invited to contact the Working Group of his/her interest and get involved in its activities.

Whilst our colleagues from Czech Republic are already planning the details of the next International Conference on Urban Drainage (ICUD), which will be held in Prague, 10-15 September 2017, it is also the time to think about the ICUD 2020. There is an open call for proposals to host this conference in 2020 (see Section 5, p. 8). This will be the 15th edition of this conference, with the first one held in Southampton, England, in 1978.

May I now take the opportunity to thank each and every one, and in particular also the “newcomers” to our community, for your involvement in urban drainage and encourage you to make use of the activities of the working groups of the Joint Committee to assist you in your tasks serving the public – in whichever part of the world you are active and whichever field of urban drainage you are focussing on.

May this newsletter – thanks to Jiri Marsalek for the hard work of compiling it – assist you in your work. Finally, if you have suggestions on how the Joint Committee or its working groups can serve you better, please do not hesitate to contact me or any other member of the Joint Committee.

Best wishes and regards,

Manfred Schütze

Chair of the IWA/IAHR Joint Committee on Urban Drainage

What is the Joint Committee on Urban Drainage and how can I get involved in its activities? A primer (not only) for newcomers to the Urban Drainage Community

By Manfred Schütze, Chair of the JCUD

The very fact that you are reading this newsletter indicates that you are aware of (at least) some of the activities of the Joint Committee on Urban Drainage. This newsletter, compiled annually by Jiri Marsalek, with contributions from all around the world, provides a good insight into what is going on in our field around the globe.

Still you might wish to know more about “what is behind the scenes?” Here comes the answer – or, at least, an attempt to provide an answer:

The Joint Committee on Urban Drainage of IWA and IAHR (short: JCUD, or JC) is a committee of, at present, 12 members (plus a non-voting secretary) worldwide, who are elected for a period of three years (with one extension possible). Their aim is to bring together and to coordinate activities related to urban drainage. By the way, the JC is going to be expanded – another article in this newsletter provides more details.

The JC organises, once every three years, the International Conference on Urban Drainage (e.g. 2017: Czech Republic). Furthermore, the JC oversees various working groups (their list and contacts are also included in this newsletter). Some of these working groups run specialist conferences (e.g. Sewer Processes and Networks; Urban Drainage Modelling etc.). Everyone is most welcome to engage in the activities of the working groups.

Furthermore, the JC attempts to stimulate contacts, exchange and discussion, e.g. by this newsletter (published annually) and by the "urban-drainage" email discussion list.

How can I get involved?

-
- Subscription to the "urban-drainage" **email discussion group** (see www.jiscmail.ac.uk/urban-drainage). Subscription is free and does not involve any commitment. (Simply go to <https://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=URBAN-DRAINAGE&A=1> or send an email with the contents *subscribe urban-drainage Your First Name and Your Last Name* to listserv@jiscmail.ac.uk)
Conference announcements and other information are distributed by this list. You can also put your announcements or questions to this list. At present, the list has almost 340 recipients worldwide and therefore provides an easy access to urban drainage experts around the globe. On the webpage given above you can also find previous posts to the list.
 - Participate in and contribute to the **Working Groups**: Feel free to contact the working group of your interest (see their reports in this newsletter), to get more information about their activities and, possibly, to contribute to their work.
 - **Conferences**: Participate and contribute to the conferences. The conferences under the auspices of the JC and/or of its working groups are usually announced, among others, through this newsletter, through the webpage of the JC (www.jcud.org) and through the urban-drainage list.

The JC can be considered as a Specialist Group under the umbrella of, both, IWA (International Water Association) and IAHR (International Association of Hydro-Environment Engineering and Research), hence the word "joint" in "Joint Committee". There are also many other Specialist Groups in these associations (e.g. Large Wastewater Treatment Plants and many more – visit <http://www.iwa-network.org/specialist-groups.php>). Obviously, you are most welcome to join IWA (www.iwa-network.org) or IAHR (www.iahr.org) – or even both - and enjoy their benefits (e.g. reduced subscription rates to their journals etc.).

Should you have any questions about or any suggestions for the Joint Committee, please do not hesitate to get in contact with me or with any of the JC members.

It is our desire to facilitate urban-drainage related work in order to contribute to solutions of one of the pressing needs of this world.

3. FROM THE SECRETARY'S DESK

Committee Newsletter – our annual newsletter is published to serve the international urban drainage community and meet the requirements of our parental organisations. The main purpose of the newsletter is to facilitate communications and interactions among specialists in our field, rather than to present detailed information. The most recent newsletter can be found on our website <http://www.jcud.org>

Both IWA and IAHR now distribute newsletters only electronically, and place our newsletter on their websites. We also distribute the Newsletter to more than 1,200 colleagues on our JC mailing list, which is based on the IWA and IAHR memberships, and participation in ICUD and NOVATECH conferences. Please share your electronic newsletter copy (or the link to our website) with colleagues, or refer them to the IAHR, IWA and Joint Committee websites. Your comments on this issue and contributions to future newsletters are most welcome.

Joint Committee Activities – The 2015 annual Committee meeting was held during the Urban Drainage Modelling Conference in Mont Ste Anne du Beaupre, Quebec, Canada, on September 20, 2015. The minutes of the meeting can be found on our website (www.jcud.org), highlights follow.

Newly elected members of the Joint Committee (in 2015): three new JC members were announced at the meeting, Prof Lian Lundy (UK), Assoc. Prof Tone Merete Muthanna (Norway), and Dr Kevin Winter (South Africa). The Committee has now 12 voting members and as a part of continual renewal, new members are solicited for in Section 4 of this newsletter.

The Joint Committee website (www.jcud.org) is operated by Jeroen Langeveld at Delft University of Technology. The latest news from JC, including the minutes of the meetings, is posted on this website (in addition to the website hosted by IWA).

Involvement in IWA Affairs: reported on by Jean-Luc Bertrand-Krajewski. IWA has adopted the Strategic Plan for 2014-2018, with four priorities, among which two are particularly important for JC:

(a) The IWA as a content developer promoting change of agendas, and (b) The IWA as a facilitator enabling learning and professional development. Among JC shortcomings in contributions to the IWA agenda one could list two: (a) low visibility in IWA programs and clusters, and (b) lack of presence at SG Leaders Fora. More information about the IWA Strategic Plan is available at <http://www.iwa-network.org/downloads/1424767381-Iwa-Strategic-Plan-2014-2018.pdf>

The “urban drainage” email discussion list (managed by Dr Manfred Schütze, Magdeburg, Germany)

The urban drainage email discussion list has been set up in 1998 by David Butler and Manfred Schütze. It is an easy and convenient means of getting in touch with urban-drainage researchers and practitioners worldwide. Salient points for getting on and using this list appear in the box below (courtesy of our Chairman, Manfred Schütze).

How to use the “urban-drainage” email discussion group? – All you need to know in a nutshell

- To subscribe:
Send an email with the contents *subscribe urban-drainage YourFirstName YourLastName* to listserv@jiscmail.ac.uk
- To leave (un-subscribe):
Send an email with the contents *leave urban-drainage* to listserv@jiscmail.ac.uk)
- To send a message to the list:
Send your message to urban-drainage@jiscmail.ac.uk
Your message will then be distributed to all list members worldwide. At present, the list has about 340 members worldwide. Please note that commercial use/commercial advertising is not allowed on the list.
- To obtain more information:
Consult www.jiscmail.ac.uk/urban-drainage

Discussions re the proposals to organize the 15th ICUD conference: No complete bids were received by the official deadline (June 15, 2015); two indications of interest came from Australia and Canada. The Committee agreed to reopen the call for proposals to host the conference, as elaborated on in Section 5 of this newsletter.

Tentative future JC meetings: Lyon, France, tentatively planned on June 27, 2016, in conjunction with the Novatech conference, June 28-July 1, 2016; in 2017, just before the 14th ICUD in Prague, Czech Republic, Sep. 10-15, 2017, and suggestions of the place and date for the 2018 meeting are welcome. Please note that JC meetings are public – all are welcome.

Jiri Marsalek
JC Secretary

4. JCUD MANAGEMENT COMMITTEE: Call for NEW member nominations

The Management Committee of the IWA/IAHR Joint Committee on Urban Drainage (JCUD) will have at least one vacancy later this year and is looking for possible replacement(s) as a part of continuous revitalization of the Committee. Details follow below.

Job description: all members operate in their own way and contribute accordingly. Typical contributions include proposing to organize workshops/conferences and training courses (usually in collaboration with our working groups), organizing or contributing to publications (monographs, or journal review papers), contributing news from their country or region to the Committee's annual newsletter, participating in email discussions, attending JC meetings held annually in conjunction with drainage conferences, and promoting JC activities and visibility in general.

Qualifications: we are looking for colleagues actively involved in any aspect and sector of urban drainage. However, perhaps the most important qualification is having some time to devote to the committee activities and personal initiative in proposing and implementing new activities. One reason why our Committee has been successful in its more than 30 years of operation is our ability to attract highly motivated members to serve on the Committee. The elected candidates must be (or become, within one month of being elected) members of one of the parental organizations (IAHR or IWA), and our statutes allow only one member per country; if your country is already represented on the committee, you may have to wait till there is a vacancy, or even better, simply join in the meantime one of our working groups and start contributing to our efforts that way. The information on Joint Committee and the current membership can be found on our website: www.jcud.org.

Application procedure: you can either nominate yourself for JCUD membership, or you can nominate another person (ideally after establishing their willingness to serve, otherwise this will have to be done by JCUD), and submit electronically the following two documents to the current JC Chairman, Dr Manfred Schütze (Manfred.schuetze@ifak.eu), copied to JC secretary Dr Jiri Marsalek (jiri.marsalek@canada.ca): (a) A brief CV, and (b) a statement of activities you would like to contribute to the JC programme. Neither document must exceed one page, using a 10-point font or larger.

Deadline: May 31, 2016. The applications received will be distributed to the JCUD members for assessment and voting; the results will be announced in August 2016.

5. CALL FOR PROPOSALS TO ORGANISE THE 15TH INTERNATIONAL CONFERENCE ON URBAN DRAINAGE IN 2020, ON BEHALF OF THE IAHR and IWA JOINT COMMITTEE ON URBAN DRAINAGE

The Joint Committee on Urban drainage of IAHR and IWA is inviting the interested parties to submit proposals to host the 15th International Conference on Urban Drainage in 2020. This conference will build on success of the previous conferences in this series, which were held in Southampton (UK, 1978), Urbana-Champaign (USA, 1981), Gothenburg (Sweden, 1984), Lausanne (Switzerland, 1987), Osaka (Japan, 1990), Niagara Falls (Canada, 1993), Hannover (Germany, 1996), Sydney (Australia, 1999), Portland (USA, 2002), Copenhagen (Denmark, 2005), Edinburgh (UK, 2008), Porto Alegre (Brazil, 2011), and Kuching (Sarawak, Malaysia, 2014). The 14th conference is scheduled to be held in Prague (Czech Republic) in 2017.

The proposal format is fairly flexible, but the following information should be included:

1. Conference title (sub-themes), location, dates and duration
2. Proponent team (conference chair and/or co-chairs; the conference financial guarantor, who is ultimately responsible for the event and its solvency)
3. Connection of the proponent team to the Joint Committee (existing or planned)
4. Conference organization and management (Program committee, international committee)
5. Proposed conference program and format (list of concurrent sessions, seminars, workshops, oral and poster sessions, technical exhibition, technical tours)
6. Poul Harremoës prize competition
7. Selection of contributions (abstract and/or paper reviews) and the publishing of papers / proceedings
8. Conference venue (meeting rooms)
9. Accommodation (with approximate 2016 pricing in Euro or US \$)
10. Financial issues (budget, registration fees – discounts for IAHR and IWA members, potential sponsors – documented by letters of support, if and where applicable)
11. Social program and post-conference tours; and
12. Any other points you may consider worthwhile.

Mandatory requirements

The proposals (in English) must be submitted electronically in PDF or Microsoft Word (2003 version or later) format, and the size of the file should not exceed 7 MB; the proposal layout should not exceed 20 pages, using 12-point font. It is required that the proponents identify the person (or the organization) that is responsible for conference finances and would cover any financial deficits. The proposals must reach the Joint Committee Chair (Manfred Schütze, Manfred.schuetze@ifak.eu) or Secretary Jiri Marsalek (jiri.marsalek@gmail.com) by June 15, 2016. The Joint Committee will review the proposals at its meeting in late June 2016 and notify all proponents of its decision by July 31, 2016.

If you require further clarifications of the proposal specifications, please contact either Jiri Marsalek or Manfred Schütze). Thank you.

6. WORKING GROUP REPORTS

6.1. International Working Group on Data and Models (IWGDM) (Chairman: Dr David McCarthy, Environmental and Public Health Microbiology Laboratory, Monash Water for Liveability, Department of Civil Engineering, Building 60, Monash University, Clayton, Vic 3800, Australia, Phone: +61 3 9905 5068, Fax: +61 3 9905 4944, E-mail: david.McCarthy@monash.edu; Secretary: Prof. Manfred Kleidorfer, Unit for Environmental Engineering, University of Innsbruck, Technikerstrasse 13, 6020 Innsbruck, Austria, Phone: +43 512 507 62134, Fax +43 512 507 62199, E-mail: manfred.kleidorfer@uibk.ac.at); Website: <http://iwgdm.wikispaces.com>

The IWGDM organized the 10th International Conference on Urban Drainage Modelling, September 20-23, in Mont-Sainte-Anne, Québec, Canada, with Prof. Peter Vanrolleghem as the chair. The proceedings and photos can still be downloaded from <http://udm2015.org/>. As a follow-up to previous workshops the working group also organized a pre-conference workshop “Uncertainty Analysis Methodologies Workshop: All models are wrong but some are useful” together with the QUICS network. In a working group meeting the group expressed their thanks to the outgoing Chair Prof Simon Tait and elected David McCarthy as the Chair and Manfred Kleidorfer as the secretary.

In 2016 a workshop and a working group meeting are planned at NOVATECH conference (June/July). The 11th International Conference on Urban Drainage Modelling will be held in Palermo, Sep. 23 – 26, 2018, and will be organized by University of Palermo with Giorgio Mannina as the Chair (contact: giorgio.mannina@unipa.it).

Everyone who wants to get in touch with the group and keep updated on its activities is invited to contact the secretary to join in the mailing list.

6.2. The Real-Time Control of Urban Drainage Systems (RTCUDS) Working Group (Chairman: Prof Dirk Muschalla, Graz University of Technology, Institute of Urban Water Management and Landscape Water Engineering, Stremayrgasse 10/I, 8010 Graz, Austria; Phone: +43-(0)316-873-8370, Fax: +43-(0)316-873-8376, E-mail: muschalla@sww.tugraz.at, Web: <http://www.sww.tugraz.at>, Secretary: Dr Jeroen Langeveld, Delft University of Technology, Stevinweg 1, 2628 CN Delft, the Netherlands. Phone: +31 6 22409565. E-mail: j.g.langeveld@tudelft.nl)

The RTCUDS group is planning to conduct the following activities in 2016:

Workshop at the NOVATECH conference to be held in Lyon, France June 28th to July 1st.
The RTCUDS is planning to organize a RTC workshop in conjunction with the NOVATECH conference. Contact: j.g.langeveld@tudelft.nl

Junior Scientist Workshop

The RTCUDS group intends to organize a Junior Scientist Workshop on integrated modelling and RTC in 2016 near Graz, Austria, together with the IWA MIUWS working group (modelling integrated urban water systems) and its IWA working group on Modelling, Instrumentation and Automation. Contact: Dirk Muschalla: muschalla@sww.tugraz.at

6.3. Sewer Systems and Processes Working Group (SS&PWG) - (Chairman: Prof Simon Tait, Pennine Water Group, Department of Civil and Structural Engineering, University of Sheffield, Sir Frederick Mappin Bldg, Mappin Street, Sheffield, S1 3JD, UK, Ph: +44 114 2225-771. E-mail: s.tait@sheffield.ac.uk; Vice-chair / Chair of next SPN8 conference: Dr Jeroen Langeveld. Delft University of Technology, Stevinweg 1, 2628 CN Delft, the Netherlands. Phone: + 31 6 22409565. Email: j.g.langeveld@tudelft.nl, Secretary: Dr Asbjørn Haaning Nielsen, Department of Civil Engineering, Aalborg University, Sofiendalsvej 11, DK-9000 Aalborg, Denmark, Phone: +45 9940 9817, E-mail: ahn@civil.aau.dk. WG Website: <http://www.sspwg.org>.)

The SS& PWG group has organized or planned the following activities in 2015 and 2016:

SPN (Sewer Process and Networks) conference

The 8th SPN conference in the series, SPN8, will be held in Rotterdam, 31 August – 2 September 2016, organized by Delft University of Technology. Contact: j.g.langeveld@tudelft.nl and see Section 10 of this Newsletter. Website: www.spn8.nl

Junior Scientist Workshops

The 22nd Junior Scientist Workshop on “Monitoring urban drainage systems” has been organized by Jean-Luc Bertrand-Krajewski (INSA Lyon), Francois Clemens and Mathieu Lepot (TU Delft), and Frank Blumensaat (EAWAG). Contact: organisationcommitteeejsw2015@gmail.com. The 22nd EJSW focused on the application of modern sensor technology, data communication, data validation and analysis. The workshop has been held in Chichilianne (France), 18 - 22 May 2015. A workshop report is available at: <http://deep.insa-lyon.fr/fr/content/final-report-22nd-european-junior-scientists-workshop-chichilianne-france>). A new edition of the workshop is under preparation to be held at the same venue in May 2017.

Solids in Sewers

A new edition of the Scientific and Technical Report on Sewer Solids is planned to be published in 2016, edited by Jean-Luc Bertrand-Krajewski, Simon Tait, Jeroen Langeveld, Jes Vollertsen and Alma Schellart. Contact: s.tait@sheffield.ac.uk or a.schellart@sheffield.ac.uk

6.4. Working Group on Source Control for Stormwater Management (SOCOMA)

(Chairman: Gilles Rivard, Urban Hydrology, Lasalle-NHC, 9620, rue Saint Patrick, Lasalle – Montreal (QC), Canada H8R 1R8; Phone: +1-514-366-2970, Fax: +1-514-366-2971, Cell: 514-574-2154, E-mail: griward@lasalleNHC.com ;

Vice-chair: Sylvie Barraud, INSA Lyon - LGCIE - Bâtiment Coulomb, 34 Avenue des Arts, F-69621 Villeurbanne Cedex. Phone: +33 4 72 43 83 88; Fax: 04 72 43 85 21; E-mail: sylvie.barraud@insa-lyon.fr); Secretary: Tim Fletcher, Melbourne School of Land & Environment, The University of Melbourne, 221 Bouverie St, Parkville, Vic, 3010, Australia. Tel: +61 3 8344 0621, E-mail: tim.fletcher@unimelb.edu.au).

Working Group Report

The SOCOMA working group studies source controls, which are defined as all measures applied to control stormwater before it enters sewers or the receiving systems (surface water or groundwater). The group’s objective is to facilitate the development of these techniques, by conducting research and experiments, and disseminating the results by various means. As compared to the WSUD (Water Sensitive Urban Design) working group, which has related interests but in a more holistic and

institutional outlook, SOCOMA focuses more on technical aspects related to source control technologies as applied to urban drainage. The group's activities and workshops would therefore be more oriented to providing a forum for exchanging technical details of design and implementation of research results and approaches to source control mechanisms.

The group has not held an annual meeting in 2015, but its chairman, Gilles Rivard, was present at the Urban Drainage Modelling conference (UDM) in Quebec City (September 2015) and attended the Joint Committee meeting during this event. A summary of other 2015 activities follows.

- The SOCOMA web site (<http://graie.org/SOCOMA>) has been updated; additional references and documents will be added in 2016. Proceedings from various workshops held by the group can be downloaded from the site, and contributions from group members are welcome.

- Participation in the upcoming NOVATECH Conference in Lyon (June/July 2016): the SOCOMA members have been involved in the Scientific and Organization Committees and reviewed abstracts for specific sessions.

- Development of a specialized Workshop, to be held at the NOVATECH Conference, with the following tentative title:

Admitting that we might be wrong: How to design and monitor to ensure the adaptability of stormwater control measures (SCMs).

The underlying assumption of the Workshop is that some of the uncertainty involved in the performance and design of SCMs is inevitable and that monitoring their performance has the ultimate goal of providing us with knowledge that will enable us to design even better SCMs. The Workshop will explore how knowledge from the design phase of SCMs can be used constructively in the monitoring phase and vice versa, and how the concept of flexibility could contribute to develop better SCMs. It will provide a unique opportunity to share experiences among experts on design and monitoring, respectively, with a planned technical visit of actual SCMs built on the INSA EcoCampus.

Upcoming conferences

- LID International Conference (August 29-31, 2016, Portland, Maine, USA) (<http://www.lidconference.org>). Members of SOCOMA will participate in the Conference, following a discussion at the Joint Committee meeting in Quebec City with Elizabeth Fassman who is involved in the organization of the Conference. Collaboration with the Cold Climate Group will also be sought in the form of a mini-symposium on Cold-Climate LID applications, planned for this conference. A possible collaborative workshop is also being discussed.

Other future activities

Members of the SOCOMA group are encouraged to provide relevant documents, references and sites for the group's website to make it more useful for the community. Another item that was discussed previously was to develop a Wikipedia-type glossary that could be put on-line and provide basic technical information on topics associated with source control and stormwater management measures. This is yet to be implemented.

Also, some Canadian members of SOCOMA have expressed interest in having a closer relationship with the Cold Climate Group. As already planned in 2015, some joint activities could be developed in 2016 between both groups, along with the other on-going collaborative efforts with WSUD and Rainfall Harvesting groups. Discussions for further collaboration will be held during the LID Conference in Portland, Maine (USA).

The next SOCOMA meeting will be at the Novatech Conference in Lyon (June 28-July 1, 2016).

6.5. International Working Group on Urban Rainfall (IGUR)

(Chairman: Prof Simon Beecham, University of South Australia, School of Natural and Built Environments, Room P1-22A, Bldg P, Mawson Lakes Campus, Adelaide, Australia. Phone: +61 8 8302 5141, Fax: +61 8 8302 5082, E-mail: simon.beecham@unisa.edu.au , Secretary: Dr. Thomas Einfalt, hydro & meteo GmbH & Co. KG, Breite Strasse 6-8, D-23552 Lübeck, Germany. Phone: +49-451-7027333 Fax: +49-451-7027339, e-mail: einfalt@hydrometeo.de
Group's web site: <http://www.kuleuven.be/hydr/gur>.)

Working group report (January 2016):

- The IGUR co-organised the UrbanRain15 international workshop on precipitation in urban areas which took place in Pontresina, Switzerland, Dec. 1–5, 2015(<http://www.ifu.ethz.ch/urbanrain>). More than 90 experts participated in this high quality workshop, showing a growing interest of established and young researchers in the topics of precipitation measurement, forecasting, uncertainties, applications, climate change and modelling. The proceedings are available on-line: <http://e-collection.library.ethz.ch/view/eth:48248>.
- Marie-Claire ten Veldhuis: RainGain Interreg project was completed on Nov. 30, 2015. Two polarimetric X-band radars were installed in Paris and Rotterdam; Web link: raingain.eu
- Patrick Willems: PLURISK project (Belgium) (<http://www.kuleuven.be/hydr/plurisk>) addressed the development of methodologies and software for nowcasting of fine-scale extreme rainfall, two-dimensional fine-scale modelling, mapping and nowcasting of inundation in urban areas, socio-economic urban flood risk quantification, urban flood risk communication and warning, and the study of new sustainable urban flood management strategies (green - blue water; landscape architecture; ecotechnologies).
- Thomas Einfalt: RainAhead (www.rainahead.de) on the development of a planning and warning tool for urban flash floods and the mitigation of the consequences and StuckK (www.stuck-hh.de) on the concurrent arrival of storm tide and heavy precipitation in coastal areas (Germany) are interesting projects with strong emphasis on precipitation information in real time.
- Hannes Müller on: SYNOPSE project: A tool for producing time series for past and future time series for any location in Germany - <http://www.iww.uni-hannover.de/en-us/Mitarbeiter/Haberlandt/Forschungsprojekte/Projekte/index.php?pid=98> or <http://www.bmbf.nawam-inis.de/inis-projekte/synopse> .
- Søren Thorndahl: EU project: WATER JOINT PROGRAMMING INITIATIVE - WATERWORKS 2014 COFUNDED CALL
Project: MULTI-SCALE URBAN FLOOD FORECASTING (MUFFIN)
Partners: Swedish Meteorological and Hydrological Institute (Jonas Olsson), Aalborg University, Denmark (Søren Thorndahl), Delft University of Technology, The Netherlands (Herman Russchenberg), Aalto University, Finland (Teemu Kokkonen)
U-funding: € 867000, total budget: €1.2M. Project will start in spring 2016.
- Jovan Despotovic: The last year's flood has been the most severe on the Sava river. He is trying to establish a group of hydrologists that would complete the flood information by using the satellite + rainfall information, which would be useful for Romania and Bulgaria in particular.
- Van Nguyen works on a 5-year flood study in Canada, with 10 universities across Canada and additional partners. The study addresses flood forecasting, extreme events, IDF's in a changing climate, and producing a new rainfall map for Canada. For more information, visit <http://www.nsercfloodnet.ca/>

The most recent information on IGUR activities as well as the meeting reports can be found on the IGUR website, which is regularly updated: www.kuleuven.be/hydr/gur.

6.6 Urban Drainage in Cold Climate Working Group (UDCCWG) - (Chair: Prof Maria Viklander, Dept. of Civil, Mining and Environmental Engineering, Luleå University of Technology, S-971 87 Luleå, Sweden, Phone: +46 920 491 634, Fax: +46 920 491 493, Email: Maria.Viklander@sb.luth.se; Secretary: Assoc. Prof. Tone Merete Muthanna, Department of Hydraulic and Environmental Engineering, Norwegian University of Science and Technology, Phone: +4795186817, Email: tone.muthanna@ntnu.no.)

Cold climate PhD seminar, Trondheim 10-11th May 2016

Luleå University of Technology (LTU) and the Norwegian University of Science and Technology (NTNU) will host a seminar for PhD candidates working on cold climate urban water systems, water treatment, stormwater, urban streams, or water infrastructure. The main objectives of the seminar are to present and discuss research with PhD candidates working on similar topics, and create a network for cold climate water research. We plan to make this an annual event in Trondheim or Luleå. Unfortunately, we cannot offer travel support, but the PhD candidates interested in participating should contact us and we will help them with affordable housing options. The seminar is free and will be held on the NTNU campus in Trondheim. A full program should be ready by late February, and the registration deadline is April 1st.

6.7 International Working Group for Water Sensitive Urban Design (IWG for WSUD)(Co-Chair: Dr Megan Farrelly, School of Social Sciences, Monash Water for Liveability Centre, CRC Water Sensitive Cities; 20 Chancellors Walk, Monash University, Wellington Rd Clayton VIC 3800; Ph: +61 3 9905 4618, megan.farrelly@monash.edu
Co-Chair: Dr Briony Rogers, School of Social Sciences, Monash Water for Liveability Centre, CRC Water Sensitive Cities; 20 Chancellors Walk, Monash University, Wellington Rd Clayton VIC 3800; Ph: +61 3 9905 2581, briony.rogers@monash.edu
Secretary and Vice-Chair: Dr James Shucksmith, Pennine Water Group, Department of Civil and Structural Engineering, University of Sheffield, Sir Frederick Mappin Building, Mappin Street Sheffield S1 3JD, UK; J.shucksmith@sheffield.ac.uk.)

Following the development of a strategic plan for moving forward, we have hit significant delays in progressing our website development. There has been no formal scheduling of a meeting of the IWG for WSUD. However, the Chair has begun to develop a template for global contributions towards a paper outlining the "current state of play" of WSUD - which also seeks to outline a future global research agenda to support academics and industry stakeholders with practical applications.

6.8 Working Group on Urban Streams (USWG) - (Chair: Dr Ivana Kabelkova, Department of Sanitary and Ecological Engineering, Faculty of Civil Engineering, Czech Technical University in Prague, Thakurova 7, 166 29 Prague 6, Czech Republic, Phone: +420 2 24321292, e-mail: kabelkova@fsv.cvut.cz.)

In 2015, the working group held a meeting in late March 2015 in Prague, with the main task of searching for common project topics and possible grants to encourage the group activities. 2016 activities – the group will start preparation of a workshop to be held at the next ICUD conference in Prague, 2017.

6.9 Working Group on Urban Storm Water Harvesting – (Chair: Prof Alberto Campisano, Dept. Civil Engineering and Architecture, University of Catania, Viale A. Doria 6, 95125 Catania, ITALY; Phone: +39 0957382730, Fax: +39 0957382748, Email: acampisa@dica.unict.it); Secretary: Dr Matthew Burns, Melbourne School of Land & Environment, The University of Melbourne, Building 379, Parkville, Vic, 3010, Australia. E-mail: matthew.burns@unimelb.edu.au.)

The group is writing a state-of-the art paper on modelling and applications of rainwater/stormwater harvesting. The paper objective is to provide a wide overview of the state of advancing of RWH with expected contributions from countries all over the world. Potential co-authors from the private sector are welcome to contribute their experience from this field. Interested people should contact Prof Alberto Campisano at acampisa@dica.unict.it for further information.

The WG is organizing the second workshop on RWH that will be held in Lyon next June/July 2016 in conjunction with the Novatech conference. The workshop presentations will focus on advances in research and technological aspects of rainwater harvesting. Interested potential speakers from companies working in this field should contact Dr Matthew Burns at matthew.burns@unimelb.edu.au for further information.

7. NEWS FROM IAHR

IAHR Secretariat contacts: IAHR, Paseo Bajo Virgen del Puerto 3, 28005 Madrid, Spain; Tel: +34 91 335 7908; Fax: +34 91 335 7935; E-mail: iahr@iahr.org, URL <http://www.iahr.org>. For more information on IAHR activities and free subscription of the IAHR e-newsletter 'NewsFlash', please contact the IAHR Secretariat: IAHR@IAHR.org

Note that the 2016 membership fees are now due (for more information, visit the IAHR website). IAHR offers ten various categories of membership described on their website. IAHR members can choose from a variety of journals available either as a part of membership benefits or in the form of paid full or reduced subscriptions, depending on the journal and the type of membership: Journal of Hydraulic Research, Journal of Applied Water Engineering and Research, International Journal of Water Resources Development, Civil Engineering and Environmental Systems, International Journal of Computational Fluid Dynamics, Urban Water Journal, Environmental Technology, Journal of River Basin Management, Journal of Hydro-Environment Research, Journal of Hydroinformatics, and Journal of Sediment Research. In early 2016, IAHR will launch a new journal, the Journal of Ecohydraulics.

IAHR is sponsoring organization of many conferences of potential interest to the urban drainage community; for full information, please visit their website www.iahr.org. Among those, the most important is the 37th IAHR World Congress, Aug.14-18, 2017, Kuala Lumpur, Malaysia. The congress will cover latest developments in science and practice in all IAHR disciplines.

8. NEWS FROM IWA HEADQUARTERS AND IWA PUBLISHING

8.1 News From IWA Headquarters

[Early Bird Registration Now Open](#) for the IWA World Water Congress and Exhibition 2016.

The IWA World Water Congress & Exhibition is the global event for water professionals. It offers new insights into how pioneering science, technological innovation and leading practices shape the major transformation in water management that is underway. It draws over 5,500 of the top water, environment and related professionals from more than 100 countries from across the water sector, including thought leaders from within and beyond the water sector.

If you become an IWA member while registering for the Congress you will have a greater discount in delegate registration and when booking exhibition space. Take advantage of the additional benefits of membership including The Source Magazine, exclusive online content and further discounts on IWA publications.

Visit the conference website for more information: www.worldwatercongress.org

For 2016 IWA Membership Renewals, please go to <https://iwaconnect.org/subscribe>.

If you experience any difficulties with your renewal, please feel free to send us an email at members@iwahq.org and we will get back to you as quickly as possible.

There is a strong interest in enhancing the collaboration between IWA and IAHR. Prof Jean-Luc Bertrand-Krajewski will contribute to this activity through his long experience of serving on the Joint IWA-IAHR Committee on Urban Drainage (JCUD) as an example of fruitful partnerships between these two parent organizations of JCUD.

8.2 New publications from IWAP - Selected books

Rainwater Tank Systems for Urban Water Supply

Ashok K. Sharma, Donald Begbie & Ted Gardner

ISBN: 9781780405353

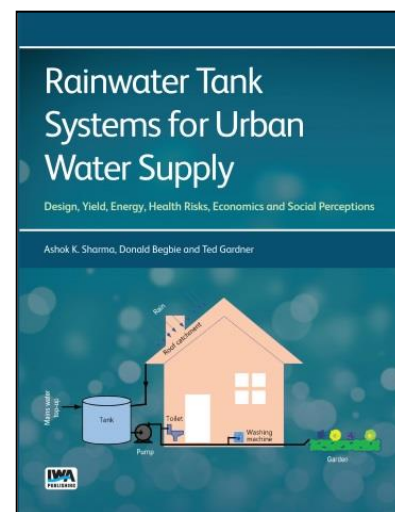
May 2015 • 372 pages • Paperback

IWA Members price: £ 79.00 / US\$ 142.00 / € 107.00

<http://www.iwapublishing.com/books/9781780405353/rainwater-tank-systems-urban-water-supply>

This book provides insights and detailed analysis of design, modelling, implementation, operation, energy usage, economics, management, health risk, social perceptions and implications for water quality/quantity of roof water runoff. It considers expected performance and potential pitfalls of rainwater tank systems including:

- actual harvested yield and resulting mains water savings,
- optimal sizing for rainwater storages and roof collection systems,
- expected water quality and implications for managing public health risks,
- modelling tools available for decision support,
- operation and management approaches of a decentralised asset at the household scale and community acceptance.



Water and Cities: Ensuring Sustainable Futures

Organisation for Economic Co-Operation and Development (OECD)

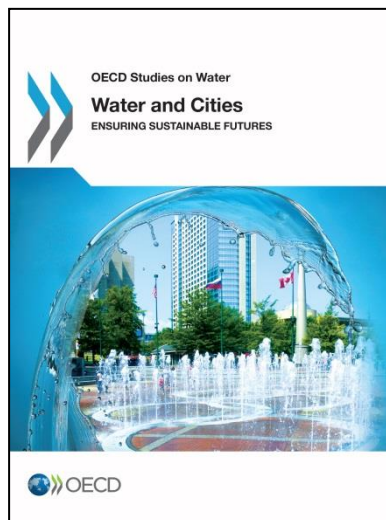
ISBN: 9781780407593

May 2015 • 182 pages • Paperback

IWA Members price: £ 23.00 / US\$ 41.00 / € 31.00

<http://www.iwapublishing.com/books/9781780407593/water-and-cities-ensuring-sustainable-futures>

This report focuses on the urban water management challenges facing cities across OECD countries, and explores both national and local policy responses with respect to water-risk exposure, the state of urban infrastructures and dynamics, and institutional and governance architectures. The analyses focus on four mutually dependent dimensions – finance, innovation, urban-rural co-operation and governance – and proposes a solutions-oriented typology based on urban characteristics. The report underlines that sustainable urban water management will depend on collaboration across different tiers of government working together with local initiatives and stakeholders.



Urban Water Reuse Handbook

Saeid Eslamian

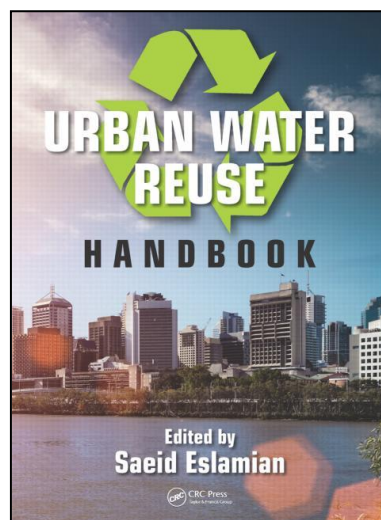
ISBN: 9781780407364

January 2016 • 1184 pages • Hardback

IWA Members price: £ 81.00 / US\$ 164.00 / € 109.00

<http://www.iwapublishing.com/books/9781780407364/urban-water-reuse-handbook>

Rapid population growth, along with drought, water-intensive energy development, climate change conditions, and a number of other factors all place stress on world water supplies. In many countries throughout the world, water reuse has proved to be an effective and safe means to help satisfy growing water demands and offset scarcity. This book provides the latest information on water reuse applications with a focus on urban areas. It examines numerous new and alternative methods for sustainable water supplies.



Water Governance in Cities

Organisation for Economic Co-Operation and Development (OECD)

ISBN: 9781780408248

April 2016 • 140 pages • Paperback

IWA Members price: £ 19.00 / US\$ 34.00 / € 26.00

<http://www.iwapublishing.com/books/9781780408248/water-governance-cities>

Urban, demographic and climate trends increasingly expose cities to risks of too little, too much and too polluted water. Facing these challenges requires robust policies and sound governance frameworks to co-ordinate across multiple scales, authorities, and policy domains. Building on a survey of 48 cities in OECD countries and emerging economies, the report analyses key factors affecting urban water governance, discusses trends in allocating roles and responsibilities across levels of government, and assesses multi-level governance gaps in urban water management. It provides a framework for mitigating territorial and institutional fragmentation and raising the profile of water in the broader sustainable development agenda, focusing in particular on the contribution of metropolitan governance, rural-urban partnerships and stakeholder engagement.

Hydraulic Design and Management of Wastewater Transport Systems

Michiel Tukker, Kees Kooij, Ivo Pothof

ISBN: 9781780407821

June 2016 • 224 pages • Paperback

IWA Members price: £ 67.00 / US\$ 121.00 / € 90.00

<http://www.iwapublishing.com/books/9781780408248/water-governance-cities>

This manual compiles all hydraulic knowledge necessary for designing and managing wastewater transport systems, which link collection and treatment. These systems include suction basins, the sewage pumping station and the pressure pipelines.

Wastewater transport systems are becoming more complex due to larger sewage water treatment plants, transportation over greater distances and more small pipelines connecting to sewers. Pumping station operations are determined by how the entire system behaves, so systematic insight is crucial for proper design and management.

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9. NEWS FROM AROUND THE WORLD

BELGIUM (REPORTED BY PATRICK WILLEMS)

The Interreg NWE IVB project RAINGAIN, in which urban drainage experts from The Netherlands, Belgium, France and the UK cooperated on the topic of “fine-scale rainfall estimation and nowcasting for enhanced street scale urban surface flood prediction, warning and risk management”, has finished with a final conference in Paris on 8-9 June 2015 and a final workshop in Rotterdam on 12 October 2015. The final conference in Paris was attended by 174 participants from all the continents. It was granted COP21 label by Ségolène Royal, the French Minister of Ecology, Transports and Energy. The newly installed X-band radars in Paris and Rotterdam are now operational. At Gent (Belgium), two low-cost X-band radars from FURUNO were installed as well and have been operational since 2015. The final project results can be found on the project website: <http://www.raingain.eu/en/raingain>

The ongoing project funded by the Belgian Science Policy, PLURISK on “forecasting and management of extreme rainfall induced risks in the urban environment”, is currently developing methodologies and software (STEPS-BE) for nowcasting of fine-scale extreme rainfall, two-dimensional fine-scale modelling, mapping and nowcasting of inundation in urban areas (InfoWorks-ICM based), socio-economic urban flood risk quantification, urban flood risk communication and warning, and new sustainable urban flood management strategies (green - blue water; landscape architecture; ecotechnologies). The project is currently underway in two Belgian cities (Leuven and Gent) and aims to support local authorities, which typically have low capacity for establishing risk quantification, forecasting, control and management systems. For more info, visit: <http://www.kuleuven.be/hydr/plurisk>

Vincent Wolfs successfully defended his PhD thesis on semi-automatic model structure identification and calibration of conceptual sewer models based on simulation results of a full hydrodynamic sewer network model. A tool called Conceptual Model Developer (CMD) has been constructed. For more info, see: <http://bwk.kuleuven.be/hydr/Research/urban-river>

CANADA (REPORTED BY JIRI MARSALEK)

Modern stormwater management has reached an advanced stage of mature environmental issues in Canada. This is reflected by the ongoing activities in the field, which concentrate on promotion of, and guidance for, applications of LID and similar measures, rather than researching facilities performance. Typically, the leading agencies in this field are those in regions with progressing urbanization and fast development. Examples of activities in these jurisdictions follow.

Toronto Region – Promotion of eco-roofs (i.e., the roofs which either support vegetation, or reflect solar energy, is supported by a grant program operated by the City of Toronto. The program started in 2009 and has helped to install more than 100 green and cool roofs in the city. Qualified projects receive up to \$50,000 (\$2-5/m²) and \$100,000 (\$75/m²) for cool and green roofs, respectively. The Toronto and Region Conservation Authority keeps updating Stormwater Management Criteria providing guidance for stormwater management implementation. The latest version of the document (prepared in collaboration with the Credit Valley Conservation Authority and others), includes detailed guidance for SWM design procedure, flood control design, erosion protection, stormwater

quality management, maintaining water balance, and SWM practices. The document is available for free download at <http://trca.on.ca/the-living-city/water-flood-management/storm-water-management.dor> The TRCA site also offers a number of documents on performance of various stormwater BMP/LID measures. Similar documents are also available on the website of the Sustainable Technologies Evaluation Program (STEP – <http://www.sustainabletechnologies.ca>) and on the website of the Credit Valley Conservation (<http://www.creditvalleyca.ca>), with guides/documents for landscape design for LID, LID planning and design, construction of LIDs, thermal impacts of urbanization, overcoming institutional barriers to LID, SWM financing, rainwater management, and bioretention.

A broad presentation of urban water management activities in the Province of British Columbia can be found on the Waterbucket website – Sustainable approaches to integrated water management (<http://waterbucket.ca/m/>). Under the headings of “rainwater management”, the site links to BC Guidance Documents, Rainwater Capture, Stormwater Planning: A Guidebook for British Columbia, implementation of “Design with Nature”, and numerous entries on watershed sustainability. Similar promotional activities are conducted by the Alberta Low Impact Development Partnership (<http://alidp.org>) serving the Province of Alberta. The partnership is working on addressing LID implementation hurdles in four areas: social acceptance, professional competence, feasibility, and enabling policy environment.

CHINA (REPORTED BY SHAW YU, UNIV. OF VIRGINIA, and HAIFENG JIA, TSINGHUA UNIVERSITY)

China’s ambitious Sponge City Initiative

Since the early 2000s’ the concept of *Low Impact Development* (LID) has gained widespread recognition as an ecologically sound and sustainable approach to stormwater management, especially in terms of urban stormwater runoff quantity and quality control. Currently in the United States, all levels (federal, state and local) of governments have either recommended or required the use of LID practices in new or retrofit urban projects. Similar trends have been enthusiastically adopted elsewhere, for example in Europe under the title *Sustainable Urban Drainage Systems* (SUDS), in New Zealand as *Low Impact Urban Design and Development* (LIUDD), and in Australia as *Water Sensitive Urban Design* (WSUD)”, etc. In China, the rapid urbanization process in recent decades has led to worsening “city syndrome” situations that exist in many urban areas, such as urban flooding, water pollution, heat-island effects and ecologic deterioration, etc. As a result, in recent years much attention and efforts have been given to finding solutions to these and other environmental problems. Such efforts include government-sponsored initiatives on “low-carbon cities”, “green or ecological cities”, etc. A thorough review of the traditional urban drainage practices has also been underway and a new paradigm is emerging regarding the system sustainability, which embraces many of the basic principles of LID technology.

In order to promote a sustainable urbanization strategy, the Chinese government announced in late 2013 a “Sponge City” Initiative (SCI) in building urban infrastructures. Deviating from the traditional “rapid-drainage” approach, the new paradigm calls for the use of natural processes as part

of the urban runoff control strategy. The “six-word” principle, which includes infiltrate, detain, store, cleanse, use and drain, forms the guidelines for urban stormwater management.

In October, 2014 the China Ministry of Housing and Urban-Rural Construction (MHURC) issued the “Guidelines for Construction Technology of Sponge City – The Establishment of Low Impact Development Stormwater Systems”. In April, 2015 the China Ministry of Finance, with support from MHURC and the Ministry of Water Resources, selected 16 cities, among more than one hundred of applicants, as the first tier of sponge city pilot sites (See Figure 1). Each city receives between \$63.5 million to \$95.2 million from the government for three years with the total investment estimated to be about \$14 billion. Local matching of funds is required and public-private-partnerships (PPP) are encouraged. Cities will receive a 10% bonus from the central government, if the PPP contribution exceeds a certain percentage of the overall budget.

In October, 2015, the China State Department announced a major expansion of the Sponge City Initiative, which will be implemented nationwide. Recognizing the limitation of LID/GI facilities in controlling large or less frequent storm events, the government mandates the integration of green and gray infrastructures. The new SCI push also includes in its goals not only effective urban flood control, but also rainwater harvesting, water quality improvement and ecological restoration. For example, the current urban runoff control goals are set for 75% volume and 50% pollutant load reductions, on average. The use of LID/GI practices will be required for new development and retrofit sites, science and commercial parks, green spaces, non-mechanical vehicle roads, pedestrian walkways, etc. The estimated total investment is roughly 1.5 Trillion RMB for sixty cities nationwide or on average \$400 million per city. These amounts correspond to about \$28.6 million per impervious square kilometre, or \$120,000/per impervious acre.

China’s sponge city initiative represents an enormous and unprecedented undertaking by the government for achieving urban sustainability. MHURC officials recognize that the success of the SCI will require a combined and coordinated effort by many government agencies such as landscape architecture planning, construction, municipal, water, transportation, finance, environmental protection and other stakeholders. How to finance all the sponge city projects is a real challenge. The government has listed some innovative strategies for fund-raising, which include, in addition to government grants and subsidies, local matching of funds and public-private partnerships. The government is also encouraging participation by financial institutions, and will allow qualified entities to issue construction bonds to finance the sponge city projects.

China will also host the first International LID Conference outside of the United States (see the flyer in Section 10) in 2016. The conference will provide an excellent opportunity for LID/GI professionals in the Asia-Pacific region to exchange experiences, share results and implementation strategies with colleagues from North America, Europe and other parts of the world. Furthermore, presentations and discussions should be conducive to producing new ideas and innovation in the LID/GI technologies. International collaboration on LID/GI research projects and other efforts such as establishing an international “sponge city” alliance might be potential outcomes of the conference.

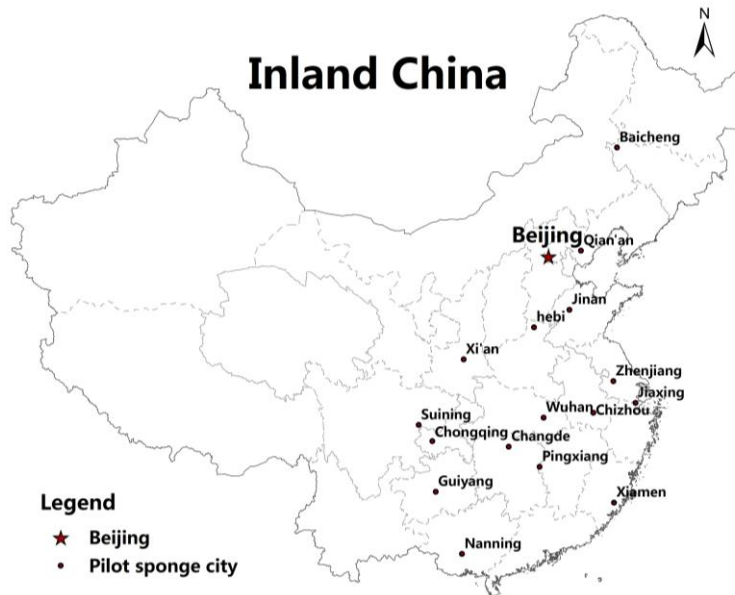


Figure 1: China 2015 Pilot Sponge Cities

Contact: Dr Haifeng Jia, Assoc. Prof, Member of JC, Director of the Centre for Urban Runoff Control & Stream Restoration, School of Environment, Tsinghua University, Beijing 100084 China; Email: jhf@tsinghua.edu.cn

CZECH REPUBLIC (REPORTED BY VOJTECH BARES, IVANA KABELKOVA AND DAVID STRANSKY)

Research and education

The Czech Technical University in Prague (CTU) is running the TeleMAS project (Urban stormwater runoff predictions based on rainfall-induced attenuation of telecommunication microwave links), supported by the Czech Science Foundation, in close cooperation with the EAWAG, Switzerland. The project team operates real-time data acquisition of microwave link data in several urban catchments in the Czech Republic (<http://www.telemas.cz>).

The project of CTU and ATEKO “Heat recovery from wastewater in combined sewer systems”, which started in 2013, continued in 2015 with main activities focusing on in-situ testing of the developed heat exchanger.

The new CTU research and development centre UCEEB operates a microscale experimental site for monitoring near-surface fluxes of water, energy and momentum in the soil-vegetation-atmosphere system, as well as above man-made structural surfaces. A postdoctoral research project “Water and heat dynamics in anthropogenic soil systems affected by soil structural changes” is connected mainly to green roofs.

Brno University of Technology coordinated the Visegrad Fund project “Sustainable rainwater management in the V4 countries”. The objective of this project was to support and strengthen the cohesion of the four Visegrad countries (Czech Republic, Slovakia, Poland and Hungary) in achieving a sustainable water future in urban areas. The 2015 output of this project was a

publication Storm Water Management: Examples from Czech Republic, Slovakia and Poland, Eds. P. Hlavinek, M. Zelenakova, Springer Hydrogeology.

NGO Koniklec and CTU continued an educational project “Counting on Rainwater” focused on the increase of understanding of the SUDS principles and technical requirements by engineers and public administrators. The project was supported by the Swiss Confederation Funds for East European countries. In 2015 a field trip to Switzerland and Germany took place, and a series of lectures and a conference were organized.

Conferences

14th International Conference on Urban Drainage (ICUD), which will be held in Prague, Czech Republic, on September 10-15, 2017, was introduced at the Urban Drainage Modelling Conference in Quebec, Canada, 2015. The organizers of the 14th ICUD conference are the Czech Water Association (CzWA) and the Czech Technical University (CTU) in Prague. Please view the videos and show your interest by proposing your ideas for the conference on the web page <http://icud2017.org/>. Potential participants are also invited to suggest their own special sessions.

The 26th General Assembly of the International Union of Geodesy and Geophysics was held from June 22 to July 2, 2015 in Prague. The meeting with the theme: “Earth and Environmental Sciences for Future Generation” included several contributions from the international UD community on the topic of precipitation measurements and urban hydrology.

DENMARK (REPORTED BY KARSTEN ARNBJERG-NIELSEN)

Urban drainage continues to be high on the political agenda because of the interest in climate change adaptation measures. 2015 showed not only the ‘by now common’ occurrences of pluvial flooding in summer months, but also flooding caused by long low-intensity rainfalls leading to flooding in December. Copenhagen has just passed the most ambitious city renewal plan since 1807, which is centered on the creation of resilient neighbourhoods in a blue-green city. The investment is the largest ever made by the municipality. The mayor also personally participated in the IWA meeting, where the host city for the IWA World Water Congress in 2020 was selected; perhaps that was one of the reasons why Copenhagen was selected. So see you in Copenhagen in late summer 2020.

The national research funding landscape is changing toward more industry-oriented themes and the overall budget has decreased substantially. One of the few new projects within the environmental theme focusses on urban water management. Technical University of Denmark, DHI, Krüger, Ramboll, Danish Meteorological Institute, and the utilities covering Copenhagen, Aarhus, and Odense will strive to develop better models and decision tools for planning and operation of urban drainage in the project Smart Water Cities. The EU-funded project MUFFIN (Multi-Scale Urban Flood Forecasting) led by Aalborg will start in 2016 with partners from Sweden (SMHI), Finland (Aalto) and the Netherlands (TU Delft). Industrial PhDs and PDFs are also becoming more common, funded in combination between universities and either private companies or utilities. Currently two industrial PhDs are focusing on sustainable urban water management and one industrial PhD and one PDF are focusing on forecasting and real-time control.

The professional society of engineers has been trying to scope a national recommendation for risk-based design in relation to urban flooding and integrating it into the other national recommendations for urban water management. It has not been easy, but it seems that 2016 will finally be the year

when these recommendations will be endorsed by the professional society and also supported by the confederations of municipalities and water utilities in Denmark.

FRANCE (REPORTED BY JEAN-LUC BERTRAND-KRAJEWSKI)

News from DEEP at INSA Lyon

Laboratory re-organisation and INPI 2015 Award

After a preliminary period from November 2014 to December 2015, the urban hydrology and drainage research group at INSA Lyon is now part of the new laboratory DEEP (Déchets Eaux Environnement Pollutions – Wastewater Environmental Pollution) since the 1st of January 2016. DEEP includes in total 55 people and is organised in two main domains of research : (1) Urban water systems, and (2) Solid wastes and contaminated soils and sediments. Jean-Luc Bertrand-Krajewski has been appointed head of DEEP for the next 4 year period.

DEEP won the French 2015 Research Innovation Award from the INPI (National Institute for Industrial Property), as a recognition for its patents (DSM Flux (see below) and biogas analysis), three software tools (Canoé, Indigau and Evohé) and two start-up companies (Deltalys and Aegir). DEEP has launched its new website in September 2015, where all the above information is presented in detail: <http://deep.insa-lyon.fr>

DSM-Flux: a calibrated downstream-controlled double-side overflow device

The DSM-flux[®] is a calibrated-downstream overflow structure that enables to control and measure the quantity and quality of overflow effluents. The patented device serves four key purposes: (i) measure overflow discharge and volume, (ii) measure pollutant concentrations, (iii) reduce the approach velocities to the water bodies by means of energy dissipation, and (iv) reduce particulate pollutant loads by sedimentation. Located downstream of Combined Sewer Overflow structures, this device transforms the supercritical overflow into subcritical by forcing a hydraulic jump. An end wall and a double sharp-crested oblique side weir located downstream of the structure promote a calm area appropriate for water depth and turbidity measurements. These values can be linked to the overflow rate and suspended sediment concentrations respectively.

Contact: Gislain.lipeme-kouyi@insa-lyon.fr

Publication:

Lipeme Kouyi G., Momplot A., Hmedi N., Sun S., Bertrand-Krajewski J.-L., Visiedo R., Volte E., Solliec L. (2015). Chapter 3.7 - *Sensor placement (micro location) for discharge measurements in sewers*. In *Climate Change, Water Supply and Sanitation: Risk Assessment, Management, Mitigation and Reduction*, edited by Hulsman A., Grutzmacher G., van den Berg G., Rauch W., Lynggaard Jensen A., Popovych V., Rosario Mazzola M., Vamvakeridou-Lyroudia L.S., Savic D.A. London (UK): IWA Publishing, 168-174. ISBN 9781780404998.

Interdisciplinary approach to better characterization of sediments in dry detention basin - the Cabrres national French program

An interdisciplinary approach has been developed in order to better characterize sediments in a dry detention basin. Investigations are done in the framework of the Cabrres French program (funded by the French National Research Agency). Scientific fields enhanced in the project are based on skills and tools of urban hydrology, including: social and human sciences, fluid mechanics, metrology, microbiology, chemistry, ecotoxicology and statistics. The linkage between all these scientific

disciplines brings new insights regarding for example relationship between social and economic activities and the microbiological contamination of stormwater in studied urban catchment. Further investigations are in progress and will enhance results related to ecotoxicity and bacteria species in sediments, and also address health concerns of the technical staff. CABRRES results will help practitioners to better choose or develop technologies for sediments treatment.

Contacts: [INSA Lyon DEEP – gislain.lipeme-kouyi@insa-lyon.fr](mailto:gislain.lipeme-kouyi@insa-lyon.fr) and [GRAIE - Laëtitia BACOT - laetitia.bacot@graie.org](mailto:laetitia.bacot@graie.org)

The Micromegas Project

The MICROMEGAS project started in March 2015 in response to the French national call "Innovation and change in practices: Micropollutants in urban water". The project aims at comparing the performance of stormwater source control systems (vegetated swales, trenches, porous pavements...) situated on the Ecofriendly Campus of Lyon Tech La Doua with the "end of pipe" systems collecting water from larger catchments and systems based on retention/infiltration in a centralized basin. The study will consider different measures of performance: hydraulic, micropollutant removal, construction, operating and economic aspects, social acceptance and uses. This project is conducted under cooperation between the DEEP laboratory (Waste Water Environment Pollution - <http://deep.insa-lyon.fr/>) for the technical part, the lab Environment City and Society (EVS - <http://umr5600.ish-lyon.cnrs.fr/>) for social aspects, and GRAIE for dissemination of findings. It is carried out in the framework of OTHU with the research network (URBIS) of Paris and Nantes. The main objective is to study source control in different contexts in order to provide knowledge and recommendations of good practice.

Contact: Sylvie Barraud (Sylvie.barraud@insa-lyon.fr), Robin Garnier (robin.garnier@insa-lyon.fr).
Website: <http://www.micromegas-lyon.org/>

Green roofs: the GEPETO project

The GEPETO project, funded by the Rhône-Méditerranée-Corse Water Agency, is devoted to monitoring and modelling of innovative green roofs aiming to better store and evapotranspire rainwater. Experimental green roofs were installed in Lyon to evaluate their performance, and to develop and test a detailed hydrological model. The partners are Le Prieuré (coordinator), Greater Lyon and DEEP.

Contact: jean-luc.bertrand-krajewski@insa-lyon.fr

Water quality monitoring: The SMILE project

The SMILE project, funded by the French FUI 17 programme, aims at developing a compact monitoring station with new and innovative sensors including turbidity, on-line BOD, gas phase UV spectrometry, on-line toxicity warning, and on-line heavy metals. The partners are Hemera (coordinator), EFS, Enoveo, Viewpoint, Alison, ISA, Irstea, Greater Lyon and DEEP. DEEP is in charge of the on-line data validation and uncertainty assessment.

Contact: jean-luc.bertrand-krajewski@insa-lyon.fr

Biomimetic cities: the ViBiom project

The ViBiom project, funded by the multidisciplinary laboratory IMU (Intelligences des Mondes Urbains – <http://imu.universite-lyon.fr/>), is devoted to biomimicry applied to cities. The project partners are the Faculty of Philosophy – University Lyon 3 (coordinator), CETHIL and DEEP. DEEP is in charge of water aspects in biomimetic cities of the future.

Contact: jean-luc.bertrand-krajewski@insa-lyon.fr

News from OPUR in Paris

Wastewater treatment

In 2015, a PhD thesis (Romain Mailler) dealing with removal of priority and emerging substances by powdered (PAC) and micro-grain (μGAC) activated carbon was defended. In the thesis project, the performance of a large scale pilot plant was assessed. Most of pharmaceuticals, alkylphenols, artificial sweeteners, parabens and pesticides were efficiently removed ($> 80\%$) by activated carbon in fluidized bed at moderate doses ($10\text{-}20 \text{ g/m}^3$). The activated carbon dose had a great influence on treatment performance, whether with PAC or μGAC . However, μGAC has several operational advantages (reactivity, ease of operation, high solid retention time, no need for coagulant/flocculant addition to handle the fluidized bed) over the PAC, together with similar performance at a similar fresh μGAC dose ($20 \mu\text{GAC/m}^3 \approx 20 \text{ gPAC/m}^3$). In addition, this type of process allows an improvement of the conventional wastewater quality parameters, especially in the case of μGAC , which retains total suspended solids and eliminates totally nitrites. Finally, a correlation between micropollutant and UV-254 removals has been confirmed, suggesting that this parameter could be used as a performance indicator. The complementary laboratory scale experiments allowed a better understanding of the PAC adsorption mechanism in wastewater. The correlation between the specific surface, the bulk density of the PAC and PPHs removal has been displayed, as well as the importance of the fresh PAC dose and the contact time. Moreover, the positive effect of FeCl_3 and negative influence of the quantity and quality of organic matter on micropollutant adsorption have been observed. For further details, please refer to the three following references:

Large-scale efficacy of powdered activated carbon to remove a wide range of emerging and priority micropollutants from wastewater treatment plant effluents. R. Mailler, J. Gasperi, Y. Coquet, S. Deshayes, S. Zedek, C. Cren-Olivé, N. Cartiser, V. Eudes, A. Bressy, E. Caupos, R. Moilleron, G. Chebbo, V. Rocher. *Water Research* 2015, 72, 315-330.

Removal of a wide range of emerging pollutants from wastewater treatment plant discharges by micro-grain activated carbon as tertiary treatment. R. Mailler, J. Gasperi, Y. Coquet, A. Buleté, E. Vuilliet, S. Deshayes, S. Zedek, C. Mirande-Bret, V. Eudes, A. Bressy, E. Caupos, R. Moilleron, G. Chebbo, V. Rocher. *Science of the total environment* 2016, 542, 983–996.

Removal of emerging micropollutants from wastewater by activated carbon adsorption: experimental study of different activated carbons and factors influencing the adsorption of micropollutants in wastewater. R. Mailler, J. Gasperi, Y. Coquet, C. Derome, A. Buleté, E. Vuilliet, A. Bressy, G. Varrault, Chebbo G., Rocher V. *Journal of Environmental Chemical Engineering* 2016, in press.

Microplastics: from urban sources to surface water

Various projects are currently carried out on microplastics in the LEESU lab; all of them supervised by Johnny Gasperi and Bruno Tassin. The main objectives of these projects are: (i) to assess the microplastic contamination in various compartments of the urban water cycle (atmospheric fallout, stormwater, wastewater, combined sewer overflows), and (ii) to evaluate the impact of urban inputs on surface water. A PhD thesis (Rachid Dris) was launched in 2013. This PhD project has already demonstrated the ubiquitous presence of microplastics in most compartments of the urban water cycle, and also in rivers. Knowledge on the type (fibres, spherule, etc.), nature, and size distribution of microplastics in the $[100 - 5\,000 \mu\text{m}]$ range was provided. A paper focusing on atmospheric fallout of microplastics in two different urban and sub-urban sites was recently published. Fibres accounted for almost all the microplastics collected. An atmospheric fallout between 2 and 355 particles/ m^2/day was highlighted. Registered fluxes were systematically higher at the urban site than

at the sub-urban site. Chemical characterization allowed to estimate that these fibres represent 29% of all synthetic materials (made with petrochemicals), or made of a mixture of natural and synthetic materials. Extrapolation using weight and volume estimates of the collected fibres allowed a rough estimation showing that between 3 and 10 tons of fibres are deposited by atmospheric fallout at the scale of the Parisian agglomeration every year (2,500 km²).

Publication: *Synthetic fibres in atmospheric fallout: a source of microplastics in the environment*. R. Dris, J. Gasperi, M. Saad, C. Mirande, B. Tassin. *Marine Pollution Bulletin* 2016, in press.

News from GRAIE

NOVATECH 2016

Novatech 2016, the 9th International Conference on Planning & technologies for sustainable URBAN WATER management will be held in Lyon, France, from June 28 to July 1st 2016.

The program of the conference will be organized slightly differently than usual, because of the Euro 2016 soccer tournament: the conference will take place from Tuesday 28th to Thursday 30th June and will be followed, on Friday 1st July, by the workshops and technical tours. Therefore the program of Novatech 2016 will be organised around the following components:

- An opening plenary session with two distinguished guest speakers:
 - Rob Skinner, director of Monash University's Water for Liveability Centre and Deputy Chair of the CRC for Water Sensitive Cities.
 - Paola Viganò, architect and Italian urban planner, who won the French Urban Planning Award in 2013. She promotes the "porous city" concept.
- 2.5 days of conference with four concurrent sessions, featuring about 140 oral presentations and 70 posters.
- Interactive thematic sessions, to optimise knowledge transfer between scientists and operators.
- The 2nd edition of the Novatech Awards, which will reward public projects and policies integrating stormwater management in three categories: Urban renewal / Town planning strategies / The individual's place in the project.
- Specialised workshops organised by the international JCUD working groups and technical tours will enable delegates to discover remarkable urban planning projects in Lyon, as well as experimental catchment areas of the Field Observatory for Urban Water Management

Novatech 2016 is built around four complementary themes, which cover diverse perspectives:

- Stormwater and urban planning: from the plot to city-scale, what are the best strategies and policies for integrated management of urban stormwater?
- Innovative solutions for stormwater management: which technologies to use in building and managing sustainable cities?
- Stormwater and aquatic environments: floods, erosion, and pollution; which global strategies serve to limit the risks?
- Stormwater, city and stakeholders: skills, services, responsibilities, and uses; should we modify our organisation and regulations?

Practical information:

Co-organised by the GRAIE (Rhone-Alps Research Group on Infrastructure and Water) and INSA Lyon, the 9th edition of the Novatech conference will take place at the INSA Lyon on the LyonTech campus in Villeurbanne. This smart, bustling and responsibly developed campus is only 15 minutes from the Lyon city centre.

Next steps: A preliminary programme will be available in March 2016. Registration will open in April 2016.

Chairmen: Jean-Luc Bertrand-Krajewski (France) and Tim D Fletcher (Australia), general secretary: Elodie Brelot – Graie (France)

More information on our website: <http://www.novatech.graie.org>

News from SIPIBEL – Bellecombe site

The Bellecombe observatory SIPIBEL was created in 2011 in the French region of Upper Savoy to study the characterisation, treatability and impacts of hospital effluents in a municipal sewage treatment plant. SIPIBEL is operated jointly by The Bellecombe Public Utility (operator of the sewage treatment plant) and the GRAIE. It involves many French research groups: Limoges University, ENTPE, INSA Lyon, Faculty of Pharmacy of Paris Sud University and ISA-CNRS of Lyon. The project is supported by the Rhône-Méditerranée Corse Water Agency, the Auvergne - Rhône-Alpes Regional Council, the French National Agency for Water and Aquatic Environments, the European Union, and other partners.

SIPIBEL is a research and monitoring site with the following structure:

- A field observatory aiming to monitor urban and hospital effluents (pharmaceuticals, monitoring biological tools, antibiotic resistance,...) and their impacts on receiving water bodies;
- Research actions developed in conjunction with the field observatory are grouped in four themes: (1) pollutant loads, (2) treatment, (3) risks, and (4) sociology.

On March 26-27, 2015, the international conference “Water and Health - Pharmaceuticals in the urban water cycle: state of art and reduction strategies” was organised in Geneva (Switzerland) and Annemasse (France) as the final event of the French-Swiss Interreg project IRMISE (more than 200 participants). IRMISE, an extension of the Bellecombe site, focuses on the downstream impact of micropollutants and pharmaceuticals discharges from wastewater treatment plants on the Arve River catchment and on the Geneva aquifer.

2015 was also the final year of the noPILLS research project (which includes SIPIBEL) with a conference and a final report: http://www.no-pills.eu/conference/BS_NoPills_Final%20Report_long_EN.pdf.

Finally, the RILACT project (Risks and Measures related to pharmaceuticals, detergents and biocides discharges in hospital and urban effluents) started in November 2014 in response to the "Innovation and change in practices: micropollutants in urban water" French national call for project proposals. RILACT is an extension of the existing SIPIBEL facility and the IRMISE project, supporting the achievement of the three following main objectives: (1) better understanding of discharge sources, their metabolism and degradation processes in sewage networks; (2) characterization of sanitary and environmental risks related to these effluents; and, (3) identification of linkages by involving the whole chain of responsibility and actors. RILACT includes 7 research partners (INSA Lyon, ENTPE, CNRS, EHESP and universities of Paris Sud, Limoges and Lyon). First reports will be published in 2016. For more information about these projects, please contact us (sipibel@graie.org) and visit our Webpage: <http://www.sipibel.org>.

News from EURO-SAM Network | Sewer Asset Management (reported by Frédéric Cherqui)

EUROpean – Sewer Asset Management network aims to share recent research results and facilitate collaboration among European researchers. This network organizes a workshop each year in June:

- June 2013 in Lyon: 12 participants from France and Germany;
- June 2014 in Berlin: 26 participants from Austria, France, Germany, Netherlands, Norway and Switzerland; and,
- June 2015 in Amsterdam: 20 participants from France, Germany, Netherlands, Norway and Switzerland.

The workshops are always free of charge and open to all researchers (however, the number of participants is limited to 25). Participants are invited to present their current research and time is reserved for collaborative work, in order to identify shared topics and define further collaboration

among the interested participants (e.g., data and methodology sharing; collaborative publications and projects, etc.). Suggested topics include:

- Inspection techniques, CCTV and sewer condition assessment
- Uncertainties in condition assessment
- From sewer condition to serviceability
- Deterioration modelling
- Strategic planning and operational asset management
- Cross between technical, financial and accounting approaches
- Socio-economic approaches.

Similar to the last years, the next workshop will be held on 6th and 7th June 2016 in Strasbourg, France, hosted by Irstea-Enges. If you wish to participate, register via the following on-line form:

https://form.jotformeu.com/eurosam/euro-sam_4 .

You can also contact the organizing committee: Caty Werey (Irstea – Enges joint research unit GESTE, Strasbourg), caty.werey@engees.unistra.fr ; Nicolas Caradot (KWB, Berlin), nicolas.caradot@kompetenz-wasser.de; and, Frédéric Cherqui (DEEP - INSA Lyon): frederic.cherqui@insa-lyon.fr

News from OTHU

Since 1999, 12 research laboratories from Lyon (France) have developed a long term field-observatory (named OTHU) with the support of the Greater Lyon city council and the Rhone-Mediterranean Corsica water agency. This observatory gathers a multidisciplinary team with competencies in climatology, hydrology, fluid mechanics, geography, soil sciences, chemistry, biology, microbiology, and social sciences.

It is dedicated to the study of a wide range of phenomena associated with urban drainage. OTHU undertakes intensive continuous monitoring of climatic parameters, water flows and pollution at four experimental sites, in addition to many regular and specific monitoring campaigns. More than ten additional sites are also monitored occasionally in order to validate certain assumptions or trends.

In 2015: The experimental site located in Chassieu has been retrofitted to strengthen the reliability of collected data. The new observatory-based research program (2014-2018) is in progress with some innovative aspects such as:

- improving knowledge and management of BMPs (Environmental performance evaluation at local scale, in particular their role regarding micropollutants, conditions of their social acceptance, potential health hazards, asset management of BMPs at a city scale),
- management of sediments and mephitic sewer gases in networks,
- impact of global change on periurban streams and groundwater quality, and
- health and environmental impact assessment of wet weather discharges by means of specific innovative metrological devices and approaches (biosensors, biological indicators, etc.).

In 2015, among other numerous research projects, the project CHRONOTHU was launched. It was carried out in order to highlight temporal evolution trends based on a long-term time series of data collected at different experimental sites for more than 10 years. The project studies the evolution in terms of climate (rain and dry weather regime, air temperature), groundwater characteristics (water temperature and depth), and impacts of urban development on the quantity and quality of water discharged into aquatic environments (river and groundwater).

For more information, see the following references:

- Sun S., Barraud S., Castebrunet H., Aubin J. -B., Marmonier P. (2015). Long-term stormwater quantity and quality analysis using continuous measurements in a French urban catchment. *Water Research*, 85 (2015) 432-442. [DOI: 10.1016/j.watres.2015.08.054](https://doi.org/10.1016/j.watres.2015.08.054).

- Barraud S., Sun S., Castebrunet H., Aubin J. -B., Marmonier P. (2015). *Etude de l'évolution et de la variabilité des quantités et de la qualité des eaux urbaines en temps de pluie sur la dernière décennie – Capitalisation des chroniques de l'OTHU (Projet CHRONOTHU)*. Report 2013 2882 - Agence de l'Eau Rhône-Méditerranée-Corse , Lyon, France, 92 p. (in French).

The year 2016 already looks promising for the observatory, with:

- the further development of the observatory-based research program 2015-2018
- the operation of a new experimental ECOcampus site (dedicated to the monitoring of source control measures)
- the Novatech international conference organized with the Graie association, with the opportunity for participants to visit OTHU experimental sites.

For more information on the OTHU project or collaborations, do not hesitate to contact us (info@othu.org) and visit <http://www.othu.org>

The Mentor project

The Mentor project, funded by the Ecotech program of the National Agency for Research, held its final meeting in Nantes on Feb. 4th, 2016.

The program dealt with the following topics:

- Introduction of the recent French regulations regarding the monitoring of sewer systems by C. Venturini of the Ministry of Environment,
- Presentation of the project by F. Larrarte (IFSTTAR/LEE);
- How integrated monitoring induces organization evolutions by S. Vareilles & J.Y. Toussaint (UMR EVS), B. Riochet (Nantes Metropole);
- Computational calibration of a stage–discharge relationship for overflow facilities by M. Dufresne (UMR Icube) , G. Lipeme (INSA-LYON/LDEEP), J. Vazquez (UMR Icube);
- Reliability of velocity measurements in sewers, by F. Larrarte & C. Joannis (IFSTTAR/LEE), N. Rivière (INSA-LYON/LMFA), G. Lipeme (INSA-LYON/LDEEP);
- Computational calibration of a relationship between two distant water depths and a discharge in a sewer by S. Isel (3Deau);
- Uncertainties in pollutant discharge measurements by C. Joannis (IFSTTAR/LEE) , G. Chebbo (LEESU); and,
- Conclusion by L. Semblat (FNCCR- National Federation of Network Operating Collectives).

This meeting emphasized two kinds of interactions between technical devices and human organisations, and between site specific hydrodynamic conditions and sensors. New perspectives were provided especially regarding numerical modelling of measuring sites (computational calibration) and many discussions were developed with the audience coming from municipalities, water authorities, and consultants.

The proceedings and the technical guides produced by the MENTOR project can be downloaded on the web site <http://www.gemcea.org/projets/mentor> ; contact : Frederique.larrarte@ifsttar.fr

French Expertise for CGEDD (Conseil Général de l'environnement et du développement durable)

A scientific seminar was organised to support a governmental expertise mission dedicated to the governance of stormwater management.

In 2015, the Cabinet director of the Minister of Ecology assigned an expertise mission on the governance of stormwater management to the General Council of the Environment and Sustainable Development (CGEDD - Conseil Général de l'environnement et du développement durable). Currently, she is waiting for proposals how to create conditions for a more integrated stormwater management policy. The mission is coordinated by Pierre-Alain Roche, general engineer and former director of a water agency. To encourage listening to, and dialogue with, stakeholders and enrich the deliberations, the CGEDD organized seven thematic seminars between June and December, in different cities, and a scientific seminar in September. During this seminar, the laboratories involved in the URBIS observatories network presented the state of knowledge in four workshops:

- Quantitative hydrology for sustainable cities,
- Pollutants and impacts,
- Runoff management facilities, and
- Stakeholders, territories and governance.

The seminar was concluded by Prof Bernard Chocat, from DEEP - INSA Lyon. More than 100 attendees contributed to discussions, and together with the material collected during other seminars, they will enlighten the Ministry's policy regarding stormwater management.

Proceedings and the final report will be available at/

<http://www.cgedd.developpement-durable.gouv.fr/publications-r16.html> , or contact Nathalie.lenouveau@cerema.fr

News from LMFA at INSA Lyon

A new PhD student at Irstea has been working on developing a better understanding of the exchange of water during urban floods between the water stored in flooded streets and the water entering the blocks of private houses, large buildings, gardens, courtyards etc... These aspects will be investigated both experimentally on a new experimental set-up to be built at Irstea Lyon and numerically on real floods such as the Oullins flood (south of Lyon, France) in 2008.

Contact: Emmanuel.mignot@insa-lyon.fr

GERMANY (REPORTED BY MANFRED SCHÜTZE, GERMANY)

As in the previous years, a wide range of projects related to urban drainage is carried out at German universities, research centres, water associations and industry. Many of these projects are carried out as joint projects of different partners. Therefore, many project teams involve researchers, application experts and end-users. The German Ministry of Education and Research, within its funding priority "Sustainable Water Management", is currently funding a number of thematic areas related to urban drainage. These action areas, each of which covers about a dozen of projects, include the following:

- "Smart and Multifunctional Infrastructural Systems for Sustainable Water Supply, Sanitation and Stormwater Management" (INIS) - <http://www.bmbf.nawam-inis.de/en>
- Future-oriented Technologies and Concepts for an Energy-efficient and Resource-saving Water Management (ERWAS) - <http://www.bmbf.nawam-erwas.de/en>
- Risk Management of Emerging Compounds and Pathogens in the Water Cycle (RiSKWa) – <http://www.bmbf.riskwa.de/en/index.php>

- Regional Water Resources Management for Sustainable Protection of Waters (ReWaM) - <https://bmbf.nawam-rewam.de/en/>
- Integrated Water Resources Management (IWRM) - <http://www.bmbf.wasserressourcenmanagement.de/en/index.php>
- KMU innovation – a special fund dedicated to supporting small and medium enterprises.

Space within this JCUD Newsletter does not allow presenting each project in detail, but the reader is invited to consult the listed websites, which are linked with those of the individual projects, and refer in total to the activities of more than 100 academic and non-academic partner institutions.

Just as examples, two projects are mentioned here: The SYNOPSE project, which will develop and improve methods for the generation of synthetic rainfall data, which will be useful for a wide range of urban drainage applications. Within the SaMuWa project, which views the city as a hydrological system undergoing a change, various measures (including, among others, open space planning, real time control, improved data processing) for preparation of drainage systems for the future are investigated and put into practice. The links given above will lead to a multitude of ongoing projects. Final results of the “INIS” measure will be presented at a dedicated conference on 20 & 21 April 2016 in Berlin. This year will also see the preparation of new projects related to global water resources management.

Also in 2015, the Central European Researchers’ Simulation group (known as “HSG” to the German-speaking community) continued the series of their informal, yet highly productive meetings. For example, the new A131 guideline document of the German Water Association (DWA) on design of wastewater treatment plants incorporates also some findings of the earlier HSG meetings.

Among the highlights of events forthcoming in 2016, the **IFAT, the world’s largest trade fair on water and wastewater technology**, should be mentioned. This fair will be held again in Munich (May 30 – June 3, 2016) (www.ifat.de), and as in previous years, visitors and exhibitors from all over the world are expected in Munich at the fair.

Looking forward to an exciting 2016 - and to meet you at some event in Germany or elsewhere!

Manfred Schütze

ITALY (REPORTED BY PATRIZIA PIRO)

The Urban Water Park at the University of Calabria: results and research advancement

Progressing urbanization connected with the demographic growth of the last decades has led to an increase of impervious surfaces in urban catchments at the expense of natural areas. The major effects of the alteration of natural hydrological cycle are the reduced infiltration and evaporation

capacity of urban catchments, resulting in increased surface runoff and reduced groundwater recharge. Moreover, the frequency of extreme rainfall events, characterized by high intensity and short duration, is expected to increase in the immediate future, as a consequence of the global warming, and with that the occurrence of flooding in urban areas.

The increasing frequency of flood events proves that a new design paradigm for drainage systems is needed; this approach must aim to restore the natural hydrological cycle by increasing evapotranspiration and infiltration capacity of urban catchments. In recent years, Low Impact Development (LID), an innovative approach of land development, has gained increasing popularity. LID is a green approach to stormwater management that seeks to mimic the natural hydrology of sites using decentralized micro-scale control measures.

At the University of Calabria in the Urban Water Park of the Vermicelli watershed a series of low environmental impact solutions associated with traditional hydraulic infrastructures have been implemented. In the context of a sustainable management of land and water resources, the Urban Water Park may serve as a demonstration site for applications of sustainable solutions associated with traditional techniques in the Mediterranean area.

The Park development was funded by the project “Integrated and sustainable management service for the water - energy cycle in urban drainage systems” of the National Operational Program - Research and Competitiveness 2007– 2013 (PON-REC), and co-financed by the European Regional Development Fund and the National Resources Grant. The park includes: an extensive green roof, a permeable pavement and a biofiltration system. Experimental sites have been monitored since 2013. High resolution climatic and hydrological data are acquired and then processed and stored in SQL databases. The main purpose of the project was to investigate the benefits and hydrological performance of LIDs at field scale. Starting with the collection of experimental evidence and data, the research activities have followed different directions.

As widely discussed in the literature, one of the key limiting factors in the widespread adoption of such systems is the lack of adequate analytical and modelling tools. Although several stormwater models can be applied in LID analysis, most of them do not incorporate accurate descriptions of the underlying hydrological processes and this may lead to inaccurate predictions. For these reasons, the research has focused on the numerical description of the hydraulic behaviour of LIDs under different boundary conditions. One of the main characteristics of LIDs is the high infiltration and evapotranspiration capacity, provided by a highly conductive porous medium. This high permeability implies a strongly unsaturated behaviour of the substrate. From the previous considerations, the first step was the characterization of the unsaturated hydraulic properties of the substrate used in green roofs. In particular activities have focused on the determination of both soil water retention curve and unsaturated hydraulic conductivity. Results confirmed the highly conductive behaviour of the substrate and represented the base for the subsequent numerical modelling.

A physically-based model has been studied and used, in view of its high accuracy achievable by a well-defined model. Comparisons with experimental data confirm the suitability of mechanistic models in correctly describing the hydraulic behaviour of LIDs.

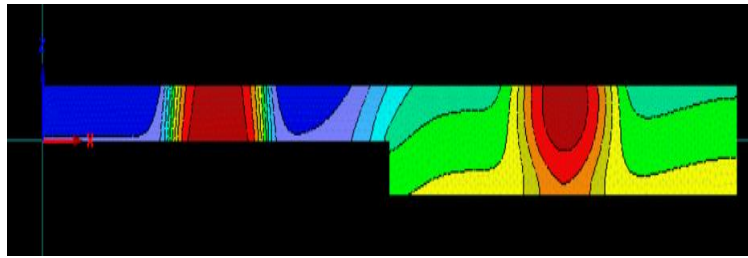


Figure 1. 2D numerical modelling of LIDs

It is well known that the performance of the LIDs is mostly affected by the health status of the vegetative component. To follow this notion, the hyperspectral remote sensing has been used for the eco-physiological analysis of the Green Roof. An extensive monitoring campaign is currently ongoing.

Together with field-scale data, laboratory research activities are conducted on different test beds. One of the aims of the laboratory campaign is to develop a methodology for the application of VNIR-SWIR spectroscopy models striving to characterize soil-water content by the determination of soil-water retention curve with spectral measurements.

As reported in the literature, LIDs improve water quality. Processes of adsorption-desorption of solutes in porous media, together with bioremediation induced by plants, reduce the amount of pollutants in stormwater. Since 2013, water quality analyses of the installed LID effluents have been performed. In particular, the analyses have focused on the determination of different types of pollutants: physical parameters (Total Suspended Solids, Temperature, pH, Electrical Conductivity, etc.), nutrients (Total Nitrogen, Phosphorus, Organic Matter, etc.), and Heavy Metals (Cadmium, Lead, Copper, Iron etc.).

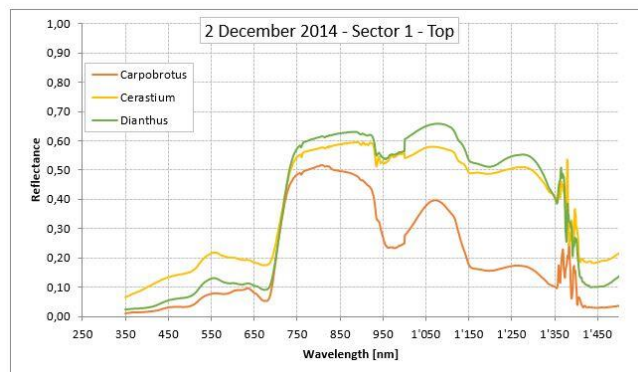


Figure 2. Hyperspectral analysis and reflectance spectrum for the different plants installed on the Green Roof

JAPAN (REPORTED BY FUMIYUKI NAKAJIMA AND TAKASHI SAKAKIBARA)

The IWA World Water Congress and Exhibition will be held in Tokyo in 2018, and two years later, in 2020, also the Olympic Games. This provides an increased motivation to accelerate the improvement of stormwater management in Japan, especially in Tokyo.

Basic Act on the Water Cycle

To date, a number of independent water cycle measures have been taken in various fields, but from now on, these independent measures must be interconnected and coordinated to achieve the common goal of maintaining and/or restoring the sound water cycle. Many measures may also require comprehensive coordination by the government. For these reasons, the Basic Act on the Water Cycle was introduced in July 2014 to promote water cycle-related measures in a comprehensive and integrated way.

The Basic Plan concerning the Water Cycle, which was launched in FY 2015 for a period of 5 years, was designed to achieve the objective stipulated in Article 13 of the Act for promoting the water cycle measures comprehensively and systematically, and under the basic plan on water cycle measures in Japan. The Plan consists of three parts: basic policy of water cycle measures, comprehensive and systematic measures on the water cycle implemented by the government, and requirements for the comprehensive and systematic promotion of measures on the water cycle.

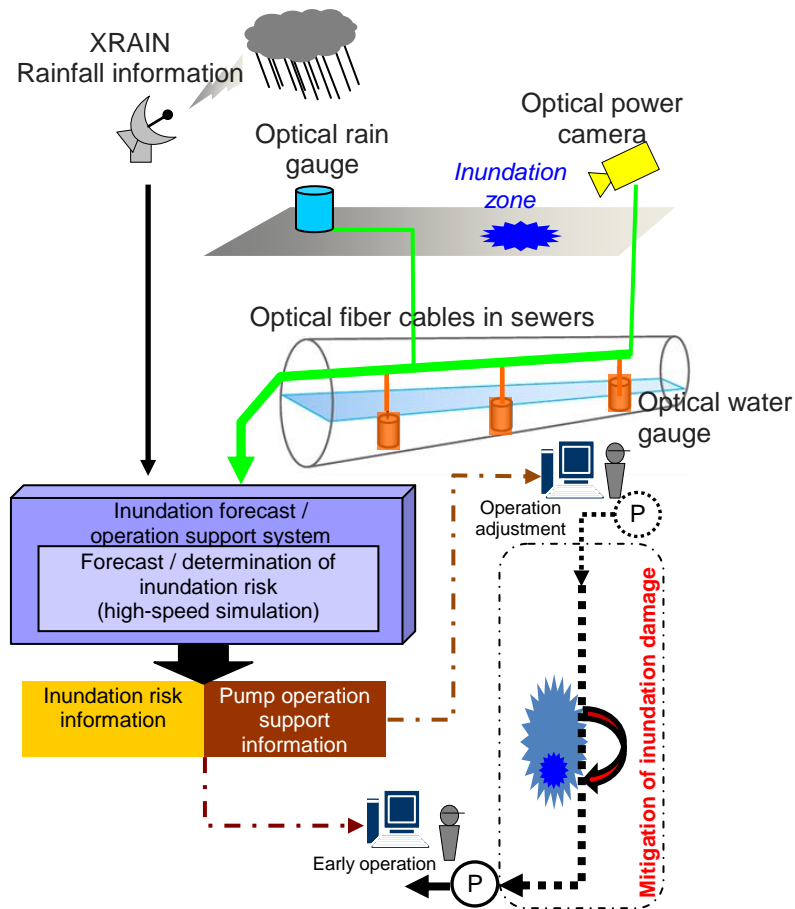
Operation Support System for Inundation Control by ICT

Ministry of Land, Infrastructure, Transport and Tourism has been advancing the B-DASH (Breakthrough by Dynamic Approach in Sewage High Technology) Project since 2011. The objective of this project is a full-scale demonstration of new technologies at real WWTP sites and sewer networks. The technology covers all kinds of sewerage system such as wastewater treatment, sludge treatment and disposal, pipe inspection and stormwater management. Regarding stormwater management, two projects are currently underway: (i) 'Operation support system for inundation control by ICT', and (ii) 'Torrential rain management in small urban areas'. This article focuses on the former project.

This project aims to mitigate inundation damage through establishment of a system that integrates individual technologies using ICT for the detection, transmission, analysis, and provision of information on rainfall, water levels, etc. and efficient operation of existing inundation countermeasures. The experimental field, the Eba area (3.29 km²) in the Hiroshima City, is located at the mouth of the Ota River and has often suffered inundation due to its topographical characteristics and wastewater inflow from the surrounding area. In this project, rainfall and water levels in sewers in the area are measured with three ground-level rain gauges (including the existing ones) and thirteen water level gauges. These gauges utilize fibre-optic sensors, which work without electric supply at the measurement sites. X-band Multi Parameter radar, called XRAIN, is also used to obtain rainfall information, including a short-range forecast. All this information is collected in real time through the optical fibre cables laid in the area with a total length of about 4 km and used to provide information on inundation forecast and support of pump operation, etc. (see the Figure). The system construction was completed and data collection and monitoring started in 2014. At present, the effectiveness of the system in reducing inundation damage is being verified against the collected data. It is also planned to prepare Technical Guidelines on the basis of the obtained results, to ensure their wide dissemination. For more information, visit the following websites:

XRAIN http://www.mlit.go.jp/river/pamphlet_jirei/pdf/xrain_en.pdf?0930

B-DASH project http://www.nilim.go.jp/lab/ecg/english/b_dash.htm



Outline of the experimental data acquisition system

THE NETHERLANDS (REPORTED BY JEROEN LANGEVELD)

In the Netherlands, the urban drainage research program, funded and supported by the Dutch urban drainage sector during the period 2010-2015, has received new funding for the period 2016-2020. This means that at TU Delft, new 3-4 PhD positions will open up in 2016/2017, within this program. The program covers four themes:

Theme 1 Asset management. The research within this theme focuses on alternative sources of information (or ways of working) for organizing the asset management in such a way that sewer system performance (serviceability) will be maintained at the desired level. Nikola Stanic successfully defended his PhD thesis “Assessment methods for structural and hydraulic properties of concrete sewer pipes” and Wouter van Riel is about to finish his thesis on a similar topic. Future work will focus on combined platforms for sewer inspection, led by Mathieu Lepot, and on automatic pattern recognition, led by Lisa Scholten, who started a tenure track at Delft University of Technology in 2015.

Theme 2. Operation and maintenance. The research projects within this theme will provide knowledge on the relationship between the operation and maintenance strategies applied and the overall system performance. This topic is addressed by Johan Post, who focuses on failure mechanisms of gully pots and house connections. In addition, Marco van Bijnen is conducting

research on the relationship between the condition of the sewer system, with respect to root intrusion and sediment beds, and hydraulic performance.

Theme 3. Dynamics of sewer systems. Continuous monitoring of hydraulics and wastewater quality is applied at a number of locations in the Netherlands. These data open an enormous opportunity to study the dynamics of sewer systems themselves, and in relation with wwtps and receiving waters, and to enhance the knowledge on in-sewer processes. Petra van Daal-Rombouts works on this topic, using the extensive database of Waterboard De Dommel developed within the KALLISTO project. As part of the EU-QUICS project (www.quics.eu), Antonio Rodenas studies the impact of uncertainties in integrated catchment studies, with focus on spatial and temporal variations of rainfall. This work nicely connects with the research conducted by Marie-Claire ten Veldhuis in the field of rain radar.

Theme 4. Sustainable urban water cycle. Theme 4 focuses on research on new concepts for the urban water cycle enabling energy recovery and reuse of materials. The main issues to be dealt with are the conveyance of black water. The transport of domestic slurries (black water, possibly including kitchen waste) is a part of a comprehensive research project conducted by PhD student Adithya Thota Radhakrishnan and combines pilot-scale research with multiphase modelling.

More information on the above projects can be obtained via j.g.langeveld@tudelft.nl

The partners of the research program are (in alphabetical order):

ARCADIS, Deltares, Evides, Gemeente Almere, Gemeente Breda, Gemeente 's-Gravenhage, Gemeentewerken Rotterdam, Gemeente Utrecht, GMB Riolerings technieken, Grontmij, KWR Watercycle Research Institute, Royal HaskoningDHV, Stichting RIONED, STOWA, Tauw , Vandervalk & De Groot, Waterboard De Dommel, Waternet en Witteveen+Bos.

The Dutch KALLISTO project (<http://www.samenslimschoon.nl>) is based on an integrated approach to cost effective and efficient water management of the catchment area of Eindhoven. The involved municipalities, water boards and universities developed innovative solutions for a new approach to integrated water management, based on integrated modelling, large scale continuous monitoring and pilot plants for physico-chemical stormwater treatment. A combination of RTC measures, river aeration and wwtp optimisation have resulted in a cost effective solution complying with the integrated water resources management approaches required by the EU Water Framework Directive.

NEW ZEALAND (REPORTED BY ELIZABETH FASSMAN-BECK)

In Auckland, the **Auckland Council** Stormwater Unit's activities are informed by The Auckland Plan, which aims to deliver the vision of Auckland becoming the world's most liveable city. The Auckland Plan identifies strategic direction and priorities of environmental management. Some of these directly relate to progressing Auckland towards a Water Sensitive City through the implementation of Water Sensitive Design (WSD). These include priorities around:

- Auckland's Environment - valuing our natural heritage, sustainably managing resources, and treasuring our coastline, harbours, islands and marine areas;

- Urban Auckland - realising quality, compact urban environments, and demanding good design in all development;
- Auckland's physical and social infrastructure - optimising, integrating and aligning network provision and planning, and to protect, enable, align, integrate and provide social and community infrastructure for present and future generations.

The Proposed Auckland Unitary Plan (PAUP) will be the rulebook that shapes the way Auckland grows. It will set out what can be built and where, in order to create a higher quality and more compact Auckland while still providing for rural activities and maintaining the marine environment.

The PAUP contains a number of initiatives designed to achieve better ecological outcomes, including:

- measures to prevent the piping of both permanent and intermittent streams
- measures to better protect riparian zones
- measures to reduce runoff volumes and retain groundwater recharge where discharging to freshwater receiving environments
- a requirement to consider WSD, in particular for large scale development, where there is the greatest scope for integrated outcomes

Retaining intermittent streams during development of greenfields areas results in smaller catchment areas prior to discharge to the receiving environment. This, together with the requirement for reducing runoff volumes through infiltration or re-use, requires a predominantly at-source management approach, rather than end-of-pipe catchment-scale solutions. This presents new challenges for both Auckland Council and the development community, but will deliver better outcomes, in particular for freshwater receiving environments.

The Stormwater Strategic Plan has seven major objectives to support the Auckland vision: Safe Communities, Supporting Growth, Healthy and Connected Waterways, Collaborative Outcomes, Efficient Business, Prioritised Investment, and High Performing Teams. Supporting Growth aims to enable growth through water sensitive development and provision of quality stormwater infrastructure. Healthy and Connected Waterways seek to ensure stream, groundwater and coastal water values are maintained and enhanced and communities are connected to them.

New technical resources include the Stormwater Code of Practice and the Guideline Document Water Sensitive Design (GD04) are freely available online:

<http://www.aucklandcouncil.govt.nz/en/environmentwaste/stormwater/Pages/home.aspx> (Choose Professional Resources, then scroll down to Design Standards). For further information, contact Judy Ansen (Judy-Ann.Ansen@aucklandcouncil.govt.nz)

At the **University of Canterbury**, the Department of Civil and Natural Resources Engineering's HydroEco Research group lead by Drs. Tom Cochrane, Aisling O'Sullivan, and Ricardo Bello-Mendoza, has been very active in stormwater research in NZ. In early 2015, former PhD student Louise Murphy successfully defended her PhD thesis on "Quantifying Spatial and Temporal Deposition of Atmospheric Pollutants in Runoff from Different Pavement Types". Dr Murphy published her work in *Science of the Total Environment, Water Air & Soil Pollution*, as well as in local NZ journals and reports.

In collaboration with Dr. Ignacio Fraga from the University of La Coruna, Portugal, the group published a paper on “ A novel modelling framework to prioritize estimation of non-point source pollution parameters for quantifying pollutant origin and discharge in urban catchments” in the *Journal of Environmental Management*. This publication provides the first description of the groups MEDUSA (Modelled Estimates of Discharges for Urban Stormwater Assessment) stormwater model.

Frances Charters, PhD candidate, has focused on improving the MEDUSA event-based pollutant load model that predicts sediment and heavy metal loads from individual urban surfaces based on rainfall characteristics (pH, intensity, duration, antecedent dry period). The model is now being applied to a catchment of concern for the local Regional Council to help identify pollutant hotspot areas and to guide the selection of appropriate treatment options. The research has also furthered knowledge of pollutant generation processes in a low intensity rainfall climate and of particle size distribution variance in the sediment within untreated urban runoff. Related papers have been published in *Science of the Total Environment* and *Water Research*. The model framework was also presented at the 13th ICUD Conference in Malaysia in 2014, and the particle size distribution variance work was presented at the EWRI World Water Congress in 2015.

Salina Poudyal, PhD candidate, has been working on collecting stormwater samples from carpark sumps to understand the dynamic nature of contaminant loadings (TSS, heavy metals, hydrocarbons and pathogens) and particle size distributions from three different land-use (residential, commercial and industrial) areas under different rain conditions. Findings are expected to contribute to a better understanding of (a) the relationship among pollutants to particle size distribution, rainfall characteristics and land use, and (b) the selection of appropriate stormwater filter devices.

Fabio Cabral, ME student, has been working on assessing the source and transformation of nitrogen compounds in a low lying urban stormwater drain network in Christchurch (Haytons Stream). Knowledge gained from this project will be used to recommend best management practices for mitigating nitrogen compound impacts in the stream.

SOUTH AFRICA (CONTRIBUTED BY Dr KEVIN WINTER, FUTURE WATER INSTITUTE, UNIVERSITY OF CAPE TOWN, kevin.winter@uct.ac.za)

South Africa is a water scarce country that is in the grip of a severe drought attributed partly to *El Niño* and climate change, and to the occurrence of one of the driest years in over a century. In these circumstances urban drainage and stormwater management can easily fall below the radar in the struggle to address issues of water supply. Moreover, South Africa is a developing country that is attempting to resolve multiple challenges that have arisen from its socio-political history as a result of its colonial and Apartheid past, and at the same time is hampered by diminishing financial resources and human capacity. Meanwhile the impact and frequency of water risks is increasing which includes rainfall events that result in localised floods. Therefore advancement in drainage must attend to reducing the impact of flooding and flood risk, as well as the use of stormwater and runoff as alternative options to conventional water supply; extending the use of ‘fit for purpose’ water; and ensuring that water quality in runoff does not compromise human health and ecosystems. These critical issues and others prompted the Water Research Commission of South Africa, a government funded research wing of the national Department of Water and Sanitation, to support

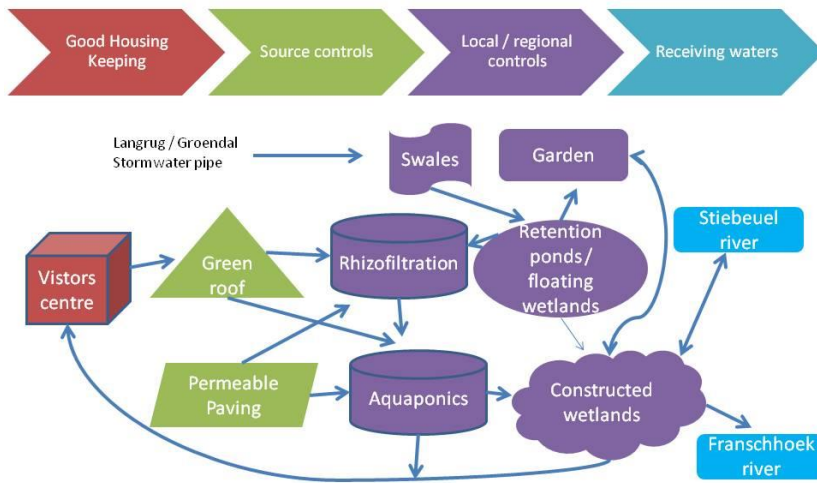
two important research projects of national interest that are intended to raise the profile of, and interest in, SuDS and WSUDS. Both projects were awarded to the University of Cape Town's Urban Water Management research unit for the duration of 5 years commencing in 2015. The first is a feasibility study to evaluate the potential of using Water Sensitive Design principles to strengthen planning for water sensitive cities of the future (WRC Research Project K5/2412). The study involves a scoping exercise to evaluate suitable sites for a feasibility project, but also includes sharing the water sensitive urban design concept, framework and guidelines with relevant stakeholders. The second project is for the development of a Water Sensitive Design Community of Practice programme (WRC Research Project K5/2413). It involves testing concepts, frameworks and options of WSUD with all relevant stakeholders. In the long term it also envisages a programme that will identify and establish regional clusters of emerging champions who will exercise new forms of leadership in knowledge and policy generation.

These two projects led to the invitation to Professor Bill Hunt, from North Carolina State University, to present a series of one-day lectures in five major centres in South Africa. His talks on SuDS and Water Sensitive Design – implementation, operation and management – were well received by an enthusiastic audience of close to 500 people from local authorities, consultancies, and from research and academic institutions. The popularity and interest in these talks provided the catalyst to start the conversation about urban water management and practice with a wider audience than could be reached ordinarily by researchers alone.



Professor Bill Hunt in action at the University of Cape Town, November 2015

Another important initiative is the introduction of a SuDs Centre under the auspices of the Western Cape regional Government situated in a small town of Franschhoek in the Western Cape, about 110 km north of Cape Town. It is the site of a decommissioned waste water treatment plant. The centre will become a research-led initiative that aims to explore and evaluate alternate treatment options for surface water runoff, including biological treatment and the use of bio-mimicry. A secondary, but equally important benefit will be to train officials and practitioners in the operations and management of these new forms of treatment in support of a shift toward sustainable drainage. The site is strategically positioned down slope of an informal settlement, from which there is a constant release of contaminated surface water that is eventually discharged untreated into a local river. This is a four year project, the first of its kind in the country, and involves government officials, consultants and researchers in developing the concept and plan followed by implementation (see the concept below). The project began in early 2015 and will continue for three more years.



Conceptual schematic for the SuDs Centre, Franschhoek, South Africa.

SWEDEN (REPORTED BY MARIA VIKLANDER, LULEÅ UNIVERSITY OF TECHNOLOGY, LULEÅ, SWEDEN)

New research projects

An interdisciplinary research project on **Sustainable Urban Flood Management** brings together researchers in Water Resources Engineering, Urban Water Engineering, Risk Management, Architecture, Food Technology and GIS at Lund University, in cooperation with the faculty of Culture and Society at Malmö University, and addresses the consequences of heavy rainfall and the way of coping with it by the society. Today's cities have not been designed to withstand extreme downpours and furthermore it is also not clear which public agencies are responsible for minimizing the risk of damage in the case of heavy rainfall. The project will study these aspects more closely and will make specific organization units, agencies and individuals, who have not previously been very active in this field, to work together. The overall aim of the project is to suggest how the society can prevent and manage big floodwater masses so that damage is minimized. Nevertheless, the primary objective of the project is not to develop robust construction directives, but to take a holistic view serving to see how the society can best coordinate its efforts in addressing this problem.

In 2015, the Stockholm Harbour and Luleå University of Technology initiated a cooperative project on **Sustainable urban snow handling**, in order to develop a nationwide applicable model for environmentally friendly and more efficient urban snow handling, including snow removal as well as temporary and permanent snow deposits. Every winter, hundreds of thousands of tons of polluted snow need to be removed from cities in cold climates for operational and safety reasons, and properly disposed of either on land, or in water. This snow contains pollutants and must be stored. According to the Swedish national regulations, (urban) snow is classified as waste, and waste disposal into water is prohibited. Organisations and businesses that wish to dump snow into water are, therefore, required to apply for and obtain time-limited permits (exemptions) from the Swedish Environmental Protection Agency. The agency requires that operators dumping used snow into water need to characterize and quantify the pollution caused by the dumped snow in the receiving waters, and compare it with pollution from other sources. In this project, the feasibility of environmentally safe disposal of urban

snow into the harbour of Stockholm will be assessed by means of a proposed snow management tool (SMT).

Another project led by Luleå University of Technology, **Assessment and modelling of green infrastructure for urban catchments**, addresses the need for tools for planning and assessment of green infrastructure, i.e. alternative measures for stormwater management in urban areas. It is a cooperative project with the Laboratory DEEP at INSA Lyon, France. The project aims to improve models for green infrastructure, based on monitoring programs at different field sites in Sweden and France. These sites comprise different infiltration facilities and green roofs. Their monitoring allows to study underlying processes in detail and also to address the effects of various climatic conditions. Uncertainties in the whole process extending from field measurements to modelling results will be addressed, with a special focus on data from sensors, which are not commonly used in urban drainage (e.g. soil moisture). The model development will focus on physically based models, which are capable of supporting the planning and design of green infrastructure in the context of urban drainage and stormwater management.

Graduate Theses

The following graduate theses on urban drainage were defended at LTU in 2015.

Jonathan Mattsson (Luleå University of Technology) defended his PhD thesis “Impacts on sewer performance due to changes to inputs in domestic wastewater”, in which he discussed the need to place changes in inputs in the context of larger societal trends, in order to properly understand their full implications for future objectives, when relying on sewers as carriers of domestic wastewater.

Oleksandr Panasiuk (Luleå University of Technology) published his licentiate thesis “Towards better practices in detection of wastewater pollution in stormwater sewers and volume estimation of SSO discharges”, of which aim was to review and improve the strategies used for detection of wastewater inputs to stormwater sewers and their locations, and to address the issue of quantification of untreated wastewater discharges into the receiving waters by developing two methods: one for SSO discharges and one for the estimation of the wastewater amounts in stormwater sewers.

Conferences

In December 2015, the Swedish Water and Wastewater Association in collaboration with the Swedish national centres of excellence in water research arranged a two-day **Research and Innovation Conference on Sustainable Water Services** in Stockholm, Sweden, attracting more than hundred participants. Leading national and international experts gave presentations in their respective fields, in order to summarize the historic, current and future development of water research in Sweden and abroad. The conference focused on sustainable stormwater solutions, resource efficient wastewater management for better environment, and safe drinking water. Among others, issues regarding stormwater pollutants, water in the sustainable city and innovative stormwater management and research were addressed in several sessions and workshops.

UNITED KINGDOM (COMPILED BY LIAN LUNDY, MIDDLESEX UNIVERSITY)

Abertay University – research, conferences and awards

Rebecca Wade (R.Wade@abertay.ac.uk) reports that the Urban Water Technology Centre (UWTC; www.uwtc.abertay.ac.uk) has recently undertaken several drainage projects for the Scottish Government under their Centre of Expertise for Waters (CREW) initiative. CREW aims to connect research and policy to support the implementation of water policy in Scotland, and recent **CREW projects** carried out by UWTC included:

- Diffuse pollution mitigation with multiple benefits
- Source control SUDS
- Scottish Rural Development Planning guidance for Rural Sustainable Drainage Systems (RSuDS)
- Design and Build Guidance for RSuDS
- How do we increase public understanding of the benefits provided by water?
- Innovative solutions for sustainable drinking water treatment at small to medium scales
- Practical measures for reducing pollutant loads from septic tanks

All CREW reports can be accessed via <http://www.crew.ac.uk/publications>

Abertay University is in the final year of a 3-year research project that is evaluating the performance of a large species **SuDS treepit** that has been retrofitted to a busy leisure centre car park. Results to-date confirm that the system reduction in flow quantity of 90% surpasses greatly the 47% reduction required by the municipality, in order to reduce a 1 in 30-year storm event to the equivalent of a 1 in 5-year greenfield event. Results for water quality are also positive.

In 2015 UWTC staff at Abertay University (www.uwtc.abertay.ac.uk) completed a 3-Year **EU MED project** in collaboration with UPV (Valencia, Spain) and municipal partners in seven countries. The E²STORMED project (<http://www.e2stormed.eu/>) aims to improve energy efficiency in the urban water cycle and in buildings by promoting the use of innovative storm water solutions such as Sustainable Drainage Systems (SuDS) in MED cities. The E²STORMED project has developed a Decision Support Tool for use in urban stormwater management. It can be used in one of the six supported languages (English, Spanish, Italian, Croatian, Montenegrin and Greek) and can be freely downloaded from the results page of the project web site; <http://www.e2stormed.eu/results/>.

SUDSnet, an international network for SuDS researchers, practitioners, agencies and developers, held its **9th Sudsnet conference** in September 2015. The conference, co-organised by Abertay and Coventry Universities, was well attended and abstracts and slides from the event can be accessed at <http://sudsnet.abertay.ac.uk/downloads.htm>.

In November 2015 Abertay University won of a VIBES co-operation award (Vision In Business for the Environment of Scotland, <http://www.vibes.org.uk/>). The award recognised a collaborative effort between the university and business partners, which led to the implementation of innovative source control SuDS units in residential house plots. The partners are Taylor Wimpey Homes, Abertay University, C&D Associates, Central Scotland Green Network Trust and Scottish

Government. Collaborative work continues with monitoring of the units and working with community/residents.

CIRIA – SUDS manual and BeST tool

The SuDS Manual 2015, a timely update of the 2007 publication, covers the planning, design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments. It looks at how to maximise amenity and biodiversity benefits, and deliver the key objectives of managing flood risk and water quality. There is also supporting information covering topics such as materials, landscape design, maintenance, community engagement and costs and benefits. The guidance provides the framework for designing SuDS with confidence and to maximise benefits. Its contents are relevant for a wide-range of professions and roles and it highlights that through engagement and collaboration SuDS can be integrated into the design of urban areas, to create high quality places for future generations. The full manual can be accessed on-line at: www.ciria.org or contact Paul Shaffer (paul.shaffer@ciria.org).

CIRIA has also recently launched **BeST (Benefits of SuDS Tool)**, a free Excel tool (with supporting guidance) to make assessing the benefits of SuDS easier. Without the need for full scale economic inputs, BeST provides a structured approach to evaluating a wide range of benefits, often based upon the overall drainage system performance. It follows a simple structure that begins with a screening and qualitative assessment to identify the benefits to be evaluated further. It then provides support to help quantify and monetise each benefit. On completion of the evaluation, the tool provides a series of graphs and charts based on Ecosystem Services (ESS) and Triple Bottom Line (TBL) criteria. The BeST can be accessed on-line at: www.ciria.org or contact Paul Shaffer (paul.shaffer@ciria.org).

Cranfield University – car park surface sediment research

Jim Harris (j.a.harris@cranfield.ac.uk) reports that a recently completed PhD project studied the accumulation, transport and potential treatment of surface sediment on car parks with channel drains. A series of experiments was undertaken to develop an understanding of the **physical and chemical characteristics of car park sediment at different stages throughout the drainage system**. 1) Sediment accumulated on car park surfaces was sampled from office and retail car parks with different use patterns using a “wet-vacuuming” method. 2) The mobilisation and transport into a channel drain was assessed using simulated rainfall events of a range of intensities. 3) The potential “treatment” of organic pollutants (PAH) within sediment in a channel drain was assessed in laboratory experiments. Both the physical and chemical characteristics of the sediment were shown to be similar across car parks, regardless of use-pattern, and similar to those found on highways, suggesting that the extensive data on the characteristics of highway sediments can be extrapolated to car parks. The sediment washed into drains was also found to be similar to that accumulated on the surface - suggesting that the accumulated sediment is generally mobilised and transported to the channel drain. Finally, potential treatment of pollutants by biodegradation was demonstrated. This work was carried out by James Barlow (supervised by Prof Jim Harris and Dr Tim Hess) with the support of ACO (Martin Fairley) and the EPSRC.

Brian D’Arcy (independent environmental consultant) – Industrial estate pollution mitigation publication

Brian D'Arcy (b.darcy@btinternet.com) reports the forthcoming publication of '**Wealth creation without pollution - Industry, Ecobusiness Parks & Industrial Estates**' (Editor BJ D'Arcy) by IWA publishing. The book includes contributions from a range of academic and practitioner contributors with chapters covering the industrial impacts on the water environment, the

ecobusiness parks concept, sustainable drainage systems for industry and commerce, environmental regulation and contingency planning and how to improve existing pollution problems.

University of Exeter – research and Water Infrastructure Demonstrators' Network,

David Butler (D.Butler@exeter.ac.uk) reports that work at Exeter over the last year has concentrated on above **ground urban flood modelling, stormwater management, urban drainage resilience and sewer misconnections**. For example, Chen et al. (2016a) developed a new coupled 1D/2D (SIPSON/P-DWave) model to analyse the influence of manhole cover weight on the interaction between the dual drainage networks during extreme flood events. Analysis shows that the new approach describes the physical phenomena closer to reality. Chang et al. (2015) considered drainage conditions for various land cover types in urban areas and adopted different approaches with the coupled SWMM/UIM model to reflect the flow dynamics between surface and the sub-surface systems. For a case study in Taiwan, flat roofs with surrounding walls acting as temporary detention ponds were properly reflected via the model. Chen et al. (2016b) developed GIS-based tools that are generically applicable to various case studies with different availability and quality of data. The tools can combine flood hazard information, land use and vulnerability characteristics to determine the damage and risk under various climate scenarios. Applications in European and Asian cities have shown the flexibility of the tools. In a Dhaka case study (Khan et al. 2016), future urban development scenarios projected by an urban growth model were further applied to the flood risk assessment. The results helped urban planners understand the potential flood impacts for different urban development strategies and determine the optimum master plan for urban growth.

A least-regret methodology was developed by Casal-Campos et al. (2015) to evaluate the impact (environmental, economic and social) of various urban drainage strategies in the context of an integrated urban wastewater system. The study highlighted the robustness of low-cost source control infiltration as compared to traditional piped alternatives, although low-regret strategies were found for both green and grey solutions. Mugume et al. (2015) developed a new methodology, global resilience analysis to systematically evaluate the performance of an urban drainage system when subjected to a wide range of structural failure scenarios (breaks or blocks) resulting from random cumulative link failure. The methodology was applied to an existing urban drainage system in Kampala, Uganda to test the effectiveness of potential adaptation strategies in enhancing its resilience. Evidence to evaluate the potential scale, severity and cost of surface water sewer misconnections in England and Wales was evaluated by Ellis & Butler (2015). The pollution potential resulting from domestic misconnections was explored based on sampled data and shown to be significant in certain locations. However, there is still significant uncertainty in the findings and the magnitude of the problem from a national perspective.

The Centre for Water Systems is launching **the Water Infrastructure Demonstrators' Network** in March 2016. Hosted by David Butler, the EPSRC funded workshop is the first in a series of networking and innovation events, providing an opportunity to collaborate with water industry demonstrators, industry professionals and leading academics to monitor and assess novel urban water technology in practice and work together to access demonstrator investment funding.

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Middlesex University – research and capacity building

Bryan Ellis reports that the Urban Pollution Research Centre is currently undertaking research on **surface water misconnections from household discharges** which has led to two publications:

- JB Ellis and D Butler (2015) [Urban surface water pollution problems arising from misconnections](#). *Science of The Total Environment* 551–552,163-174.
- DM Revitt and JB Ellis (2016) [Surface water sewer misconnections in England and Wales: Pollution sources and impacts](#). *Science of The Total Environment* 526, 98-109.

Also of note is news that the UK government (through a joint Defra and Environment Agency initiative) is undertaking a major national review of future strategies and priorities for urban diffuse pollution. A review of *in-situ* contaminated sediment (which includes urban sources) has been completed and will be issued shortly.

The Urban Pollution Research Centre is expanding its research on the multiple benefits provided by SuDS to undertake a multi-disciplinary evaluation of the ecosystem services provided by a range of urban green space types through RC-UK Newton funded collaboration with the University Federal Minas Gerais (Brazil) and Abertay University (UK). Focusing on developing a more nuanced understanding of differential experiences of urban ecosystem services and benefits, **ADEPT: developing the ecosystem Approach to DERive Positive urban Transformations in the context of intersecting vulnerabilities**) utilises and co-implements a range of social and physical science methodologies to inform the development of good practice in policy and/projects that directly or indirectly engage or improve the delivery of urban ecosystem services and benefits. For further information contact: Lian Lundy (L.Lundy@mdx.ac.uk).

The EU TEMPUS Integrating Water cycle management: building capability, capacity and impact in Education and Business (IWEB; <http://iwebtempus.kz>) project in Kazakhstan is drawing to a close. Inputs of potential interest include a handbook entitled **Integrated Water Cycle Management in**

Kazakhstan (Editors B Meyer and L Lundy; available for free via the project website; in English, Russian and Kazakh) and **Integrated Water Cycle Management: a multi-lingual glossary - English – Russian – Kazakh** (Editors R Nurdillayeva and H Jones; also available for free via the project website).

University of Nottingham – research outputs

Emily O'Donnell (Emily.O'Donnell@nottingham.ac.uk) reports on the outputs of the recently completed EPSRC funded **Blue-Green Cities** (www.bluegreencities.ac.uk) consortium. The team have spent the last three years creating methodologies and frameworks, conducting field and lab work, testing novel techniques, and developing models to evaluate the multiple flood risk benefits of Blue-Green Cities. A Blue-Green City aims to recreate a naturally-oriented water cycle while contributing to the amenity of the city by bringing water management and green infrastructure together. A key output is the development of a [GIS Multiple Benefits Toolbox](#) (free to download from the [Blue-Green Cities website](#)) that can help practitioners understand the relevant dominant benefits, and spatial distribution of benefits, for SuDS/Blue-Green infrastructure schemes. This complements existing monetisation techniques. Research is described in a series of [factsheets](#) and a [Key Project Outputs](#) summary (available on the website). Other research outputs include:

- A framework to characterise the uncertainties and barriers to widespread implementation of Blue-Green infrastructure (see Thorne et al. (2015), Overcoming uncertainty and barriers to adoption of Blue-Green Infrastructure for urban flood risk management. Journal of Flood Risk Management, DOI:10.1111/jfr3.12218).
- Development of the CityCAT hydrodynamic model to better represent pluvial flood inundation in urban areas. The model fully couples surface flow with flow in the storm sewer network, for the first time linking gullies/drains and sewer pipes, and models the movement of water through Blue-Green features (e.g. blue-green roofs, retention ponds, permeable paving, swales, water butts).
- Development of a 2D hydro-morphodynamic model to predict flow and suspended sediment dynamics in urban rivers and investigate how restored floodplains and SuDS ponds can attenuate the upstream flood peak, act as a sediment sink and impact on downstream sediment transport.
- Increased understanding of behavioural responses of the public to blue-green infrastructure (see Everett et al. (2015), Delivering Green Streets: an exploration of changing perceptions and behaviours over time around bioswales in Portland, Oregon. Journal of Flood Risk Management, DOI: 10.1111/jfr3.12225).

University of Sheffield – multi- academic/practitioner research programme

The Universities of Sheffield, Exeter, Manchester, Reading, Newcastle and Imperial College London have recently been awarded EPSRC funding to undertake the TWENTY 65 (Tailored Water to Ensure sustainability beyond 2065) research project. Together with 26 companies from across the UK water sector, the six universities led by Prof Joby Boxall (j.b.boxall@sheffield.ac.uk) will work collaboratively to ensure the UK maintains a clean, sustainable water supply for the future. It will tackle key challenges in the sector, including population growth, ageing infrastructure and climate change, working across eight technical themes which include focusing on demand based technologies, social practices, water energy systems to minimise carbon emissions and the use of robotic autonomous systems for infrastructure inspection and repair.

Welsh Government – new standards for SuDS

Phil Chatfield (Phil.Chatfield@wales.gsi.gov.uk) reports that the Welsh Government has published new standards and guidance for sustainable drainage serving new developments in Wales. The standards have been developed with support from HR Wallingford and take account of the latest SuDS Manual from CIRIA and feedback from a public consultation in 2015. There are six standards, dealing with runoff destination, hydraulic control, water quality, amenity, recreation and design. Guidance on each of these is also included in the document, along with links to further relevant sources of information to aid design, construction and maintenance. The document also includes a section on SuDS Principles, providing a list of the principles, such as managing water on or close to the surface and as close to the source of the runoff as possible, which underpin the design of surface water management schemes to meet the Standards. The Standards are currently non-statutory. Their publication will allow local authority staff and developers to test their operation on a voluntary basis. However, if the Welsh Government decides to implement the SuDS provisions of the 2010 Flood and Water Management Act in Wales, they could form the basis of statutory standards. The standards are available at: <http://gov.wales/topics/environmentcountryside/epq/flooding/drainage/?lang=en>

Yorkshire Water - Water UK: 21st Century Drainage programme

Brian Smith (Yorkshire Water; brian.c.smith@yorkshirewater.co.uk) reports that Water UK recognises that over next 25 years there are many issues facing the UK water industry, regulators and society. Coupled with tighter regulatory standards, population and development growth, changes in the global climate will have both direct and indirect effects on local and regional water resources and environmental impacts; and will put our drainage infrastructure under ever increasing strain. To continue operating as we currently do, and in addition meet the full requirements of the European Water Framework Directive (WFD), it is predicted that our electricity demand will increase as will our carbon footprint. There is therefore a need for increased resilience of our drainage systems.

Water UK is undertaking a programme referred to as '**delivering 21st century drainage for our customers**'. This is a long-term programme that fits with its increasing focus on the continuing sustainability of the Sector. It has been agreed by both UK Government and Water Industry representatives that the UK Water Sector would benefit from a new high level drainage framework to support the government and water industry in providing more resilient urban drainage systems fit for the challenges the 21st century brings. The programme brings together representatives from the UK water industry, all devolved Governments, Regulators, Research organisations, Local authorities and eNGOs. It was agreed that as part of this, evidence would be gathered to allow both the UK and Regional Governments to review regulatory policy options relating to the design of the UK's drainage infrastructure going forward so as to best reflect the UK resilience needs for the 21st Century. The programme will build on work/research projects already undertaken in the industry in recent years. It is clear that wider and improved collaboration is essential to enable successful delivery of integrated water management. Continuing engagement and partnering is critical to the success of the programme.

A Programme Board, chaired by Tony Harrington (*Dwr Cymru Welsh Water*) oversees all the activities with other roles being made up of Members and Observers from UK Water Companies, Water UK, Environment Agency, Defra, CC Water, UKWIR, Ofwat, DWI, East Sussex County Council, Blue Print for Water (eNGO), SEPA, WIC (Scotland), The Utility Regulator (Northern Ireland; NI), NI Environment Agency, NI Executive, Natural Resources Wales, Association of Drainage Authorities, DCLG, Welsh Government, Natural England, Association of Local

Governments. The programme comprises the following work-streams: WS1 - Communications and Engagement; WS2 - Drainage capacity planning; WS3 – Overflows WS4 - Drainage misuse; WS5 - Groundwater inundation of drainage; WS6 - Enablers for progress; WS7 - Drainage infrastructure deterioration. The programme is a Water UK and UK Government and Water Sector priority, the intended outcomes of which are:

- ensure investment is affordable, focused on facilitating economic growth and is driven by clear prioritised and phased WFD environmental and customer related outcomes
- ensure we remain compliant with current or future related environmental legislation by demonstrating clear progress is being made in the development of our drainage systems
- set out evidence based ‘policy options’ for Governments to consider how the existing and complex arrangements for managing drainage systems can be simplified, and in so doing reduce the costs, bureaucracy, and time taken to drive better standards of service for our customers.
- set out new practical planning and other tools as required to: make our drainage systems more resilient to the impacts of climate change, reduce the number of blockages and the maintenance costs for our sewerage systems (through driving behavioural changes within our customer and industrial clients and or regulatory changes so as to reduce sewer misuse) and design and deliver efficiently managed, resilient drainage systems fit for the future needs of customers and the environment.

The thematic approach adopted provides a logic chain to the breadth of topics and activities developing and presents the opportunity to set out a long-term policy direction; the required levels of spending to achieve this; and to inculcate the importance of leadership and working in a coordinated manner.

USA (REPORTED BY STEVE STARRETT and SAMANTHA LAUGHMAN)

The Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers (ASCE) consists of about 20,000 members focused on surface water, hydraulics, planning and management, watersheds, urban water resources, water supply, environmental engineering, groundwater, irrigation and drainage, and other topics. The total membership of ASCE is about 150,000 with 8 other technical institutes. The vision of EWRI is to advance water resources and environmental solutions to achieve a sustainable future. Knowledge is primarily disseminated through books, standards, conferences, and the following journals:

- Journal of Environmental Engineering
- Journal of Hydraulic Engineering
- Journal of Hydrologic Engineering
- Journal of Irrigation and Drainage Engineering
- Journal of Water Resources Planning and Management
- Journal of Hazardous, Toxic, and Radioactive Waste
- Journal of Sustainable Water in the Built Environment

About 500,000 full text downloads of journal articles occurred in 2014. Over 17,000 publications have been authored since 1983. Twenty-four ASCE Standards have been developed since 2000 on water resources and environmental topics. The opinions of 50 experts were published

in the *Toward A Sustainable Water Future: Visions for 2050* published in 2012. These publications are available online via www.asce.org → publications.

EWRI has also been instrumental in advancing the health, safety and welfare of the public related to disasters and important issues. EWRI, along with COPRI and the Geo Institute of ASCE, participated in the Hurricane Katrina Advisory Task Committee to develop recommendations and lessons learned related to Hurricane Katrina. EWRI also served in an important role on the International Upper Great Lakes Study.

EWRI partnered with WERF, USEPA, FHWA and APWA to develop the International Stormwater BMP Database (www.bmpdatabase.org). The database reports about 600 scientifically sound BMP studies, statistical data summaries, and tools to improve the design, selection and performance of BMPs. The BMP database website is also home to the (USA) National Stormwater Quality Database (NSQD). The NSQD is an urban stormwater runoff characterization database developed under the direction of Dr. Robert Pitt, P.E., of the University of Alabama and the Center for Watershed Protection under support from the U.S. Environmental Protection Agency. Version 3.1 contains quality-assured data from more than 8,500 storm events from about 100 municipalities throughout the USA, representing multiple land uses.

Across EWRI, there are about 150 committees studying many different topics. For example, some are focused on low impact development (LID) topics, such as: bioswales, green highways, combined sewer, computational methods, bioretention, green roofs, national guidelines, and rainwater harvesting. EWRI has authored 13 LID related books since 2014.

2016 brings several conferences of interest to the urban drainage community, including: The World Water and Environmental Congress (Florida, 22-26 May, www.ewricongress.org), and two International Low Impact Development Conferences (in China, 26-29 June www.lid2016-china.org/en and in Maine, 29-31 Aug. www.lidconference.org)

This is just a brief summary of EWRI activities. More details can be found EWRI website (www.asce.org/ewri).

10. FUTURE MEETINGS AND CONFERENCES

A table listing the proposed JC and WG conferences and workshops (as of February 2016) appears below; additional information on some events is also presented elsewhere in the Newsletter. All information about conferences, seminars, workshops, summer schools, etc. dealing with urban drainage is welcome and will be added to this table. Please send such information to Jiri Marsalek or Manfred Schütze. You should also use this table when proposing new events - to avoid overlaps in dates and topics. Even though we strive for accuracy, please always check the primary sources of information for updates and changes.

Year	Event	Contacts
2016	<p>The 2016 International Low Impact Development Conference – Beijing, China. June 26-29, 2016. Conference website: http://www.lid2016-china.org</p> <p>The 9th Novatech Conference, Lyon, France, June 28 – July 1, 2016.</p> <p>SPN8 (Sewer Processes and Networks), Rotterdam, The Netherlands, 31 August – 2 September, 2016</p>	<p>Dr Haifeng Jia Secretary General School of Environment Tsinghua University Beijing, China Email: LID2016@163.com</p> <p>www.novatech.graie.org</p> <p>Jeroen Langeveld j.g.langeveld@tudelft.nl</p>
2017	14th International Conference on Urban Drainage (ICUD), Prague, Czech Republic. Sep/ 10-15, 2017	David Stransky (stransky@fsv.cvut.cz), Vojtech Bares (bares@fsv.cvut.cz), Ivana Kabelkova (kabelkova@fsv.cvut.cz)
2018	The 11 th International Conference on Urban Drainage Modelling, Palermo, Italy, Sep. 23-26, 2018	Dr Giorgio Mannina, conference chair Giorgio.mannina@unipa.it

**The 2016 International Low Impact Development Conference - China
Beijing, China. June 26-29, 2016 ; Website: <http://www.lid2016-china.org>**

1. Organization: The 2016 International Low Impact Development Conference is sponsored jointly by the Chinese Society of Civil Engineers – Water Industry Society (CSCE/WIS), American Society of Civil Engineers – Environmental and Water Resources Institute (ASCE/EWRI), and Chinese Academy of Engineering-Division of Civil, Hydraulic and Architecture Engineering. The conference is organized by Tsinghua University, Beijing University of Civil Engineering and Architecture, and Peking University. There are more than 20 very active co-organizers including universities, design institutes, and associations.

2. Major topics:

- A. Urban Water Infrastructure System Design and Optimization
- B. Regulations / Technical Guidelines
- C. LID/GI Development: Research/Technical
- D. LID – Implementation Strategies
- E. LID and Urban Planning & Design – Theory and Methodology
- F. LID/GI Case Studies

3. International cooperation and exhibitions

An important activity planned for the Conference is to establish a collaborative agreement between professionals from China and other parts of the world, which will lead to further discussions of subjects of mutual interests and to potential international cooperation through various arrangements. An example is the possibility of forming an “LID/GI city alliance” between interested cities in China and in other countries to share experiences, results, etc. and to engage in collaborative projects. Technical exhibitions will be arranged concurrently to display related technology, products, and equipment.

Language: English, Chinese; Simultaneous interpretation will be provided for plenary meeting.

Time and Venue: June 26-29, 2016 in Beijing, China, China National Convention Center (CNCC)



6. Contact: Dr Haifeng Jia, Secretary General

The 2016 International Low Impact Development Conference - China
School of Environmental Science and Engineering, Tsinghua University
Beijing, China

Email: LID2016@163.com

7. Workshops and Short Courses

A series of workshops and short courses will be arranged before the conference, including: Design and construction of LID facilities, Simulation and optimization models, Landscaping / planning, Investment/funding and cost-effectiveness analysis, and Inspection and maintenance of facilities.

2016 NOVATECH

The 9th edition of the Novatech international conference will take place from June 28 to July 1, 2016, in Lyon, France. Novatech conferences focus on research and experiences concerning the planning and technologies for sustainable urban water management, and are now recognized as key events in the field of integrated stormwater management. The 9th conference will follow this tradition by featuring 140 oral presentations from practitioners and scientists, and many other forms of presentations and knowledge sharing. In the opening session, two lectures will be given by prominent experts in urban planning and water management, Paola Vigano and Prof Rob Skinner.

Conference program overview

The presentation program will run from Tuesday, June 28 to Thursday, July 1, 2016, and will feature 140 oral presentations from practitioners and scientists from all over the world, with four focus points of stormwater management: links with urban planning, innovative solutions, watersheds, and water professionals. A detailed program will become available in April 2016 (follow the conference website). Other program components include interactive sessions, poster sessions, and workshops.

The last day of the conference, Friday July 1, will be devoted to workshops and technical tours. Five workshops are planned, assuming that there is enough interest:

- RTC: where science meets practice, organised by the WG RTC (IWA/IAHR JCUD);
- A workshop organised by the WG data and models (IWA/IAHR JCUD);
- Advances in modelling and applications of rainwater/stormwater harvesting, organised by the WG Urban Storm Water Harvesting (USWH) (IWA/IAHR JCUD);
- A workshop organised by the WG Source Control for Stormwater Management (SOCOMA) (IWA/IAHR JCUD); and,
- Simulation workshop - Real-time control and integrated modelling, organised by ifak e. V. Magdeburg, Germany.

Technical tours are also planned on Friday and will feature tours of urban water operations in Lyon and surroundings.

Conference venue – after many years, the conference is returning to its roots at the INSA Lyon campus, where the first conference was held in 1992.



Lyon and the UEFA EURO 2016: concurrently with the Novatech, Lyon will host the European Football (Soccer) Championship. We therefore recommend that you carefully plan your stay. The Novatech organizers will make available a limited number of student residence rooms (these can be applied for when registering for the conference).

Conference website: www.novatech.graie.org.

8th International Conference on Sewer Processes & Networks (SPN8), Aug. 31 – Sep. 2, 2016, Rotterdam, the Netherlands

The SPN conferences are relatively small events (100-150 attendees) held under the IWA sponsorship and the auspices of the IWA's Sewer System Processes working group, every 3 years. Although the conference mainly aims at communicating the latest scientific developments in the field of sewer processes and networks, in the past, the attendance of practicing engineers has shown to be effective by stimulating the exchange of knowledge and experience between researchers and practitioners. In order to underline the virtues of a specialist conference, there are no parallel tracks so as to allow all attendants to fully participate in discussions. In the past conferences held in this series, the audience was an inspiring mixture of scientists and practitioners in different stages of their career.

The main themes of the conference are:

- In-sewer processes
- (re)Designs and operational issues
- Monitoring and associated technologies

- Sewer system impacts
- Sewer Asset Management and inspection techniques
- Emerging Issues and new technologies related to sewers

Practical information about the conference can be found on the conference website: www.spn8.nl

We hope to welcome you at the SPN8 in Rotterdam!

14th International Conference on Urban Drainage (ICUD), Prague, Czech Republic, Sep. 10-15, 2017

The 14th ICUD was introduced at the Urban Drainage Modelling Conference in Quebec, Canada, 2015. The organizers of the conference are the Czech Water Association (CzWA) and the Czech Technical University (CTU) in Prague. Please view the videos and show your interest by proposing your ideas for the conference on the web page <http://icud2017.org/>. Potential participants are also invited to suggest their own special sessions.

11. WORKING GROUP CONTACTS

Int. Working Group on Data & Models (IWGDM) Web site: http://iswr.eng.monash.edu.au/iwgdm	
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