



IAHR/IWA Joint Specialist Group on URBAN DRAINAGE

Newsletter No. 28

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For updated information, please regularly visit our websites at:

<http://www.jcud.org>

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2. CHAIRMAN'S THOUGHTS

Magdeburg, March 2015

Dear friends and colleagues,

Again, a new year has commenced and this newsletter provides a good opportunity to reflect on the events in 2014 and the tasks, which are ahead of us in 2015.

Obviously, the key event of the world-wide urban drainage community was the 13th International Conference on Urban Drainage, which has been held in Kuching, Sarawak, Malaysia. A special thanks to our Malaysian colleagues who have made this event a good and unforgettable conference with 440 participants (for a full conference report, see Section 10).

Last year's Joint Committee meeting also saw the handing over of its chairmanship from David Butler to the new chairman, who has been elected, according to the statutes of the Joint Committee, for a period of three years. Many thanks for entrusting this important role to myself – it will not be an easy task to follow in the footprints of David in chairing this committee!

Obviously, the committee, and our entire urban drainage community lives from the input and the activities of all of us. Among the tasks to be addressed, there are many – flooding in Malaysia and South East Asia in early 2015 reminded us again on the importance of flooding and urban drainage. Each of us has a role, talents and responsibility to serve our communities (remember: they are paying for most, if not all, of the work we are doing) in finding and implementing good ways of urban drainage appropriate to the local circumstances. In all our daily struggles for projects, funding, publications in highly-ranked journals, high scores in research assessment exercises and whatever else often takes large part of our worries, let us not forget our core responsibility. Whilst the younger colleagues among us will have new ideas and impetus, the senior ones can share their expertise and provide good examples of sound work and good scientific conduct.

This newsletter – thanks to Jiri Marsalek for the hard work of compiling it – provides a good insight into the numerous activities taking place in many corners of the globe and in the many working groups of the Joint Committee. Feel free to get in contact and to get yourself involved in these activities, which – in the end – aim at improving and maintaining good urban drainage practices.

The Newsletter also provides information on the election procedures for the expansion of the Joint Committee and for the nominations of the location of the 2020 International Conference on Urban Drainage (the conference in 2017 will be held in Prague, Czech Republic, Central Europe).

Finally, for suggestions on how the Joint Committee can serve you to assist you in serving others, please do not hesitate to contact me or any other members of the Joint Committee. Some additional thoughts on contributing to the work of the Joint Committee are in the next section.

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, nine 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. 2014: Malaysia, 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 over 310 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.

Role of IWA and IAHR as parental organisations

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). Obviously, you are most welcome to join IWA (www.iwahq.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 annual Committee meeting was held during the 13th ICUD conference in Kuching, Sarawak, Malaysia, on September 7, 2014. The minutes of the meeting can be found on our website (www.jcud.org), highlights follow.

Newly elected members of the Joint Committee: two new JC members were introduced at the meeting, Prof Haifeng Jia (China) and Dr David McCarthy (Australia). Three members finished their terms of office, David Butler, Neil Armitage, and Tim Fletcher, and Manfred Schütze was

elected as the new committee chairman. Thus, the Committee has now nine voting members and there are a number of openings to be filled in the near future.

Special projects: Special thanks go to Tim Fletcher and his team of collaborators for publishing the Stormwater management terminology paper as an Open Access article in Urban Water, which can be downloaded free of charge (Urban water Journal, 2014; <http://dx.doi.org/10.1080/1573062X.2014.916314>

The Joint Committee website (www.jcud.org) is now 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. There is a continuing emphasis placed by IWA on Clusters, which would strengthen collaboration among the specialist groups. A new IWA Strategic Plan for the next years was adopted by the General Assembly during the Lisbon Congress (Sept. 20, 2014). A Forum for SG Chairs was organized by IWA (and chaired by JLBK) on 26 September 2014 at the end of the Congress with following main objectives:

- information about, and action of, SGs for the new Strategic Plan
- continuation of promotion of collaboration between SGs, and
- inform SGs about the new material and assistance of IWA headquarters for SGs in communication, websites, events and conferences organization.

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 310 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

Joint Committee membership distribution between IAHR and IWA. The Joint Committee was founded as a working group of specialists from two parental organizations, IAHR and IWA. In the early years of its existence, the JC membership was almost equally divided between both parental organizations. It would appear that this distribution has greatly changed in recent years, with the Committee now clearly dominated by the IWA members. At some point, we will need to address this issue: Is the original model for having the JC reporting to both IAHR and IWA still valid and useful, and if not, what changes should be made.

Tentative future JC meetings: Quebec City (Mont Ste. Anne, P.Q, Canada) at the Urban Drainage Modelling Conference in September 2015 (Sep. 19?), in 2016, just before the Novatech conference in Lyon, France (July 2?), and, in 2017, just before the 14th ICUD in Prague, Czech Republic. 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) has some vacancies and is looking for two to four new members 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@ec.gc.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, 2015. The applications received will be distributed to the JCUD members for assessment and voting; the results will be announced in August 2015.

5. CALL FOR PROPOSALS TO ORGANISE THE 15th INTERNATIONAL CONFERENCE ON URBAN DRAINAGE IN 2020

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 it is a good practice to include the following information:

1. Conference title (sub-themes), dates and duration
2. Proponent team (conference chair or co-chairs, conference guarantor (i.e. who is ultimately responsible for the event, including finances), and how the team is connected, or will connect, to the Joint Committee)
3. Conference organization and management (Program committee, international committee)
4. Proposed conference program and format (list of concurrent sessions, seminars, workshops, oral and poster sessions, technical exhibition, technical tours)
5. Poul Harremoës prize competition
6. Selection of contributions (abstract/paper review) and publishing of papers/proceedings
7. Conference venue (meeting rooms)
8. Accommodation (with approximate 2015 pricing)
9. Financial issues (budget, registration fees – discounts for IAHR and IWA members, potential sponsors – documented by letters of support, if and where applicable)
10. Social program and post-conference tours; and
11. Any other points you may consider important.

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. The proposals must reach the Joint Committee Chair (Manfred Schütze, Manfred.schuetze@ifak.eu) or Secretary Jiri Marsalek (jiri.marsalek@ec.gc.ca) by June 15, 2015. The Joint Committee will review the proposals in summer 2015 and notify all proponents of its decision before Dec. 15, 2015.

If you require any clarification of the proposal specifications, please contact Jiri Marsalek (jiri.marsalek@ec.gc.ca).

6. WORKING GROUP REPORTS

6.1. International Working Group on Data and Models (IWGDM) (Chairman: Prof Simon Tait, Pennine Water Group, Department of Civil and Structural Engineering, The University of Sheffield, Sir Frederick Mappin Bldg, Mappin Street, Sheffield, S1 3JD, UK, Phone: +44 114 222 5771, FAX: +44 114 222 5700, E-mail: s.tait@sheffield.ac.uk; Secretary: 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).
Website: <http://iwgdm.wikispaces.com>)

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)

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 SPN 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 planned the following activities in 2015 and 2016:

SPN 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

Junior Scientist Workshops

The 22nd Junior Scientist Workshop on sensor technology will be organized by Jean-Luc Bertrand-Krajewski (INSA Lyon), Francois Clemens and Mathieu Lepot (TU Delft). Contact: organisationcommitteeejsw2015@gmail.com. The 22nd EJSW will focus on the application of modern sensor technology, data communication, data validation and analysis. The workshop will be held in Chichilianne (France), 18 - 22 May 2015.

Solids in Sewers

A new edition of the Scientific and Technical Report on Sewer Solids is planned to be published in 2015, 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, Aquavidya Inc, 948, Donat-Belisle, LAVAL (PQ), Canada, H7X 3W5;

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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 provide a forum for exchanging technical details of design and implementation of research results and approaches to source control mechanisms.

No annual meeting was held for the Group in 2014. It was meant to be at the ICUD in Malaysia but, unfortunately, few members could attend.

A summary of the other activities in 2014 is as follows:

- Terminology paper. Under the leadership of Tim Fletcher, this paper came about as an initiative of the ICUD, with the underlying motivation being to provide those new to our field (e.g. students or experts from other disciplines) with an understanding of the evolution and context of terms used to describe urban drainage. The paper was co-authored by 17 co-authors: Tim D. Fletcher, William Shuster, William F. Hunt, Richard Ashley, David Butler, Scott Arthur, Sam Trowsdale, Sylvie

Barraud , Annette Semadeni-Davies, Jean-Luc Bertrand-Krajewski , Peter Steen Mikkelsen , Gilles Rivard, Mathias Uhl, Danielle Dagenais and Maria Viklander. Thus, the paper had a broad input from the JCUD and particularly from the SOCOMA and WSUD Working Groups, and other members of the Joint Committee. It was published in *Urban Water* and Tim has kindly paid the fees to make it Open Access so that anyone can download it for free, at: <http://www.tandfonline.com/doi/abs/10.1080/1573062X.2014.916314#.U9t8HUiMWSk>

We hope that the paper proves to be useful both to our profession and to those with whom we wish to engage (e.g. architects, planners, etc.). The field has seen many different acronyms, names and conceptual approaches over the years and the JCUD thus considers it useful to present some historical background for the integrated urban stormwater management.

- Preparation of participation at UDM (Urban Drainage Modelling) in Quebec City (Sept. 20-23 2015). (<http://udm2015.org/>). Discussions were held with the local organizing Committee to have a pre-Conference Workshop organized by SOCOMA.

- The SOCOMA web site (<http://graie.org/SOCOMA>) has been updated and other references and documents will be added in 2015. Proceedings from various workshops held by the group can be downloaded from the site. Contributions from members of the group are welcome.

Upcoming conferences

- Activities within the SOCOMA WG will be highlighted during a presentation at the annual TRIECA Conference in Toronto, Canada (<http://www.trieca.com/>).
<http://www.trieca.com/dotAsset/200496.pdf>
- Members of SOCOMA will participate in the UDM Conference in Quebec City, overseeing potentially a specific session and organizing a pre-conference Workshop.

Other future activities

Members of the SOCOMA group are encouraged to provide relevant documents, references and sites for the group's web site so that it can become 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 storm water 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. Some joint activities could therefore be developed in 2015 between the two groups, along with the other on-going collaborative efforts with WSUD and Rainfall Harvesting. Discussions could be held during the UDM Conference and collaborative activities will also continue at the next NOVATECH Conference in 2016.

The next SOCOMA meeting will be at the UDM Conference in Quebec City (Sep. 2015).

6.5. International Working Group on Urban Rainfall (IGUR)

(Chairman: Prof Simon Beecham, University of South Australia, School of Natural and Built Environments, Bld P, Mawson Lakes Campus, Australia. Phone: +61 8 830 22357, Fax: +61 8 830 25082, 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>)

The group held its annual meeting at the 13th ICUD Conference, in Kuching, Malaysia. At the start of the meeting, the group paid a tribute to the memory of recently passed Mohammed Nor Mohd Desa, who was a very active member of the IGUR for Malaysia, and passed away on 4 March 2014.

Because the term of office of the current Chair, Patrick Willems, ended, a new Chair was elected, Prof Simon Beecham.

Group members delivered invited presentations at recent conferences, including Patrick Willems' keynotes on 'Climate change as driver for paradigm change in urban water management', at the Third Nordic International Conference on Climate Change Adaptation, Copenhagen, 25-27 August 2014; 'Rainfall variability and change and its impact on urban water management', 8th Annual Meeting of Danish Research and Innovation Platform (DWRIP), KU Science, Frederiksberg, Denmark, 30 January 2014. Another keynote lecture was given by Simon Beecham on "Developing Resilient Green Infrastructure for Urban Environments" at the 13th ICUD, Kuching, Malaysia, on 9 September 2014. Other members of the group also presented papers at this conference.

Other reports: Thomas Einfalt explained the national German radar guideline VDI 3786, part 20, which will serve as the starting basis of a new ISO standard: ISO/TC 146/SC 5/WG 7 on "Ground-based remote sensing of precipitation - Weather radar". Thomas Einfalt is the chairman of the working group preparing this ISO standard.

Patrick Willems gave an update of the projects RainGain (Interreg IVB NWE) and PLURISK (Belgian Science Policy Office) on "urban rainfall nowcasting". New, polarimetric radars in Paris and Rotterdam are nearly ready for installation. The RainGain newsletter was distributed.

Future activities and events of interest:

19th IAHR-APD Conference of the Asia-Pacific Division of the International Association of Hydro-Environment Engineering and Research, Hanoi, Vietnam, 21-24 September 2014, IGUR member V-T-V Nguyen organized a Special Session on "Modelling and Analysis of Hydrologic Processes in the Context of Climate Variability and Climate Change" with good IGUR representation: <http://iahr-apd2014.wru.edu.vn/>

RainGain workshop on "urban flood modelling", Exeter, UK, 6 October 2014:

<http://www.raingain.eu/en/raingain-international-workshop-urban-pluvial-flood-modelling>

+ on 8 October 2014, London: Local Authorities meeting, discussing political and implementation issues regarding rainfall information and urban flood management:

<http://www.raingain.eu/en/raingain-2nd-local-authorities-meeting-london>

Canadian Hydrotechnical Conference: Montreal, Canada, April 29 – May 2, 2015: <http://registration.cgi-pco.com/CSCEhydro/call.html>

10th UDM: International Conference on Urban Drainage Modelling, Quebec City, Canada, 20-23 September 2015: <http://udm2015.org/>, with a possible session(s) on urban rainfall.

UrbanRain15: 10th International Workshop on Precipitation in Urban Areas, Pontresina, Switzerland, 2-6 December 2015: co-organized by the IGUR: <http://www.ifu.ethz.ch/urbanrain>

ASCE EWRI Congress 2015, Austin, Texas, 17-21 May 2015: 2015 Hydroclimate Symposium: session on “Modeling Urban Hydrologic Processes in a Changing Climate”; <http://www.ewricongress.org/>

7th World Water Forum, Rep. of Korea, 12-17 April 2015, <http://eng.worldwaterforum7.org/main/>

An idea was raised by Kapil Gupta to organize a workshop similar to the UrbanRainfall workshop, but held in Asia or Australia.

The following ideas for future cooperative research by the IGUR were discussed:

“Radar measurements / data processing” (in parallel to the ISO standard working group), led by Thomas Einfalt and Simon Beecham)

“Spatial rainfall for design” (Karsten Arnbjerg-Nielsen)

“Continuous rainfall simulation” (Simon Beecham), and

“Multidecadal climate oscillations” (Patrick Willems)

The next annual IGUR meeting will be held at the UrbanRain15 workshop at Pontresina in December 2015.

6.6 Urban Drainage in Cold Climate Working Group (UDCCWG) - (Chair: Prof Maria Viklander, Dept. of Civil, Mining and Environmental Engineering, Lulea University of Technology, S-971 87 Lulea, 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)

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.

The IWG for WSUD met at the 13th ICUD in Kuching, Malaysia, and appointed a new leadership team: Dr Megan Farrelly and Dr Briony Rogers, appointed as Co-Chairs; and, Dr James Shucksmith, appointed as Secretary and Vice-Chair.

The working group committee was renewed, with new members engaged from a diversity of geographic regions and scientific expertise.

The committee expressed their thanks to the outgoing Chair, Professor Rebekah Brown, and Secretary, Professor Richard Ashley, for their leadership of the IWG.

At the ICUD meeting, the Group brainstormed ideas for renewing its purpose and scope of activities. It was agreed that the aim of the Group was to:

- Advance interdisciplinary research and support integrated practice towards creating more water sensitive cities, towns and regions. As such, the group will operate as a platform to:
 - Facilitate an open exchange of research and practical information, and
 - Provide a synthesis of contemporary international research activities, to contribute towards advancing on ground implementation and shape future research directions for water sensitive urban design principles, practices and technologies.

In working towards achieving this aim, the Group has committed to the following activities over the next 18 months:

- Establish a web presence, providing an accessible platform for updates regarding international research insights and best practice for on-ground applications of WSUD principles, practices and technologies.
- Establish a newsletter, providing an outlet for research and industry leaders to share insights regarding updates, interesting news and the ‘state-of-play’ in the broad WSUD space.
- Form strategic connections with related leading international groups to build profile and strengthen strategic relationship
- Host an international workshop for WSUD researchers and practitioners to assess the current international ‘state-of-play’ of WSUD research activities and on-ground applications, with the aim of seeding future research collaborations and developing a publications plan.
- Hold meetings (formal and informal) the following events in 2015: Cities of the Future Conference IWA (Sydney, Australia, February), Urban Drainage Modelling (Quebec, Montreal, September), and SUDSnet Conference, (Coventry, UK, September).

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: +42 (0)2 24321292, e-mail: kabelkova@fsv.cvut.cz)

The main objective of USWG is to bring together water management engineers, biologists and landscape planners and to encourage information exchange and co-ordination of research activities.

In 2014, the working group held a meeting during the 13th ICUD in Kuching, Borneo, and discussed an outline of the WG activities.

2015 Activities – the group will hold a meeting in late March 2015 in Prague, with the main task of planning 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)

Recent activities

- The group participated in the ICUD Conference in Malaysia by organizing one special session on USWH and reviewing conference papers.
- Group members from Australia (Matthew Burns and Tim Fletcher) contributed to writing a chapter for the book "Rainwater Tank Systems for Urban Water Supply: design, yield, health risks, economics and social perceptions", IWA Publishing. Specific contributions concerned the impact of rainwater tanks on urban hydrology and stormwater quality.
- Several members of the working group attended the *Third Symposium on Urbanization and Stream Ecology in Portland, Oregon (2014)*. Delegates from the University of Melbourne gave a keynote presentation on the importance of using stormwater harvesting to help mitigate the impacts of urbanization on streams (receiving waters). In addition, Matthew Burns was involved in a workshop, which discussed setting local stormwater objectives for the protection or restoration of downstream hydrology.
- The group sponsored a conference session at the recent WDSA Conference held in Bari in July 2014. The session included topics related to rainwater harvesting and reuse and dual networks.

Future activities

- Members of the WG are currently preparing a position paper on rainwater harvesting applications and modelling. The paper will address the modelling of rainwater harvesting systems, water quality impacts, and social aspects.
- A course on Stormwater Harvesting as source control in the urban context will be organized by the WG in Italy, in 2015. Specific information will be circulated by Alberto Campisano (acampisa@dica.unict.it).
- The WG wants to setup its own website to post news and info on main events and activities, and to set links to other web sites dealing with RWH topics.

7. NEWS FROM IAHR AND IWA

7.1 IAHR News

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 2015 membership fees are now due (for more information, visit the IAHR website). Since 2005, IAHR offers an "electronic" membership, which includes all normal membership benefits except the printed *Journal of Hydraulic Research*. Electronic access to the *Journal of River Basin Management* and the subscription to the *Urban Water Journal* are offered at a special reduced rate for IAHR members.

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 36th IAHR World Congress, 28 June - 3 July 2015, The Hague, The Netherlands "Deltas of the Future (and what happens upstream)" <http://iahr2015.info/> 2nd announcement, Deadline for abstracts: September 1st 2014, will address the following themes:

1. Managing Deltas
2. Hydro-environment
3. Sediment management and morphodynamics
4. Water engineering
5. Fluvial and maritime hydraulics
6. Extreme events, natural variability and climate change

8. NEWS from IWA Headquarters

Unlock the power of the IWA Network

Launching www.iwa-network.org

Responding to and embracing the rapidly evolving digital realities of our world, the IWA has launched a new website: www.iwa-network.org. The website provides a rich digital experience for all users, those who already know the IWA and those who are new to the association. The website is still in its BETA testing phase but will be launched fully in 2015.

We look forward to seeing you at the www.iwa-network.org

Welcome to the IWA Online Network Database

The IWA Online Network Directory is your gateway to access the full IWA 10,000-strong global network of professionals. You will be able to connect on an ongoing basis, share content, grow

your network and take the steps you need to help you enhance and achieve your professional goals.

[Click here](#) to gain access to the Online Network Directory.

The IWA Online Network Directory is your portal through which you will be able to actively manage your engagement within the network including the ability to renew your membership for 2015.

However, this is just the start. In 2015 we will take your [IWA network experience](#) to new heights. We want to enable you to reach out in a more meaningful way to connect with people across the network based on your preferences and interests. We have ambitious plans, and new features will be added regularly.

2015 IWA Membership Renewals

As you may have seen, the renewal process is quite different this year so this is a quick reminder of the key steps to proceeding to your IWA renewal in case you have not done so already:

1. Login into the [Online Network Directory](#) and go to My Profile > Settings
2. Go to Account Summary tab and review your personal data.
3. In the Renewal tab select your 2015 membership package and proceed to payment via credit card or PayPal.

Once you have completed your renewal, a receipt of your membership will be available to download under the Renewals tab in your profile.

If you experience any difficulties with your renewal then we are here to help! Feel free to send us an email at members@iwahq.org or call us on +31 (0) 70 8903524 and we will get back to you as quickly as possible.

IWA Water and Development Congress & Exhibition, Jordan, 18 – 22 October 2015 --- Water Security for Sustainable Growth

Water security is one of the most critical issues the world is confronted with today. Emerging economies and developing countries face some of the biggest and most disruptive water challenges, yet they provide some of the greatest opportunities to get ‘water’ right.

The Water and Development Congress & Exhibition organized by the International Water Association (IWA) (Jordan, 18 – 22 October 2015), is THE global event on water solutions focusing on emerging economies and developing countries. The event brings together thought leaders, decision makers, leading scientist and business representatives from within and outside the water sector.

Connecting science and research with the private sector and financial institutions, the Congress acts as a catalyst for sustainable water development. It provides a space where water professionals can

meet and exchange information and know-how. It brings to the fore the latest regulatory initiatives and leading-edge practices. It presents new research findings, technology developments and business opportunities.

The 12th IWA Leading Edge Conference on Water and Wastewater Technologies, 30 May – 3 June, 2015, Hong Kong, China

--- Moving from Pilot to Full Scale

www.let2015.org

Advanced program is online and early bird registration is open

The 12th IWA Leading Edge Conference on Water and Wastewater Technologies (LET2015) is designed to be the place where new ideas are introduced and the opportunity is provided to interact with the “best of the best”. For those who are looking to introduce new ideas and concepts, and those looking for them, this is the one conference of the year that should not be missed.

The LET2015 conference has 8 themes including:

- Alternative Water Sources
- Direct Potable Reuse
- E-technology in urban water management
- Granular sludge processes
- Integrated chemical and biological treatment
- Resource Recovery from Wastewater
- Treating Complex Industrial Wastewaters
- Water Technology for Densely Populated and Rapidly Growing Cities

Please visit the conference website www.let2015.org for the information on plenary speakers, the advanced program and register before 15 April to benefit from discounted registration rate.

IWA World Water Congress and Exhibition, Lisbon, 21-26 September, 2014

The IWA World Water Congress & Exhibition in Lisbon was a hugely successful gathering that brought together more than 5,500 water professionals from 109 countries. Wide ranging discussions on the challenges and opportunities facing water management led to the sharing of knowledge on best practices and new technologies; and by connecting a diverse set of stakeholders it fostered further cooperation between industry, science and technology to accelerate change and find lasting solutions.

The Congress positioned water as the fuel of sustainable, profitable industry, the catalyst of productive agriculture, the liquid force that turns or cools turbines, and the source of life on land, in

rivers, and through estuaries that nourish the oceans. In short, it revealed water as the currency of the 21st century.

Videos of the Keynote presentations from the Congress are available at <https://vimeo.com/iwahq>

A new Congress Synthesis Report will be available to download from the www.iwa-network.org

9. NEWS FROM AROUND THE WORLD

BENELUX (BELGIUM, THE NETHERLANDS AND LUXEMBOURG) (REPORTED BY PATRICK WILLEMS, JEROEN LANGEVELD and MARIO REGNERI)

In the Interreg NWE IVB project RAINGAIN, urban drainage experts from The Netherlands, Belgium, France and the UK cooperate on the topic of “fine-scale rainfall estimation and nowcasting for enhanced street scale urban surface flood prediction, warning and risk management”. X-band and super resolution C-band radars will be installed/applied for the case-studies in Leuven (BE), London (UK), Paris (FR) and Rotterdam (NL). After a workshop held in April 2012 at Leuven, a review report on “Methods and experiences in radar based fine scale rainfall estimation” has been prepared. Another workshop on 31 March 2014 focused on “Fine-scale rainfall nowcasting” at Antwerp, Belgium. For more info: <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 for nowcasting of fine-scale extreme rainfall, two-dimensional fine-scale modelling, mapping and nowcasting of inundations in urban areas, 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 currently works in two Belgian cities (Leuven and Gent) and aims to support local authorities, which typically have low capacity in setting up risk quantification, forecasting, control and management systems. More info: <http://www.kuleuven.be/hydr/plurisk>

Better interfacing of urban water management and urban design/spatial planning in a city (blue-green water interfacing), has been studied in the City of Turnhout in Belgium. Also the usefulness of upstream versus downstream stormwater storage along the sewer system has been studied. See the recent paper: De Vleeschauwer, K., Weustenraad, J., Nolf, C., Wolfs, V., De Meulder, B., Shannon, K., Willems, P. (2014), ‘Green - blue water in the city: quantification of impact of source control versus end-of-pipe solutions on sewer and river floods’, Water Science and Technology, 70.11, 1825-1837.

A tool for semi-automatic model structure identification and calibration of conceptual sewer models based on simulation results of a full hydrodynamic sewer network model has been developed, called Conceptual Model Developer (CMD), implemented in Matlab.

Related to this topic, the SMARTesT project, an EU Seventh Framework Project 'Smart Resilience Technology, Systems and Tools' focused on increasing flood resilience in urban areas. More info: <http://www.floodresilience.eu/>

In the Netherlands, the urban drainage research program, funded and supported by the Dutch urban drainage sector, covers four themes (j.g.langeveld@tudelft.nl):

Theme 1 Asset management. The research within this theme focuses on alternative sources of information (or ways of working) in order to organize the asset management in such a way that sewer system performance (serviceability) will be maintained at the desired level. Nikola Stanic and Wouter van Riel are working together on this topic.

Theme 2. Operation and maintenance. The research projects within this theme will provide knowledge on the relation between the operation and maintenance strategy applied and overall system performance. This topic is dealt with by Johan Post, who focuses on failure mechanisms of gully pots and house connections. In addition, Marco van Bijnen is doing research on the relation between the condition of the sewer system, in terms of 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 of 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 a part of the EU-QUICS project (www.quics.eu), Antonio Rodenas studies the impact of uncertainties in integrated catchment studies.

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 by the PhD students Arjang Alidai and Adithya Thota Radhakrishnan, who combine pilot research with multiphase modelling.

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

ARCADIS, 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, and Waternet en Witteveen+Bos.

The Dutch KALLISTO project (<http://www.samenslimschoon.nl>) is based on an integral approach to cost effective and efficient water management of the catchment area of Eindhoven. The participating 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 physical-chemical storm water treatment. A combination of RTC

measures, river aeration and WWTP optimisation has resulted in a cost effective solution complying with the integrated water resources management approaches required by the EU Water Framework Directive.

The Luxembourg based research project FUZZYSURE - Fuzzy-based multi-objective optimization for the Haute-Sûre wastewater system investigates the integrated control of rural sewer networks with central wastewater treatment. These systems are often characterized by widespread interceptor sewer networks and central wastewater treatment plants (WWTP) of rather small sizes. The case study focuses on the Haute-Sûre wastewater system in the North of Luxembourg where intensive measurement campaigns both in the sewer network and at the WWTP were done for detailed model calibration. Fuzzy predictive control is used to investigate the role of decision-making in the integrated control of rural wastewater collection and treatment systems. The objective functions for optimization thereby consider (a) the minimization of effluent loads at the WWTP, (b) the minimization of combined sewer overflows, and (c) the minimization of treatment costs of aeration at the WWTP. For the final results see:

http://modeleau.fsg.ulaval.ca/fileadmin/modeleau/documents/Publications/PhD_s/regnerimario_phd.pdf

CANADA (REPORTED BY JIRI MARSALEK)

Research on urban drainage and sustainable urban water management in more general terms, is continuing at a number of agencies in Canada. Particularly active is The Partnership for Water Sustainability in BC, which spearheads many innovative projects and approaches to sustainability of water in urban areas and beyond (www.waterbucket.ca). Among the recently initiated projects, urban hydrologists may be particularly interested in tree canopy interception of rainwater, which resulted in a Masters thesis Schooling, J.T. (2014). The influence of tree traits and storm event characteristics on stemflow production from isolated deciduous trees in an urban park. Thompson Rivers University, Kamloops, BC, Canada. The thesis focused on urban tree canopy processes affecting the volume and biogeochemistry of inputs to the hydrological cycle in cities, with a semiarid climate characterized by small precipitation events. The study findings will contribute to climate-sensitive selection and siting of urban trees, in the context of integrated rainwater management. The thesis can be downloaded from:

<http://www.kamloops.ca/stormwatertrees/index.shtml#.VPXSNHhOmos>

The Sustainable Technologies Evaluation Program (STEP) is a multi-agency program based in Ontario (Canada) and led by the Toronto and Region Conservation Authority (TRCA) (<http://www.sustainabletechnologies.ca/>). The program was developed to provide the data and analytical tools necessary to support broader evaluation and implementation of sustainable technologies and practices within a Canadian context. Among the main current issues studied one should mention: Low Impact Development (LID), Solar Research, Permeable Pavements, the Living City Campus, Bioretention Areas, and Sustainable Heating and Cooling. The STEP website is continually updated and certainly worthwhile to visit.

COLOMBIA – SPECIAL FEATURE (REPORTED BY ANDRES TORRES, JUAN PABLO RODRIGUEZ, ERASMO RODRIGUEZ, PEDRO AVELLANEDA, HUMBERTO AVILA AND CARLOS ZAFRA)

Applied scientific research on Urban Drainage (UD) has increased in recent years in Colombia. After returning from PhD programmes dealing with different aspects of UD at leading universities worldwide (Canada, France, Spain, United Kingdom, United States among others), different UD researchers joined established local groups on water resources at top universities in the country. Colombian researchers are now active and presenting at major IWA-IAHR conferences on UD such as the International Conference on Urban Drainage (ICUD), Novatech and the International Urban Drainage Modelling Conference (UDM). Furthermore, local MSc and PhD programmes now include and deal with UD issues. This report summarizes recent and ongoing research initiatives and ISI journal publications at six universities: Pontificia Universidad Javeriana, Universidad de los Andes, Universidad del Norte, Universidad Nacional de Colombia, Universidad Distrital and Universidad del Valle.

Pontificia Universidad Javeriana in Bogotá (Reported by Andrés Torres)

The research developed on Urban Drainage at Pontificia Universidad Javeriana Bogotá (PUJB) is clustered in four topics: (i) Water Quality Monitoring, (ii) SUDS (Sustainable Urban Drainage Systems), (iii) Rainwater and stormwater harvesting, and (iv) Sewer Asset Management. This work is supported by the research group “*Ciencia del Agua y del Ambiente*” (Science and Engineering of Water and Environment), Maestría en Hidrosistemas (Water Systems Master program) and the Doctorate in Engineering of the same university. In the case of water quality monitoring, the work developed is grouped in the following research fields: (a) data mining and outliers detection (López-Kleine and Torres, 2014; Zamora and Torres, 2014), (b) calibration aspects (Caradot et al., 2014), (c) applications & real-time control (Torres et al., 2013; Plazas-Nossa and Torres, 2013; Sandoval et al., 2014; Sandoval et al., 2013). Regarding to SUDS, the major contributions are reflected in Green Roofs (Oviedo and Torres, 2014; Olaya et al., 2014) and Constructed Wetlands (Torres et al., 2012). In the field of Rainwater and stormwater harvesting, the developed research fields are: water quality assessment (Torres et al., 2013) and planning (Galarza-Molina et al, 2015). Finally, the research done in the area of Sewer Asset Management is reflected in the fields of: performance indicators, data mining and decision-making (Sandoval et al., 2012; Perez et al., 2011). Some of the most recent research work has been published as follows:

- Caradot N., Sonnenberg H., Rouault P., Gruber G., Hofer T., Torres A., Pesci M. and Bertrand-Krajewski J. -L. (In press). Influence of local calibration on the quality of online wet weather discharge monitoring: feedback from five international case studies. *Water Science and Technology*.
- Galarza-Molina S. L., Torres A., Moura P. and Lara-Borrero J. (2015). CRIDE: A case study in multi-criteria analysis for decision-making support in rainwater harvesting. *International Journal of Information Technology & Decision Making*. 14(01), 43-67
- López-Kleine L. and Torres A. (2014). UV-vis in situ spectrometry data mining through linear and non linear analysis methods. *Dyna*. 81(185), 190-196.
- Plazas-Nossa L. and Torres A. (2014). Comparison of discrete Fourier transform (DFT) and principals components analysis/DFT as forecasting tools of absorbances time series received by UV-visible probes installed in urban sewer systems. *Water Science And Technology*. 69(5), 1101-1107.

- Sandoval S., Torres A., Pawlowsky-Reusing E., Riechel M. and Caradot N. (2013). The evaluation of rainfall influence on combined sewer overflows characteristics: the Berlin case study, *Water Science And Technology*. 68(12), 2683-2690.
- Sandoval S., Torres A., Duarte M. and Velasco A. (2014). Assessment of rainfall influence over water quality effluent of an urban catchment: a data driven approach. *Urban Water Journal*. 11(2), 116-126.
- Sandoval S., Torres A. and Obregón N. (2012). Tools for the implementation of proactive maintenance in urban sewer systems by the use of flooding reliability and entropy of information concepts (in spanish). *Revista Facultad de Ingeniería*. 65(1), 152-166.
- Torres A., Méndez-Fajardo S., Gutiérrez Torres A. P. and Sandoval S. (2013). Quality of Rainwater Runoff on Roofs and Its Relation to Uses and Rain Characteristics in the Villa Alexandra and Acacias Neighborhoods of Kennedy, Bogota, Colombia. *Journal of Environmental Engineering*. 139(10), 1273-1278.
- Zamora D. and Torres A. (2014). Method for outliers detection: a tool to assess the consistency between laboratory data and ultraviolet-visible absorbance spectra in wastewater samples. *Water Science and Technology*. 69(11), 2305-2314.

Universidad de los Andes in Bogotá (Reported by Juan Pablo Rodríguez)

The Environmental Engineering Research Centre (CIIA) started its research work on UD in the late 90s by extensively monitoring and modelling rainfall runoff quantity and quality from an experimental 215 ha urban catchment in Bogotá. Since then, the CIIA has carried applied research on such topics as: urban drainage infrastructure monitoring and modelling (e.g. CSOs modelling using CFD), integrated urban drainage modelling (including a detailed study of the interaction of the sewer system and receiving water bodies), computational tools for asset management (i.e. sediment-related blockages and cross-connections), urban rainfall analysis and modelling including climate variability, and green roofs monitoring and modelling. More recently the CIIA has started various research programmes on: (a) Designing and monitoring pilot Sustainable Urban Drainage Systems (SUDs) in Bogotá; this research is being developed in collaboration with the University of Alabama (Prof. Robert Pitt's research group) and is funded by the local water utility and environmental agency, (b) Operationalizing user-driven resilience for sustainability transitions in cities, as part of an emerging international research network (see <http://ourscities.net>), particularly on voluntary water demand management and the assessment of green infrastructure environmental, social and economic services, and (c) promoting energy efficiency in wastewater treatment plants in Latin America and the Caribbean in collaboration with Water Environment Research Foundation (WERF) and the World Bank. Some of the most recent research work has been published as follows:

- Manz B. J., Rodríguez J. P., Maksimović Č. and McIntyre N. (2013). Impact of rainfall temporal resolution on urban water quality modelling performance and uncertainties. *Water Science and Technology*. 68(1), 68-75.
- Rodríguez J. P., McIntyre N., Díaz-Granados M. A., Achleitner S., Hochedlinger M. and Maksimović Č. (2013). Generating time-series of dry weather loads to sewers. *Environmental Modelling & Software*. 43, 133-143.
- Rodríguez J. P., McIntyre N., Díaz-Granados M. A., Quijano J. P. and Maksimović Č. (2013). Monitoring and modelling to support wastewater system management in developing mega-cities. *Science of the Total Environment*. 445-446, 79-93.
- Rodríguez J. P., McIntyre N., Díaz-Granados M. A. and Maksimović Č. (2012). A database and model to support proactive management of sediment-related sewer blockages. *Water Research*. 46(15), 4571-4586.
- Rodríguez J. P., Achleitner S., Möderl M., Rauch W., Maksimović, Č., McIntyre N., Díaz-Granados M. A. and Rodríguez M. S. (2010). Sediment and pollutant load modelling using an integrated urban drainage modelling toolbox: an application of City Drain. *Water Science and Technology*. 61(9), 2273-2282.

Universidad Nacional de Colombia in Bogotá (Reported by Erasmo Rodríguez and Pedro Avellaneda)

The Water Resources Engineering Research Group (GIREH) from “Universidad Nacional de Colombia” has been working for several years on topics related to Urban Hydrology mainly in three aspects. The first one is related to the monitoring, modelling and hydrological and environmental analysis of an urban micro basin. For this, a database has been developed since 2008, using a dense hydrometeorological instrumentation placed on campus on an area of about 1.2 km². This database has been used to rigorously implement basic hydrological models and more complex urban hydrological models — such as SWMM and Citydrain — for both water quantity and quality purposes. With respect to the second aspect, GIREH has been working on the analysis of climate, in particular, precipitation variations over Bogotá. A historical analysis of hailstorms over the city has been conducted, investigating the relationships among storm variation, climate change, and air pollution. The third aspect is related to the analysis of sustainable urban drainage systems on campus, mainly infrastructure for rainfall harvesting and green roofs. Research results, conducted by GIREH, have been published in several journals and presented in various national and international academic events. Some of the most recent research work has been published as follows:

- Avellaneda P., Ballesteros T., Roseen R. and Houle, J. (2011). Bayesian storm-water quality model and its application to water quality monitoring. *Journal of Environmental Engineering*. 137 (7), 541-550.
- Sanchez-Villa X., Donado L., Guadagnini A. and Carrera J. (2010). A solution for multicomponent reactive transport under equilibrium and kinetic reactions. *Water Resources Research*. 46 (W07539).

Universidad del Norte in Barranquilla (Reported by Humberto Ávila)

The Estudios Hidráulicos y Ambientales Institute (IDEHA), from Universidad del Norte (Barranquilla), has been developing a monitoring and early warning system for the storm drainage system management in Barranquilla (see www.pluvial.co), which allows the reduction of risk generated by the dangerous urban flows in the city’s streets, benefiting more than one million people. IDEHA is also working on developing pilot projects of Sustainable Urban Drainage Systems (SUDS) in different city sectors serving to propose strategies of urban retrofitting for the storm runoff and water quality management in urban areas. Work is being done on classification models for SUDS application in planning processes and rainfall-runoff modelling in urban basins for early warning systems. Some of the recent research work has been published as follows:

- Ávila H., Pitt R. and Clark S. E. (2010). Development of effluent concentration models for sediment scoured from catchbasin sumps. *Journal of Irrigation and Drainage Engineering*. 137, 114 – 120.

Universidad Distrital Francisco José de Caldas in Bogotá (Reported by Carlos Zafra)

The Environmental Research Group (GIIAUD) has a research track particularly on urban runoff pollution (i.e. heavy metals) as reflected in the following recent journal publications:

- Zafra C. A., Luengas E. C. and Temprano J. (2013). Influence of traffic in the heavy metals accumulation on urban roads: Torrelavega (Spain) - Soacha (Colombia). *Revista Facultad de Ingeniería*. (67), 146-60.
- Zafra C. A., Temprano J. and Tejero I. (2011). Distribution of the concentration of heavy metals associated with the sediment particles accumulated on road surfaces. *Environmental Technology*. 32(9), 997-1008.

- Zafra C. A., Temprano J. and Tejero I. (2011). Heavy metal concentration and distribution (Pb, Zn, Cu, Cd and Cr) in urban road sediments. *Revista Facultad de Ingeniería*. (58), 53-62.

Universidad del Valle in Cali (Reported by Carlos Martinez)

Carlos Martinez of the CINARA Research and Development Institute in Water Supply, Environmental Sanitation and Water Resources Conservation at Universidad de Valle reports on his on-going PhD research on adaptation strategies for flood control in urban areas:

As a step forward, the idea to find an optimal-adaptive measure which provides flexibility is being recognized as a promising area of investigation. The concept of adaptation measures can be applied through a number of methods which vary from products, material, technologies to reduce flood risks and contamination. Adaptation measures are used to manage responses mainly at the local level as part of an overall approach that aims to develop system resilience.

This research will approach the use of adaptation strategies to flood control in urban areas based on experiments using two kinds of steps. First, evaluation of urban flood adaptation will be obtained through the adaptation index, based on the hypothesis that flexibility theories along with available optimisation methods cope with and take advantage of the selection of optimal adaptation measures in urban drainage systems. It will be addressed by developing a framework to evaluate adaptation strategies coupling flexible design and optimisation techniques in order to select the best combination of measures, different objective functions based on criteria and indicators (e.g. natural, social, physical, economic) at different scale analysis will be implemented. Second, the optimal adaptive measures could be assessed and implemented by analysing the ability of the optimal arrangement to cope with extreme rainfall and the consequences of urbanization as main possible scenarios which can alter the previous calculated outcomes. By assuming the effects of extreme rainfall and urbanization on urban drainage as similar (increases in runoff and peak flow over time), IPCC scenarios will be used to help the structural measures to be planned and prepared to deal with more frequent and intense peaks of flow caused by extreme rainfall events.

This PhD research is being done at Unesco-IHE Institute for Water Education in Delft, The Netherlands. It commenced in July 2013 and is expected to be finished after four years

Conference proceedings:

Galindo, R., Martínez-Cano, C., Sanchez, A., Vojinovic, Z., Brdjanovic, D.(submitted): Selecting Optimal sustainable drainage design for urban runoff reduction. Submitted to the E-proceedings of the 36th IAHR World Congress 28 June- 3 July 2015 The Hague, The Netherlands

Martínez-Cano, C., Toloh, B., Sanchez-Torres, A., Vojinovic, Z., Brdjanovic, D. (2014) Flood resilience assessment in urban drainage systems through multi-objective optimisation. Proceedings 11th International Conference on Hydroinformatics HIC 0214, Informatics and the Environment: Data and Model Integration in a Heterogeneous Hydro World 17-21 August New York City, USA ISBN: 978-0-692-28129-1

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

Research and education

Czech Technical University in Prague (CTU) officially started the research project TeleMAS (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 in four urban catchments. A presentation on this topic, which was created by the project team together with Ericsson Research, was given at the World Mobile Congress 2014 (Barcelona, Spain). One of the team members, **Martin Fencel from the CTU, received Poul Harremoës Award for novel and inspiring presentation of his post-graduate research on rainfall monitoring with the help of microwave technologies** at the 13th ICUD. <http://www.telemas.cz>

The project of CTU and ATEKO “Heat recovery from wastewater in combined sewer systems”, which started in 2013, continued in 2014 with the main activities focusing on the development of a cost-efficient heat exchanger and its in-situ testing.

The new CTU research and development centre UCEEB (WP: Architecture and environment) developed a microscale experimental site for monitoring of near-surface fluxes of water, energy and momentum in the soil-vegetation-atmosphere system, as well as above man-made structural surfaces. The experiments are related to microclimatic conditions in urban areas and SUDS measures. Hydrology group started a postdoctoral research project “Water and heat dynamics in anthropogenic soil systems affected by soil structural changes”.

Brno University of Technology coordinates the Visegrad Fund project “Sustainable rainwater management in the V4 countries”. The objective of this project is 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 2014 output of this project is a publication containing approaches to urban rainwater management.

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 is supported by the Swiss Confederation Funds for East European countries. In 2014 a field trip to Switzerland and Germany took place, a series of lectures was organized and a book “Sustainable storm water management in the Czech Republic” was written.

Conferences

14th International Conference on Urban Drainage (ICUD), which will be held in Prague, Czech Republic, on September 10-15, 2017, was officially introduced at the previous conference in Kuching, Malaysia, 2014. The organizers of the 14th ICUD conference are the Czech Water Association (CzWA) and the Czech Technical University (CTU) in Prague. Please view the video and show your interest by proposing your ideas for the conference on the web page <http://icud2017.org/>.

The 14th annual Conference on Urban Water covered a variety of technical, legislative and ecological topics and included an international section discussing topics of the Visegrad Fund project.

DENMARK (REPORTED BY KARSTEN ARNBJERG-NIELSEN)

Urban drainage continues to be high on the political agenda with several substantial floodings occurring annually. Within the last few years numerous reports on sea surges as well as pluvial and fluvial flooding have emerged. A number of projects have been financed during the last five years by The Danish Strategic Research Council. The projects Black, Blue and Green (<http://ign.ku.dk/forskning/landskabsarkitektur-planlaegning/landskabsteknologi/2bg-black-blue-green>), Storm- and Wastewater Informatics (<http://www.swi.env.dtu.dk/>), Centre for Changes in the Earth System (<http://cres-centre.net/frontpage/>), RiskChange (<http://riskchange.dhigroup.com/>), and Hydrocast (<http://hydrocast.dhigroup.com/>) have educated more than 20 PhD students focusing on urban drainage while the projects also had a wider scope. Quite a few of these PhD students have been successful in getting tenure track positions at universities to continue within the field. The research funding structure has been modified to enable larger projects and giving more focus on societal challenges.

Water is high on the agenda and the first round of successful applications included a project on water management within industries. The Danish IWA National Committee is currently preparing a bid for hosting the IWA World Water Conference in Copenhagen in 2020.

The projects have led to substantial spinoffs. One is an update of the design guideline for use of precipitation for design of urban runoff, available in Danish here: https://ida.dk/sites/prod.ida.dk/files/svk_skrift30_0.pdf. The new guideline is based on findings reported in around 15 publications, most which are out now. Another guideline for integration of urban design practices with urban spatial planning is underway, but will hopefully be finished in 2015. Collaboration between research organizations, utilities, municipalities, and industry is facilitated through many innovation activities, notably through Water in Cities (www.vandibyer.dk/english) and Klimaspring (www.klimaspring.dk). An initiative focusing on providing better rainfall data for urban drainage is also underway, aiming at providing high-quality data that are spatially distributed.

The Danish contribution to the Australian project CRC for Water Sensitive Cities has also generated a renewed interest in defining a design practice for urban runoff from very large events, i.e., where 1D/2D models are needed.

The WSUD approach to urban drainage is gaining ground in Denmark with many actors looking for a new balance between green and grey stormwater infrastructures. Among more innovative research projects, one should mention daylighting. One such an example is the innovation consortium City and Water in Balance, in which the ability of stormwater management to improve the urban water balance is explored (www.byerivandbalance.dk). Another example is the Water Resilient Green Cities in Africa project, financed by Danida Fellowship Centre, where ideas on green infrastructure

based stormwater management use to advance urban development is being tested in Addis Abeba in Ethiopia and Dar es Salaam in Tanzania (www.watergreenafrica.dk).

FRANCE (REPORTED BY JEAN-LUC BERTRAND-KRAJEWSKI)

1. News from OTHU (Field Observatory for Urban Water management)

During the exhibition "Pollutec" in Lyon, France (December 3rd, 2014), the 12 organization members of OTHU (Field Observatory for Urban Water management), linked to 9 research institutions (INSA de Lyon, Universités Lyon 1, Lyon 2, Lyon 3, BRGM, IRSTEA of Lyon, Ecole Centrale de Lyon, ENTPE and VetAgroSup), and supported by the Greater Lyon and the Rhône Méditerranée Corse Water Agency, renewed their commitment for 4 years in order to develop and enhance the observations and research programmes based on the observatory's data. The OTHU programme aims to better understand and manage the urban water cycle.

Gislain Lipeme Kouyi (assoc. prof. at LGCIE-DEEP, INSA Lyon) is the new Scientific Director of OTHU, since the 1st of January 2015. Having been the OTHU Scientific Director for 8 years, Prof. Sylvie Barraud (LGCIE-DEEP, INSA Lyon) now leads the OTHU Federal Research Structure that aims to strengthen relationships and collaborations between the 9 research institutions involved.

One of the OTHU key events in 2015 will be the national conference (September 17th, 2015, Lyon, France) on "Metrology and modelling for stormwater detention/infiltration systems management". For more information or collaborations, please contact us (info@othu.org) and visit <http://www.othu.org>.

2. 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 an urban 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 from Limoges University, ENTPE, INSA Lyon, Faculty of Pharmacy of Paris Sud University and ISA-CNRS of Lyon. The project is supported by the European Union, the Rhône-Méditerranée Corse Water Agency, the Rhône-Alpes Regional Council and other partners.

SIPIBEL is a research and observation 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, grouped in 4 themes: 1) pollutant loads, 2) treatment, 3) risks, 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" will be organised in Geneva (Switzerland) and Annemasse (France) as the final event of the French-Swiss Interreg project IRMISE. IRMISE,

an extension of the Bellecombe site, focuses on the impact of micropollutants and pharmaceuticals discharges from wastewater treatment plants downstream on the Arve River catchment and on the Geneva aquifer.

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, in order to achieve 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 of Lyon, ENTPE, CNRS, EHESP and universities of Paris Sud, Limoges and Lyon).

For more information about these projects and "Water and Health Conference", please contact us (sipibel@graie.org) and visit our Webpage: <http://www.sipibel.org>.

3. I.S.Rivers 2015

Following the great success of the 1st international conference I.S.Rivers 2012, GRAIE and ZABR will organise the second edition of **I.S.Rivers** on "Integrative sciences and sustainable development of rivers", 22-26 June, 2015, in Lyon, France. This conference focuses on the sustainable management of the world's natural and human-impacted rivers, especially the European ones.

The I.S.Rivers deadlines:

- Preliminary programme: February 2015
- Registration opening: March 2015

All information is on the conference website: www.isrivers.org Email: isrivers@graie.org

4. Novatech 2016: save the date!

We are pleased to announce the 9th edition of the Novatech international conference, will be held from July 3 to 7, 2016 in Lyon, France! Novatech conferences focus on research and experiences concerning the planning and technologies for sustainable urban water management. Call for papers will be issued in summer 2015.

Conference website: www.novatech.graie.org Email: lucie.dupouy@graie.org

5. News from INSA Lyon

The former research team DEEP (Déchets Eau Environnement Pollutions – Wastes Water Environment Pollutions) within the LGCIE (Laboratory of Civil and Environmental Engineering) became an autonomous multidisciplinary laboratory named LGCIE-DEEP in November 2014. The director is Jean-Luc Bertrand-Krajewski. A new website is under preparation. LGCIE-DEEP research domains are: 1) urban water systems and 2) contaminated solids, sediments and wastes. In

both domains, the research themes include: 1) knowledge of releases and transfers of pollutants, 2) physical, chemical and biological treatment and recovery processes, and 3) methods for performance and environmental evaluation.

In 2014, two PhD theses from LGCIE-DEEP have been awarded:

- Adrien Momplot received the 2014 Young Researcher Price from the French AUGC (National University Association for Civil Engineering) for his PhD on 3D modelling of flows in sewer systems.
- Christel Sebastian received the ASTEE 2014 Research Price from ASTEE (Association Scientifique et Technique pour l'Eau et l'Environnement – ASTEE is the French IWA Governing Member) for her PhD thesis on micropollutants removal in large stormwater tanks. The thesis is available at <http://theses.insa-lyon.fr/publication/2013ISAL0129/these.pdf>

Also in 2014, Jean-Luc Bertrand-Krajewski received the Hydrotechnic Grand Prix from SHF (French Hydrotechnic Society – SHF is the French representative member of IAHR) for his research work and activities in urban hydrology.

6. Méli Mélo - Démêlons les fils de l'eau

Dealing humorously with serious questions about water, in an effort to pass on knowledge much too often confidential to the general population, "Méli Mélo – démêlons les fils de l'eau" is a public awareness project led by Bernard Chocat (Emeritus Prof at LGCIE-DEEP, INSA of Lyon), the GRAIE and the film company Media Pro.

This original multimedia project is based on 2 communication media:

- A French comedy web series available on YouTube;
- A scientifically validated website, with consolidated texts, illustrations and press drawings.
-

Nine different water topics have already been covered in 2014 and more than 130,000 views on YouTube registered since June 2014!

Website: www.eaumelimelo.org Email: lucie.dupouy@graie.org

7. 30th anniversary of GRAIE in 2015

In 2015, the Graie will celebrate its 30th anniversary, reflecting 30 years of experience in the development of collaborative research and technical exchanges, in order to build, share and promote a common culture towards water management, town planning and conservation of aquatic environments!

Thanks to the 3 successive professors who chaired the GRAIE: Bernard Chocat, INSA of Lyon (founder of the association), Yves Perrodin, ENTPE of Lyon, and Jean-Luc Bertrand-Krajewski, INSA of Lyon, who is presently chairman of the GRAIE.

Website: www.graie.org Email: asso@graie.org

8. News from OPUR (Observatory of Urban Pollutants in the Paris region)

OPUR is a research platform in the field of urban hydrology, located in the Paris conurbation. It combines both a substantive observation infrastructure and a long-term partnership among the researchers and operators. OPUR started in 1994 and its program is divided into successive 6-year research phases.

The fourth phase of OPUR (2013 – 2019) is a continuation of work on the production, transport and management of urban water contaminants. An important place is given to the following topics: (1) Source control of urban stormwater contamination; (2) Alternative water resources in the city; (3) Development of new methods for monitoring and characterization of contaminants; and (4) Integrated modelling of pollutant flows. The research activities are related both to engineering sciences and human and social sciences.

17 PhD theses are under development within the frame of OPUR, three were defended in 2014:

- Multidisciplinary design of a general method for modelling roofing materials emissions on the city scale. Development and illustration for zinc in the city of Créteil (E. Sellami, LEESU – CSTB)
- Modelling of air and stormwater pollution related to vehicular traffic (M. Fallah-Shorshani, CERE – LEESU)
- Wastewater characterization in Lebanon: Impact on the operation of treatment plants (E. Maatouk, LEESU - PRASE)

The following PhD thesis projects started in 2014:

- Semi-distributed modelling of the production and transport of SS, PAH and metals in urban stormwater (S. Al Ali, LEESU – CERE)
- Measurements and modelling of the fate of micropollutants in biofiltration swales for road runoff (K. Flanagan, LEESU – CEREMA)
- Quantitative and qualitative performance of the "First - flush" devices for rainwater harvesting systems (Y. Qiao, CSTB – LEESU).
-

Two new research projects have been launched within the frame of OPUR in 2014: ROULÉPUR (see “news from URBIS” section) and COSMET’EAU projects were financed within a national call for projects on “Innovation and change in practices: fighting micropollutants in urban water”.

Learn more at <http://leesu.univ-paris-est.fr/opur/>

Contacts: Ghassan Chebbo (chebbo@leesu.enpc.fr) and Marie-Christine Gromaire (gromaire@leesu.enpc.fr)

9. Investigations on microplastics in urban environment

Microplastics are defined as plastic particles < 5 mm. These microplastics cover a large and continuous spectrum of sizes and shapes including 1D-fibers, 2D-fragments and 3D-spherules. Ingestion of microplastics and interaction with micropollutants were demonstrated. While the marine plastic pollution starts to be well documented, there is a limited focus on the continental area and particularly on the urban environment. Therefore, the LEESU launched in 2013 a research program

on the sources, fates and fluxes of microplastics in urban areas and the subsequent impact of the urban area on surface water. Therefore, microplastic contamination in wastewater, treated water, stormwater, total atmospheric fallout and freshwater is investigated. The first investigations confirm the presence of microplastics in all urban matrices and provide the knowledge on the type and size distribution of microplastics in the [100 – 5 000 µm] range. For the first time, the presence of microplastics, mostly fibers, is also highlighted in the total atmospheric fallout (29-280 particles/m²/day). Preliminary results also indicate high levels of fibers in wastewater (260-320 x10³ particles/m³) but the wastewater treatment significantly decreases the microplastic levels (14-50 x10³ particles/m³). In the river Seine, two sampling devices are used to collect both large and small microplastic particles: i) a plankton net (80 µm mesh) and ii) a manta trawl (330 µm mesh).

Sampling with the plankton net showed a predominance of fibers with concentrations ranging from 3 to 108 particles/m³. A greater diversity of both microplastic shapes and types was encountered during manta trawl sampling, but at much lower concentrations (0.28-0.47 particles/m³). The investigations are still continuing to confirm these results. For further information, consults these references: *Assessment of floating plastic debris in surface water along the Seine River*. J. Gasperi, R. Dris, T. Bonin, V. Rocher, B. Tassin. *Environmental Pollution* 2014, 195, 163-166.

First investigations on the microplastic contamination in an urban area: the case of the Greater Paris. R Dris, J. Gasperi, V. Rocher, M. Saad, B. Tassin. *Environmental chemistry* 2015, accepted.
Contact: Johnny Gaspéri (gasper@u-pec.fr).

10. COSMET'EAU

The Cosmet'eau project (2015 - 2018) investigates the “changes in the personal care products (PCPs) consumption practices: from the whistleblowers to the impacts on aquatic environments.” In this project, the example of PCPs will be used to understand how public health concerns related to micropollutants can be addressed by public authorities – including local authorities, industries and consumers. The project aims to characterize the possible changes in PCP consumption practices and to evaluate the impact of their implementation on the aquatic contamination. The first objective is to study the whistleblowers and their influence on consumer and government awareness. The second objective is to develop innovative technical and sociological tools for (i) the study of consumption practices, (ii) the monitoring of PCP residues and their potential substitutes, and (iii) the assessment of their effects on the receiving environment. The third objective is to provide stakeholders with tools to anticipate these changes in consumption practices and to choose the most efficient ones.

The Cosmet'eau project is supported by the Leesu and brings together public and private actors in the field of water: the Leesu laboratory, two stakeholders – Interdepartmental Union for Sanitation of the Paris agglomeration (SIAAP) and the City of Paris; a SME in ecotoxicology field – VigiCell –; and an association dedicated to the promotion of research –Arceau-IdF.

11. ANR project “Trafipollu” (2013-2016)

The main objective of TrafiPollu project is to develop modelling tools to produce dynamic maps characterizing the fate of pollutants generated by traffic. To achieve this goal, modelling chains are

currently implemented at various urban scales (street, district and city) to predict (i) the traffic behaviour, (ii) the pollutant emissions, (iii) the pollutant dispersion in the atmosphere, (iv) the deposition of pollutants, and (v) pollutant transfer in water and soil. The project is completed by a task on methods dedicated to the crossing of scales such as multifractals. The project brings together researchers from traffic (ENTPE, IFSTTAR), pollutant emissions (IFSTTAR), air quality (CEREA, Air Paris), and hydrology (IFSTTAR Nantes, LEESU) fields.

As a part of this project, a large-scale experiment involving traffic impacts on different media (air, water and soil) was set up in Le Perreux sur Marne (94) near Paris to monitor, in space and time, the pollutants of main interest (NO_x, CO_x, PAH, particles and metals). In this framework, an inlet of a road watershed and the outlet of the urban catchment (0.11 km²) were equipped to conduct continuous measurements of flow rates and water quality (with a turbidity probe) from spring 2014. The observation of the meteorological conditions, traffic and air quality also took place at the same experimental site in 2014. In 2015, hydrological measurements will continue until the summer and should be completed by continuous quantification of PAH content in stormwater by spectrofluorimetry.

At the same time, the water quality module of the distributed hydrological modelling platform Multi-Hydro is developed by Hong Yi (PhD student directed by Ghassan Chebbo and Daniel Schertzer). Model outputs will be compared to experimental data. Micro-scale processes will be modelled on the road watershed using FullSWOF software coupling 2D shallow water equations and erosion module based on Hairsine and Rose equations. Concerning its hydrological part, Trafipollu project is associated with the OPUR program.

Contact: Céline Bonhomme (celineb@leesu.enpc.fr)

More information: <https://sites.google.com/site/trafipollu/>

12. News from URBIS

Three coordinated projects on control of micropollutants in urban runoff.

Three coordinated projects were proposed by the three observatories of the URBIS Network and were selected by the French Office for water and aquatic environments and Water Agencies in a call for projects on innovation for controlling micropollutants in urban waters.

Roulepur, proposed by the OPUR observatory in Paris, focuses on the performance evaluation of technical devices specifically designed to improve the quality of runoff water by means of filtration processes. These devices are being applied in a variety of urban contexts by several communities, especially for controlling runoff from street and road surfaces. Besides hydraulic, biological and geochemical processes, a special focus is put on innovative processes underlying the choice of such techniques.

Micromegas was proposed by the OTHU observatory in Lyon and aims at comparing, in the same environment and for the same rain events, the efficiency of upstream vs. downstream runoff control devices. Unlike the ones considered in the Roulepur project, the devices dealt with by Micromegas

project were not designed specifically for pollution control, but should have a significant effect on pollutant loads. This project has also a sociological component, concerning the strategy (expression of objectives and specifications for results) as well as the perception of such devices by the public.

Matriochkas by ONEVU in Nantes also deals with the performance assessment of generic runoff management facilities, but taking a multi-scale approach. The performance of some specific facilities will be investigated in an operational context, and the results will be pooled with similar ones from other projects. A larger scale approach will be performed by a survey of the whole territory of the Nantes Metropolitan Urban Community, and a smaller scale study will be performed on a pilot filtration facility to investigate the effect of local hydraulic conditions on pollutant retention.

All three projects will end in 2018 and aim at a multi-criteria assessment of different devices, including pollution control (either by runoff volumes control, or by pollutant mass removal), management constraints, direct costs, and externalities either positive or negative. A common valorisation of results will take advantage of the different approaches and contexts investigated, and encompass both the performance of different facilities and a feedback about the methods used for performing these assessments.

A postdoctoral internship concerning the substances, which should be monitored in urban matrixes. The observatories of the URBIS network consistently ponder about the pollutants to be monitored either in urban waters (runoff, combined sewer overflows, discharge from treatment plants) or solids (sediments from runoff control facilities, sludge from treatment plants). A huge number of pollutants have already been detected in receiving waters and this raises questions about the economic and technical feasibility of monitoring all these pollutants in urban matrixes. So a reflection was conducted by C. Sebastian within the URBIS about the methods and criteria, which may be used for prioritising the substances to be monitored in urban matrixes, with respect to the protection of the environment and human health.

A bibliographical study revealed that a suitable a method was developed by the French Institute of Industrial Environment and Risks (INERIS) and applied in the third National Plan for Health. It relies on a multi-criteria analysis combined with an extensive consultation of scientists and operators. This method was adapted to the particular question of pollutants in urban matrixes: an extensive list (universe of substances) was established, and a working group of specialists from the three observatories identified the criteria for prioritisation. These criteria include the proportion of anthropogenic sources, persistence, bio-accumulation, dispersion, carcinogenicity, mutagenicity, effects on reproduction and endocrine perturbations, as well as technical and economic criteria. Some rules and hints for assessing the values of criteria are also provided. A survey among URBIS researchers showed that the weighting of criteria may differ. Anyway, a first set of weights was selected for applying two multicriteria analysis methods on a set of twenty substances: Electre III provides a ranking, whereas Electre Tri distributes the items considered into categories. The latter method is more suitable for comparing a large number of items. A specific interface was developed as a Visual Basic program, so any end-user can apply the underlying methods to his own set of criteria.

This study is a first step towards a long-term involvement of researchers and operational staff in an explicit definition of their objectives and their implication for the associated monitoring schemes.

Contact: Claude Joannis (claude.joannis@ifsttar.fr)

Visit also <http://www.onema.fr/LUTTE-CONTRE-LES-MICROPOLLUANTS>

13. A new hydro-meteorological radar in Paris

On the 4th December, 2014, Ecole des Ponts ParisTech (ENPC) installed its radar to improve the water management in the Paris Region. This was achieved on the roof by FRAMATEC, the builder of the tower, and SELEX, a radar provider, under the coordination of the ENPC logistic service GEMSEC and the HM&Co team of the laboratory LEESU. This was immediately followed by on-site radar tests.

The hydro-meteorological radar X-band with dual polarization is the latest generation measurement device that will enable to monitor and forecast rainfall at street scale and down to the minute. This new type of measurements has become essential for better water management in urban areas and contributes to reducing the risks associated with heavy rainfall events: drainage network overflows, urban floods, polluted surface runoff, and management of retention basins. Other application areas are considered: energy and mobility networks, events, tourism and other industry strongly influenced by the weather.

This research and innovation experiment is co-funded by the Region Ile-de-France (project RadX@DF), the European Commission (Interreg IVB NWE RainGain) and Veolia (Chair Hydrology for a Resilient City).

Contact: Daniel Schertzer (Daniel.Schertzer@enpc.fr)

14. Mentor project

The MENTOR (MEasurement sites conception method for sewer NeTwORks) project has started in 2012 and is currently in its full development. This project involves academic teams within the domains of hydraulics and fluid mechanics (GEMCEA, ICUBE, IFSTTAR, INSA –LGCIE, INSA LMFA, LEESU), and also social sciences (INSA EVS), and three sewer system operators (Grand Lyon, Lyonnaise des Eaux, Nantes Métropole) investigating the practices and representations implied by setting up measurement devices in sewers. It is a development of the COACHS (Computations and their Applications in Channel Hydraulics for Sewers) program that ended in 2014 and gave the opportunity of two technical sessions organized by GEMCEA whose more prominent results can be downloaded on <http://www.gemcea.org/projets/coachs/presentation-des-taches/page-tache-4-valorisation> (in French) as well as the 4 technical guides that are freely available. The final report (In French too) can be downloaded on <http://www.developpement-durable.gouv.fr/Appel-a-projets-2009.html>

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15. SER project

The SER (Sédiment en Réseau, Sediment in networks) project has taken its epilog with the public presentation of Nicolas Hemmerlé's thesis on October 2014. That research has shown that a lutocline can be observed in combined sewers. This term defines the step between waste waters (with suspended solids concentrations mainly below 1g/l) and a concentrated layer, also called sheet layer or fluid mud. The results showed that the concentrated layer comes from sedimentation of the suspended solids present in the water column during the slowest period of the day. This jammed material layer appeared to be eroded by the daily discharge peak, even during dry periods. Those results are based not only on sonar observations, but also on the first results of the Furrina prototype that is devoted to continuously monitor the sediment height at a given point in a sewer trunk.

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GERMANY (REPORTED BY MANFRED SCHÜTZE, GERMANY)

Traditionally, 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. The German Ministry of Education and Research (BMBF), within its funding priority "Sustainable Water Management", is currently funding a number of thematic areas related to urban drainage. All of these projects are characterised by a close cooperation of researchers, end-users and industry. Action areas, each of which covers around 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>

Space within this JCUD Newsletter does not allow presenting each project in detail, but the reader is invited to consult the given webpages, which will link on to the webpages of the individual projects involving more than 100 academic and non-academic partner institutions.

Among the research topics attracting major interest at present, one could list (though this enumeration is, by no means, exhaustive) quality measurements in sewer systems; deeper cooperation between landscape architects and water engineers; and, advances in simulation programs. Measurements have also been the focal topic of the 2014 meeting of the Central European Researchers' Simulation group (known as "HSG" to the German-speaking community; www.hsgsim.org), which has been hosted by the University of Applied Sciences in Münster in November 2014. Also integration of dynamic modelling into the current design practice of wastewater treatment has been an activity of the respective subgroup of HSG. Making the use of

simulators more accessible and intuitive has been a driver for the developments resulting in new, exciting simulator products; furthermore, also 2D flood modelling is attracting interest and gaining applications in Germany.

Another exciting project, in which more than a dozen institutions from Germany, together with their colleagues from four partner cities from different regions of the globe (Rwanda, Vietnam, Egypt, Germany), are involved, focuses on methods of urban planning, which allow rapid planning procedures (appropriate for the often data-scarce situation in many places of this world) for rapidly growing cities, considering jointly the various urban infrastructure systems, such as energy, solid waste, water supply and wastewater, and urban agriculture. The “Rapid Planning” project (www.rapid-planning.net) has started only recently, but the first initial results are promising.

Among the large events held in 2014, a mention will be made here only of **IFAT, the world’s largest trade fair on water and wastewater technology**, which has been held again in Munich and has attracted technical experts from all over the globe.

Also 2015 will offer a wide range of activities and exciting and relevant results, and I am already looking forward to learn more about those.

ITALY (REPORTED BY GIUSEPPINA GAROFALO, MARCO CARBONE, GENNARO NIGRO, AND PATRIZIA PIRO)

Urban Water Park in the Vermicelli watershed (University of Calabria)

In the urban environment, the progressive increase of impervious surfaces has produced drastic changes in the natural hydrological cycle. During rainfall events, the infiltration rates and evapotranspiration in highly urbanized watersheds have significantly dropped and, as a result, an increase of runoff volumes and peak flow rates has occurred. Heavy rainfall-runoff events may overwhelm the urban drainage systems, causing flooding, which may be dangerous to human lives and urban infrastructures. The reduction of green areas and surface ‘sealing’ not only produces negative effects from a hydrological-hydraulic perspective, but also from an energy point of view and contributes to modifying the urban microclimate and generating heat islands in our cities.

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 activities carried out in the implementation of the experimental installations and the ongoing research at the Urban Water Park could represent an useful guideline for design engineers, planners, managers and government decision makers, etc., who have to face urgently and inevitably the issues of stormwater management in the urban environment.

The study 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), co- financed by the European Regional Development Fund, and the National Resources Grant. A green roof has been designed and engineered at the

University of Calabria, along with other sustainable water-green solutions, such as a permeable pavement and a biofiltration system. The main objective of the project is the development of an integrated and sustainable management service for the water–energy cycle in the urban environment. Specifically, the green roof is covered by autochthon vegetal species (Mediterranean climate) and is characterized by innovative stratigraphies. The data have been collected by advanced custom designed instrumentation since September 2013. The green roof is designed and built based on the local climate conditions. Specifically, autochthon vegetal species, adapted to grow in a Mediterranean climate condition, are utilized, instead of commercial types of species, such as Sedum, widely used in Germany and UK. The objective of this study is to evaluate the hydrological performance of a full-scale green roof in the Mediterranean climate during dry and wet weather conditions. The hydrological performance evaluation is based on the water content data monitored across the entire stratigraphy in dry and wet weather conditions as well as the flow rates released from the green roof for three rainfall-runoff events.

Sustainable solutions offer a wide range of benefits to people and wildlife, incorporate both the natural environment and engineered systems, and preserve ecosystem values and functions. Green roofing is a GI practice, which is particularly advantageous where land area is unavailable for other BMPs.

The test site, as shown in Figure 1, is situated on a fifth-floor terrace of a campus building and consists of four green roof compartments, which vary in their stratigraphy, composition elements and vegetal species. The site is located in a Mediterranean climate region, characterized by hot-dry summers and cool-wet winters. The study refers to three rainfall-runoff events and three dry weather periods selected from a three-month monitoring program (from September to December 2013). The study is based on the data retrieved from two of the four green roof compartments. The first compartment represents the reference roof (a conventional roof), covered by a pre-existing waterproofing layer and equipped with four temperature sensors and a flow meter device at the outlet section. The second green roof with an area of 40 m² and a slope of 1% consists of the following layers: (1) a soil substrate of 8 cm; (2) an ‘egg box’ drainage and storage layer in polystyrene. The storage capacity of the drainage layer is equal to 11 L/m² as reported in the technical data sheet provided by the industrial company. The entire package has a thickness of 14 cm. The roof itself was protected by a tough geotextile membrane. A fibrous membrane was also placed between the drainage layer and the substrate.

A data acquisition system monitored thermo-physical parameters in the four compartments of the green roof (GR) and the building’s rooms underneath. The water content was measured with a relative humidity sensor, consisting of 4-fork detectors. Across the entire stratigraphy, four sampling points in the GR were set up to measure water content in the soil. For each sampling point two relative humidity sensors were installed vertically across the substrate stratigraphy, for a total of 8 sensors in the GR. Rainfall depth was measured every minute using a 0.2 mm resolution tipping bucket rain gauge. With regard to the hydraulic parameters, flow meter devices, installed at the outlet of each compartment, were used to measure the effluent flow rates. The flow meter device was custom designed to measure a large range of flow rates (0.1–2 L/s) and was based on stage-flow rate relationship through an opening. The water level was measured by a level sensor.

The permeable pavement, shown in Figure 2, serves as a parking lot, with an area of about 154 m² and a total depth of 0.98 m, composed of three major layers: a surface layer with concrete blocks of 8 cm, a filter media of 5 cm consisting of glass, sand and zeolite, a drainage layer consisting of 35 cm gravel layer (ASTM N° 57) and a 45 cm gravel layer (ASTM N° 2). At the experimental site, rainfall, runoff and outfall data are measured with a time step of one minute. In particular, the outflow and runoff data are collected by two vertical devices composed of a PVC pipe with a sharp-crested weir along the vertical direction and a level sensor on the bottom.

The PP is currently instrumented to retrieve hydrological parameters. The data are collected from an advanced and modular data acquisition system. During each rainfall event the following measurements are monitored: 1) rainfall depths by a rain gauge; 2) effluent flow rates by a triangular weir and a transducer.



Figure 1. The green roof at the University of Calabria, Italy



Figure 2. The biofiltration filter and the permeable pavement at the University of Calabria, Italy

SWEDEN (REPORTED BY MARIA VIKLANDER, Luleå University of Technology)

New research programs and projects

In 2014, **The Swedish Water Platform** has been set up in continuation of the intensive work for **A Vision for Water: Research and innovation agenda for the water sector in Sweden**, consisting of a total of approximately 50 private companies, universities, institutes of higher learning, research institutes, government agencies, water utilities and other organizations. The Swedish Water Platform is coordinated by the trade organization The Swedish Water and Wastewater Association and aims to create a national platform with broad support from the national water sector in order to

develop an agenda, communication plan and the framework for its engagement and increasing involvement in Horizon 2020, the European Union's new framework program for research and innovation. As a part of its work and in order to stress the significance of the Swedish contribution to solving the current and future challenges of the water sector in Europe, the Swedish Water Platform participated in numerous events in 2014, e.g. the WssTP annual stakeholder conference "Water in Europe: Green Tape or Blue Gold" in June (Brussels), the EIP Water conference in November (Barcelona) or the WssTP Brokerage and WG Event in November in Brussels.

The challenge-driven innovation project **GreenNano for urban drainage management** initiated by the Luleå University of Technology and comprising a total of 26 partners ranging from municipalities and a broad spectrum of private companies to research institutes and universities, started its work in May 2014 and will be running for two years. Combining green infrastructure and advanced treatment technologies, GreenNano takes a holistic approach to stormwater issues. By developing and building green infrastructure and advanced technologies for stormwater treatment, GreenNano will improve the implementation of sustainable stormwater systems, contribute to aesthetically attractive habitats, reduce the environmental impact of stormwater on lakes and rivers as well as the risk of flooding and create comprehensive solutions for innovative stormwater management.

The joint Swedish and Australian project **Improving Green Roof performance in demanding climates using the ecosystem mimicry concept** led by the Luleå University of Technology in co-operation with the University of Melbourne will start in January 2015 and be carried out in both participating countries. Green roofs and their design will be evaluated with respect to demanding climates such as cold sub-arctic and dry Mediterranean climate, both under natural conditions and in laboratory by applying the new concept of ecosystem mimicry, aiming to assess the function of green roof designs and identify opportunities for improved performance. As part of the project, improvements in urban hydrology and energy performance will be identified. Due to the cool climate, better adaptation of green roofs to demanding climates is important for their use in Sweden.

Graduate Thesis

Several graduate theses concerning urban drainage, all from Luleå University of Technology, were reported in 2014. In June, Karolina Berggren defended her PhD thesis "Urban stormwater systems in future climates: assessment and management of hydraulic overloading", in which she discussed urban rainfall and runoff processes, and runoff conveyance by separate storm sewer systems, and the changes in these processes caused by climate change, with the overall objective of investigating urban stormwater systems response and performance related to future climate changes, and particularly the future rainfall regime, by means of urban rainfall/runoff modelling.

In October, Helen Galfi presented her licentiate thesis "Suspended solids and indicator bacteria in stormwater runoff: Sources of bias in field measurements" the aim of which was to assess stormwater sampling methods and sample analyses with respect to the bias which may be introduced at different stages of the process of monitoring suspended solids and indicator bacteria.

In December, three licentiate theses were published starting with Shahab Moghadas who presented his work on “Generation of urban runoff: Seasonal and climate change perspective” that aimed at addressing the challenges of runoff generation in cold regions by advancing the procedures for winter urban runoff computations and the assessment of control measures during the winter/spring period, when the snowmelt and frozen soils dominantly impact runoff generation in the current and future climates.

For the licentiate thesis “Hydraulic Performance of Stormwater Infiltration Systems – Long-term Behaviour”, Ahmed Al-Rubaei evaluated the long-term hydraulic performance of 14 stormwater infiltration systems located in three Swedish cities Växjö, Luleå, and Haparanda, and investigated different factors affecting their performance.

Furthermore, Laila Søberg presented her licentiate thesis “Metal pathways in stormwater treatment systems”. More precisely, metal pathways in wet stormwater ponds and stormwater biofilters were investigated in laboratory studies and field experiments to evaluate metal accumulation in different compartments of the two systems. For wet stormwater ponds the primary issue addressed in detail was their risk of affecting the wider environment whereas for stormwater biofilters the main issue was their capacity to improve stormwater runoff discharge.

Research reports

Methods for assessment of the influence of extreme rainfalls on stormwater systems (Metoder för att undersöka extrema regnhändelsers påverkan på dagvattensystemet). Gustafsson, A-M., Svensson, G. & Viklander, M., SWWA Swedish Water and Wastewater Association, 2014.

This report is based on a project carried out by the Luleå University of Technology in collaboration with five Swedish municipalities in order to evaluate how to use different methods of assessing the influence of extreme rainfalls on stormwater systems. The report aims to give an overall view of the different methods and the uncertainties arising with regard to their use. In addition to the data from the Luleå project, further data from studies at Luleå University of Technology as well as other Swedish and international studies has been used in order to give an as broad perspective of methods as possible.

The feasibility of a national standard system for collection of high resolution rain data (Högupplöst nederbörd – förprojekt; Ett nationellt, samlat insamlingsystem för högupplösta regndata i Sverige). Hernebring, C., SWWA, 2014.

The feasibility of creating a national standard system for collecting high-resolution rainfall data was investigated in a 3-month trial run of the test system. Continuous high-resolution rainfall data were collected from 5 stations in Gothenburg and Jönköping, converted into the data format according to SMHI specifications and sent to SMHI for storage in a database. Afterwards, the database was interrogated to check if the raw data could be retrieved satisfactorily.

Conference

Water in the Sustainable City, a conference aimed at highlighting Swedish and international experiences in urban development focusing on water was held in Gothenburg in November 2014. Organizers of the conference were the city of Gothenburg in collaboration with the Swedish research centers of excellence Stormwater&Sewers at Luleå University of Technology and VA-teknik Södra (Urban Water technology Southern Sweden) as well as the consulting company Urban Water Management. During this two-day conference, nationally and internationally re-known speakers as Dr Prof Xie Xinghua (Nanjing Hydraulic Research Institute, China), Prof Richard Ashley (Sheffield University, UK), Gilbert Svensson (adjunct professor, Luleå University of Technology, Sweden), Prof Greg Morrison (Chalmers University, Sweden) and many others presented good examples of urban development from around the world focusing on water on day one while day two was allocated to presentations on Swedish local conditions for stormwater management and climate adaptation.

Awards

In 2014, the yearly **Water Award** granted by the Swedish Water Association (Föreningen Vatten) went to Emeritus Professor Gilbert Svensson for his career achievements in the urban water sector both as an academic and consultant. Gilbert is a specialist in a wide range of issues related to municipal water supply and wastewater and storm water management at Urban Water Management and is also adjunct professor at the Luleå University of Technology. His national and international credits are numerous as he e.g. was responsible for the international SIDA courses at Chalmers Technical University and the MISTRA program “Sustainable Urban Water Management”.

Furthermore, his work on benchmarking of the urban water sector as well as his contribution to the development of national Swedish guidelines for the design of sewage pipelines were specially mentioned as a motivation to grant Gilbert this year’s award.

At the IWA World Water Congress & Exhibition in Lisbon in September 2014, Maria Viklander was appointed **IWA Fellow 2014** in recognition of her outstanding contributions to the advancement of the field of water science, technology and management.

UNITED KINGDOM (REPORTED BY SLOBODAN DJORDJEVIC)

Green roof research at UEL

Useful results continue to emerge from the EU FP7 programme **TURAS – Transitioning towards Urban Resilience And Sustainability**, with particular contributions from the University of East London Sustainability Research Institute (www.uel.ac.uk/sri) concerning physical test results on green roofs both on site and in the laboratory, providing experimental data about this important aspect of urban drainage. Various 2014 publications by **Stuart Connop** (s.p.connop@uel.ac.uk) and colleagues regarding the Green Roof Design Test Facility at Barking Riverside may be found on the TURAS website www.turas-cities.eu. Experimental work in the UEL Civil Engineering Hydraulics

Laboratory by **Kinga Owczarek** concerning assessment of alternative substrate and drainage layer materials promises interesting future output.

SuDS Water quality – joint research initiative

The Environment Agency and British Water together with product manufacturers ACO, Hydro and Polypipe have collaborated in a joint initiative to fund research on rainfall time series in order to determine appropriate test flow rates for proprietary solutions. The Group aim to produce a ‘**Code of Practice**’ for the assessment of manufactured treatment devices which are designed to treat contaminated surface water runoff. Continuous time series analysis will inform the test procedure which is likely to evaluate product performance against a range of flow rates. HR Wallingford have been contracted to undertake the analysis and report. Contact: **Marta Perez** (Marta.Perez@britishwater.co.uk).

Urban drainage research at the University of Exeter

David Butler (d.butler@exeter.ac.uk) reports that his fellowship **Safe & SuRe – towards a new vision for water management** (<http://www.safeandsure.info/>), funded by the UK Engineering & Physical Sciences Research Council, is now in its second year and good progress is being made with a first paper available here: <http://www.sciencedirect.com/science/article/pii/S1877705814023133>. The work is timely in the sense that the UKWater Act has recently been amended to include a specific ‘resilience duty’ for the financial regulator Ofwat.

On-going work in the urban drainage field includes:

- Multifunctional rainwater harvesting design and performance, including stormwater management (Peter Melville-Shreeve) with Severn Trent Water.
- Increasing sewer flood resilience through improved regulator design and placement (Chris Newton) with Hydro International.
- Development of a *global resilience analysis* approach using the urban drainage network in Kampala (Uganda) as an example (Seith Mugume).
- Integrated environmental assessment of green and grey infrastructure Strategies using a least regret methodology (Arturo Casal-Campos) with Northumbrian Water.
- Users’ perceptions of system failures (e.g. flooding) and their personal preparedness or resilience (Kimberly Bryan) with Severn Trent Water.

The four-year EU FP7 project **CORFU (Collaborative research on flood resilience in urban areas)**, coordinated by the Centre for Water Systems at Exeter, was successfully completed and positively reviewed by the European Commission. Final project report, science-policy briefs, on-line tools, all thirty project deliverables, various publications and videos can be downloaded from the project web site www.corfu7.eu/results

Contact: **Slobodan Djordjević** (s.djordjevic@exeter.ac.uk)

Within the collaboration between DHI and the University of Exeter **Jeanne-Rose René** (jerr@dhi-group.com) successfully defended her PhD thesis entitled *Probabilistic real-time urban*

flood forecasting based on data of varying degree of quality and quantity. One of the journal publications resulting from this research is available here: <http://www.tandfonline.com/doi/full/10.1080/1573062X.2013.795237#abstract>

USA (REPORTED BY ELIZABETH FASSMAN-BECK, Ph.D., STEVENS INSTITUTE OF TECHNOLOGY)

Acknowledging the many different organizations and individuals involved in urban drainage in the USA, the news provided herein is limited to a brief summary of some of the activities of the Urban Water Resources Research Council (UWRRC) of EWRI/ASCE. Readers/interested parties may send enquiries to the Chair of the Council listed at <http://cms.asce.org/ewri/CommitteeDetail.aspx?committeeId=000000885061>

Pervious Pavements: After several years of hard work under the leadership of Bethany Eisenberg (VHB) and Kelly Collins Lindow (Cityscape Engineering LLC), the UWRRC task committee on permeable pavements has completed a 10-chapter, comprehensive report. This guideline document is intended to aid stormwater designers, educators, decision makers/permitting agencies, and O&M teams in the appropriate application, design, and maintenance of different forms of permeable pavements to manage stormwater runoff. The document will be available for US\$60 from ASCE Publications (<http://www.asce.org/publications/>) as a pdf download and in hard copy, around mid-year 2015.

Pathogens in Urban Storm Water Systems

The UWRRC Pathogens in Wet Weather Flows Technical Committee has prepared a 200+ page technical resource, intended primarily for local governments working to address elevated faecal indicator bacteria in urban areas. The collaboratively prepared report was edited by Jane Clary (Wright Water Engineers), Prof Robert Pitt (Univ. of Alabama), and Brandon Streets (Geosyntec Consultants), and extensively peer reviewed. This report is freely available for pdf download by anyone from the EWRI Collaborate website <http://collaborate.ewrinstitute.org/home>

Public Safety Guidance for Urban Stormwater Facilities

Public Safety Guidance for Urban Stormwater Facilities provides guidance for reducing risks from safety hazards at facilities managing urban stormwater. Engineers, landscape architects, land planners, stormwater professionals, and government officials will find this guidance to be a handy, concise overview of potential hazards at stormwater management facilities and of measures that can be taken to protect public safety. Although it is impractical, if not impossible, to achieve zero risk at stormwater management facilities, steps can be taken to promote public safety. The 120 page report was the effort of the UWRRC; American Planning Association; American Public Works Association; American Society of Landscape Architects; American Water Resources Association; National Association of Flood and Stormwater Management Agencies; and Water Environment Federation working in collaboration. Jonathan Jones, P.E. (Chairperson), Ben Urbonas, P.E. (Vice-chairperson) and Charles Rowney, P.E. (Secretary) led this task committee, which included

contributions from nearly 80 individuals. It is available for US\$70 for non-ASCE members in soft cover or as a pdf download from the ASCE publications website (<http://www.asce.org/publications/>)

Green Roofs: As a joint effort with the JCUD, the UWRRC green roofs task committee is currently working on a special issue publication in the *Urban Water Journal*. Manuscripts are currently under revision. The committee hopes that the special issue will be ready for publication by the end of 2015. Dr Fassman has co-authored a book with Univ. of British Columbia Landscape Architect, Daniel Roehr, entitled Living Roofs in Integrated Urban Water Systems, which provides quantitative green roof design procedures and qualitative advice to promote stormwater management. It will be published by Routledge in March 2015.

Green Streets: The first phase of a Green Streets task committee's work culminated in the organization and participation in the Green Streets Conference held in Denver, CO. in 2010. The committee is organizing and looking for volunteers for a second phase to include development of webinar materials and a guidance document. Interested persons should contact the UWRRC chair (see above).

Journal of Sustainable Water in the Built Environment: ASCE Publications launched their newest journal, thanks to the efforts of the UWRRC. Prof Allen P. Davis (Univ. of Maryland) is the Editor in Chief, while several members of the UWRRC serve as Associate Editors. The scope covers sustainable stormwater management and broader water systems interactions. Subjects include urban stormwater quantity, quality, hydrology, characterization, treatability, and impacts; water harvesting; urban water ecosystem services; sustainable urban watershed management; urban streams; combined sewer overflow/stormwater interactions; urban energy/water interactions; lifecycle analysis; and related policy, implementation, and economics. All papers are encouraged to have design or regulatory implications that are applicable to moving the profession forward. The journal can be accessed at <http://ascelibrary.org/journal/jswbay>

Conferences: The 2015 LID Conference was held in Houston in January. There were 530 attendees. A 2-volume set of Proceedings from the 2011 LID Conference held in Philadelphia are now available as LID Technology: Implementation and Economics, and LID Technology: Design Methods and Case Studies. The books can be purchased from ASCE Publications (<http://www.asce.org/publications/>). The next LID conference is tentatively scheduled for early autumn 2016 in New England (i.e. Northeast USA). Check the EWRI website for details and announcements.

The 2015 EWRI World Water and Environmental Congress is scheduled for Austin TX, 17-21 May. The 2016 EWRI World Water and Environmental Congress will be held in West Palm Beach, Florida, 22-26 May. The call for abstracts is open until 10 Sept. 2015. Details of both events can be found at (<http://www.ewricongress.org/>). The EWRI Watershed Management Symposium will be held 5-7 Aug. 2015 in Reston, Virginia. (<http://www.watershedmanagementconference.org/>)

10. REPORT ON THE 13TH ICUD, KUCHING, SARAWAK, MALAYSIA PREPARED BY ASSOC. PROF. DR. LARYIAH MOHD SIDEK, UNITEN, MALAYSIA

13TH International Conference on Urban Drainage, was held at Borneo Convention Centre, Kuching, BCCK, Malaysia, Sep. 7-12, 2014.

Organizers: Ministry of Natural Resources and Environment (NRE), Department of Irrigation and Drainage (DID) Malaysia, Joint Specialist Group On Urban Drainage: the International Water Association (IWA) and the International Association for Hydro-Environment Engineering and Research (IAHR)

Co-organizers: Universiti Tenaga Nasional (UNITEN) and Universiti Malaysia Sarawak (UNIMAS)
Attendance: 440 participants attended the conference, 220 (47.73%) from the developing world. The number of students who attended the conference reached 106, 27 from developing countries. All the continents were represented, with 33.86% of participants coming from Europe, 2.73% from South America, 8.86% from Oceania, 50.34% from Asia, 3.18% from North America, and 1.14% from Africa. Participants represented mainly professors, lecturers, scientists, master and PhD students, engineers, and researchers from various field i.e hydrology, hydraulic, urban drainage as well as biology & social science.

Programme

During the Conference, 350 papers were presented, 10 of them in poster sessions.

Topics presented and discussed during the six days event were (i) Urban hydrologic and hydraulic processes Urban hydrology - case studies, Hydraulic performance of urban drainage systems, Processes in sewer systems, Combined and separate sewer overflows, Pollutants sources and transports in urban area, Receiving environment pollution impacts, Adaptation and mitigation towards water related disaster, Urban heat island and microclimate change, Small scale storm water systems, (ii) Urban technological issues, Storm water source control and best management practices, Low impact development techniques, water sensitive urban design and sustainable urban drainage systems, Appropriate urban drainage technologies for developing countries, Data collection, monitoring, processing and archiving, Novel and emerging technologies, Operation and maintenance of urban hydrological network, Small scale stormwater systems, Ponds, wetlands, infiltration basins, Storm water and waste treatment and reuse, Urban flood modelling, forecasting and warning, Hydroinformatics - modelling and simulation of integrated urban water systems, Rainwater harvesting, Erosion and sediment control, (iii) Institutional, managerial and legal issues, Urban drainage and urban planning, Integrated urban water planning and management in developing countries, Decision support system and modelling, Regulation and institutional frameworks, Real time control and decision support system, Risk management analysis, Integrated water resources management from urban catchments to river basins, Participatory processes, decision making and social acceptance of urban drainage technologies, Public perception and awareness, Economics and life cycle analysis, Water security and water quality, Hydro informatics and knowledge information system, and (iv) Special Sessions, UN-Habitat drainage strategy, Source controls or LID measures, Urban rainfall and climate change impact on rainfall extremes and urban drainage, Integrated modelling and assessment of urban water systems.

A special plenary session was organised as a part of the competition for the Poul Harremoës Award for the best urban drainage paper by a young author with the presentation of the three selected papers for this final phase of the Poul Harremoës Award, namely: (i) “Modelling the Dynamics of Water Sensitive Planning for a Suburban Area in Melbourne, Australia”, by Peter Bach from Monash University, Australia, (ii) “Influence of local calibration on the quality of on-line wet weather discharge monitoring: feedback from five international case studies”, by Nicolas Caradot from Kompetenzzentrum Wasser Berlin GmbH, Germany, and (iii) “Commercial Microwave Link Instead of Rain Gauges – Fiction or Reality?” by Martin Fencl, from the Czech Technical University (CVUT), Prague, Czech Republic. The winner of the Poul Harremoës Award was Martin Fencl, CVUT, Prague, Czech Republic, as selected by the referee panel composed of David Butler, Elizabeth Fassman-Beck and Karsten Arnbjerg-Nielsen. Two other JCUD awards were given during the 13ICUD, the Career Achievement Award to Richard Ashley (United Kingdom) and the Mid-Career Achievement Award to Peter Steen Mikkelsen (Denmark).

Six keynote lectures were given in plenary sessions by Dato’ Sri James Dawos Mamit (Deputy Minister of Natural Resources and Environment Malaysia) entitled “Urban Drainage Systems for Mitigating Impact of Climate Change”, Prof. David Butler (Chair IAHR/IWA Joint Committee on Urban Drainage) entitled “Reliable, Resilient and Sustainable Urban Drainage”, Prof. Hubert J. Gijzen (UNESCO Regional Director and Representative of Regional Science Bureau for Asia and the Pacific) entitled “Water in the City of the Future”, Datuk Prof. Ir. Hj. Husaini bin Sulaiman (Director General of Department of Irrigation and Drainage(DID) Malaysia) entitled “A Comprehensive Urban Stormwater Management Approach In Combating Flood In Malaysia”, Prof. Simon Beecham (Head of the School of Natural and Built Environments University of South Australia) entitled “Developing Resilient Green Infrastructure for Urban Environments” and Prof. Jiri Marsalek (Professor of Urban Water at the Technical University of Lulea, Sweden) entitled “Improving Stormwater Settling And Settled Sediment Retention By a Bottom Grid Structure (BGS).”

There was a field trip during which the participants could visit one of the following places: (i) Bau Town Flood Mitigation Project, Kuching, Sarawak: The flood mitigation concept in Bau Town is bunding and pumping. The overflow flood water from Bau River is separated with bund or flood wall. The local rainfall and runoff within the bunded area will be collected in the detention pond. (ii) Centralised Sewerage System for Kuching City: The project covers an area south of the Sarawak River which is fully developed and densely populated. The works are categorised into 3 main components, namely Wastewater Treatment Plant, Sewer Network and Property Connection. (iii) Sarawak River Barrage and Shiplock: Sarawak River Barrage and Shiplock is one of the 4 components of the Sarawak River Regulation Scheme [SRRS] consisting of Bako Causeway, Pending Causeway, 6 units of rainfall and water level telemetry stations in the Sarawak River catchment. The Barrage & Shiplock and 18 units of rainfall telemetry stations are equipped with early flood warning systems were installed in December 2005.

During the Conference, the JCUD Working Groups SOCOMA, WSUD, Urban Rainfall, RTC, SS&P, Data and Models organized also their respective meetings. Based on the indications of the 13 ICUD Scientific Committee some papers presented in the conference were selected and submitted to the Water Science and Technology and Urban Water Journals to be evaluated for publication.

CONFERENCE PHOTOS



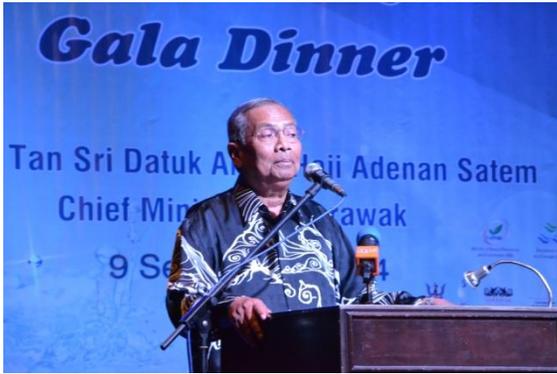
Registration Opening: Borneo Convention Centre Kuching (BCKK), Sept. 8, 2014



Welcoming Speech by Director General of Department of Irrigation and Drainage Malaysia



*The Winner and Finalists of the Poul Harremoes Award Competition
(from left to right: Peter Bach (finalist), Martin Fencl (winner), and Nicolas Caradot (finalist))*



13th ICUD Gala Dinner at Riverside Majestic Hotel, Sept. 9, 2014



13th ICUD Local Organising Committee



13th ICUD Local Organising Committee Representatives with Prof David Butler (Outgoing Chair ICUD) and Dr Manfred Schütze (New Chair)

11. FUTURE MEETINGS AND CONFERENCES

A table listing the proposed JC and WG conferences and workshops (as of February 2015) appears below; additional information on some events is also presented. 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
2015	<p>The 22nd Junior Scientist Workshop on sensor technology, to be held in Chichilianne (France), 18 - 22 May 2015.</p> <p>Urban Drainage Modelling Conference, Quebec, Canada, Sept. 20-23, 2015, Website: http://udm2015.org/</p> <p>UrbanRain15: 10th Int. Workshop on Precipitation in Urban Areas, Pontresina, Switzerland, 2-6 December 2015; (co-organized by IGUR)</p>	<p>organisationcommitteeejsw2015@gmail.com</p> <p>Organized by: Jean-Luc Bertrand-Krajewski (INSA Lyon), Francois Clemens and Mathieu Lepot (TU Delft).</p> <p>Peter Vanrolleghem (Peter.Vanrolleghem@gci.ulaval.ca)</p> <p>http://www.ifu.ethz.ch/urbanrain</p>
2016	<p>The 9th Novatech Conference, Lyon, France, July 3-7, 2016. Conference website: www.novatech.graie.org</p> <p>SPN8 (Sewer Processes and Networks), Rotterdam, The Netherlands, 31 August – 2 September, 2016</p>	<p>GRAIE: asso@graie.org ; Email: lucie.dupouy@graie.org</p> <p>Jeroen Langeveld j.g.langeveld@tudelft.nl</p>
2017	<p>14th International Conference on Urban Drainage (ICUD), Prague, Czech Republic. Sep/ 10-15, 2017</p>	<p>David Stransky (stransky@fsv.cvut.cz), Vojtech Bares (bares@fsv.cvut.cz), Ivana Kabelkova (kabelkova@fsv.cvut.cz)</p>

2016 NOVATECH

We are pleased to announce the 9th edition of the Novatech international conference, from July 3 to 7, 2016 in Lyon, France! Novatech conferences focus on research and experiences concerning the planning and technologies for sustainable urban water management. Call for papers will be issued in summer 2015.

Conference website: www.novatech.graie.org Email: lucie.dupouy@graie.org

Novatech secretariat:

Lucie DUPOUY: novatech@graie.org, GRAIE - BP 52132 - 69603 Villeurbanne cedex – France.
Tel: +33(0)4 72 43 83 68 – Fax: +33(0)4 72 43 92 77; Website: <http://www.graie.org/novatech/>

12. WORKING GROUP CONTACTS

Int. Working Group on Data & Models (IWGDM) Web site: http://iswr.eng.monash.edu.au/iwgdm	
<i>Chair:</i> Prof. Simon Tait Pennine Water Group Department of Civil and Structural Engineering Sir Frederick Mappin Bldg, Mappin Street Sheffield, S1 3JD UK Phone: +44 114 222 5771, Fax: +44 114 222 5700 E-mail: s.tait@sheffield.ac.uk	<i>Secretary:</i> Dr. David McCarthy Environ. and Public Health Microbiology Lab Monash Water for Liveability Dept. 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
Real-Time Control of Urban Drainage Systems (RTCUDS) Web site: http://web.tiscali.it/RTCUSD/	
<i>Chairman:</i> Prof Dirk Muschalla Institute of Urban Water Management and Landscape Water Engineering Graz University of Technology Stremayrgasse 10/I 8010 Graz AUSTRIA Ph. +43 316-873-8370, Fax: +43 316 873-8376 Email: Muschalla@sww.tugraz.at	<i>Secretary:</i> Dr Jeroen Langeveld Delft University of Technology Stevinweg 1 2628 CN Delft THE NETHERLANDS Phone: +31 6 1897 6283 Email: j.g.langeveld@tudelft.nl
Sewer Systems and Processes Working Group (SS&PWG) Web Site: http://www.sspwg.org	
<i>Chair:</i> Prof. Simon Tait Pennine Water Group Department of Civil and Structural Engineering Sir Frederick Mappin Bldg, Mappin Street Sheffield, S1 3JD UK Phone: +44 114 222 5771, Fax: +44 114 222 5700 E-mail: s.tait@sheffield.ac.uk	<i>Secretary:</i> Dr Asbjørn Haaning Nielsen Department of Civil Engineering Aalborg University Sohngaardsholmsvej 57 DK-9000 Aalborg DENMARK Phone: +45 9940 9817 E-mail: ahn@civil.aau.dk
Working Group on Source Control for Stormwater Management (SOCOMA)	
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International Working Group on Urban Rainfall (IGUR) Web Site: http://www.kuleuven.ac.be/hydr/gur	
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Urban Streams	
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Urban Storm Water Harvesting (USWH) Working Group	
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