IAHR/IWA Joint Specialist Group on URBAN DRAINAGE

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2. CHAIRMAN'S THOUGHTS

Dear friends and colleagues,

The compilation of our annual newsletter brings forth the opportunity to review our activities during the past year and also to look forward to new challenges. I would like to start this reflection with a review of our Joint Committee (JC) meeting in Lyon, held together with NOVATECH 2004.

With respect to the committee membership, we have been able to welcome three new members: J.H.W. Lee, P.S. Mikkelsen and N. Nascimento and thus the committee currently has full membership. With my own term as chairman ending in 2005 we will have at least one new opening next year. So the election of the new chairman is on the Joint Committee's list of tasks for 2005.

Another item on the agenda was our ongoing effort to strengthen the Europe – North America cooperation in urban water management. It appears that we are making some progress in this direction. Even though at Novatech 2004 only 8 out of 600 participants were from the USA, more than 50 abstracts from the USA have been submitted to the 10th ICUD triennial conference in Copenhagen 2005. I hope that this increased interest will apply to Edinburgh 2008 as well.

The Poul Harremoës commemoration prize has in the meantime been established and will be awarded for the first time at the Copenhagen conference. A panel has been formed consisting of three JC members, Rauch, Mikkelsen and Ashley, who will develop a proposal and forward it to the JC for approval. The formula (the current JC chair and the chairmen of the two forthcoming conferences) could be followed also for future Poul Harremoës prize award panels. We are positive that this prize will stand in time as an important award for young researchers in our field.

This leads me directly to the Copenhagen conference (22–26 August 2005). The conference chairman, Peter Steen Mikkelsen, reports later in the newsletter (Section 9) on its preparation and status. From my point of view, I only want to point out that the ICUD is the main banner, the flagship of our profession. Thus it is of major importance to have a successful conference, both from a social and a scientific point of view. For the social aspect I am very positive that the Danish organizers will make it a most remarkable event. For the scientific aspect it is our own responsibility to mobilize ourselves and our students to submit top quality papers that will stand in time and have a chance of being cited. The conference organizers have again succeeded in ensuring that the best papers will be published in *Water Science and Technology*—it is our duty to seize this opportunity to prepare a remarkable issue. Again I am very optimistic that we will succeed in this aim.

My last point in this year's reflection is the changing role of one of our parental organisations, IWA. Since the merger of IAWQ and IWSA in September 1999 the joint organisation now comprises more than 10,000 members and 50 specialist groups. Moreover, IWA features a multitude of conferences, runs a profitable publishing company, and is collaborating with international organisations like the UN and the World Bank. The increased strength and power of the joint organisation resulted in a changing role of IWA compared with the old IAWQ organisation, which was our scientific home for many years: IWA is not an enlarged IAWQ but instead a large and powerful organisation for water professionals. Formerly, IWA operated using a bottom-up approach carried by individual scientists and specialist groups, but the current IWA aims to play a significant role in the major league of water organisations. This clearly is only possible by high-level collaboration, sound and professional organisation, and adapted management structures. What does this mean to us? From my subjective point of view as first a member (starting 1996) and then chairman of the JC we clearly have lesser contact with our parental organisation compared with the earlier years of IAWQ. The attempts in the days of IAWQ to coordinate the specialist group activities (e.g., the Windsor meeting in 1997) have not been repeated, and also other requests and opportunities to participate in the larger picture of IWA have been diminished. As a rather large specialist group this changing role of our parental organisation is currently more an observation than anything else. Still, it is an important development that might potentially also affect the style of our activities.

With this I would like to thank all the members of the JC, all working group members and especially our secretary Jiri Marsalek for the continuous and high support of the Joint Committee. And since this is the last time I am writing chairman's thoughts for our newsletter, I would like to express my gratitude to all of you for helping me to do the job – I would not have succeeded without your support.

Happy New Year and see you all in Copenhagen!

Wolfgang Rauch
Chairman of the Joint Committee

3. FROM THE SECRETARY'S DESK

Committee Newsletter – We will continue to publish the JC's annual newsletter in a format similar to this issue. The main purpose of the newsletter is to facilitate communication and interaction among specialists in our field, rather than presenting detailed information. Please keep this in mind when submitting contributions.

Both IWA and IAHR now distribute newsletters only electronically, and place our newsletter on their web sites. IAHR also distributes some excerpts from our newsletter in their Newsflash. Furthermore, thanks to the continuing efforts of Mr M. Zaizen, our newsletter is translated into Japanese and 200 hard copies are distributed in Japan.

Please share your electronic newsletter copy with other colleagues, or refer them to the IAHR and IWA websites. Your comments on the current issue and contributions to future newsletters are welcome.

Joint Committee Activities – The annual Committee meeting was held in Lyon, France, on 6 June 2004. The meeting was attended by 20 people, including 10 JC members. At the meeting, Wolfgang Rauch welcomed the three recently elected members, J.H.W. Lee, P. Mikkelsen and J. Pollert. The committee has now 12 full members, and seven associate (non-voting) members. Selected discussed items appear below.

Special issue of the *Journal of Hydrology* – has been completed, the main goal has been to bridge the gap between hydrology and urban hydrology. The issue was published: Andrieu, H. and B. Chocat (eds) (2004). Urban Hydrology. A theme issue of *Journal of Hydrology*, Vol. **299**, issues 3–4, Dec. 1.

Poul Harremoës commemoration – it was agreed to establish a prize in Poul's name for best contributions to the triennial ICUD conferences by young researchers, with the first prize to be awarded in Copenhagen in 2005.

Collaboration with ASCE and US colleagues in general – there is a better exchange of information with cross-appointments between the Urban Water Resources Research Council (UWRRC) and JC. In the near future, difficulties with a greater participation of US professionals at European conferences may persist (costs, timing, etc.).

Working group reports were presented at the meeting; note that updated reports are presented later in this newsletter (Section 4). Discussions were held on establishing a new working group on Water Sensitive Design (WSD) (proposed by Tony Wong).

Other JC business - position paper – Bernard Chocat reported that it would be presented in the NOVATECH 2004 (see Section 7 of the newsletter and the NOVATECH 2004 Proceedings).

Urban Water journal – has been restarted, see the report from IAHR in this newsletter (Section 5).

New project – a project on "Institutional Memory" of JC, recording the Committee's history (volunteers are asked to contact the Chairman or Secretary).

Future conferences – several were discussed; for updates, see the newsletter sections on Reports on Conferences and Future Meetings and Conferences (Sections 7 and 9).

Future elections (Chairman and any vacancies to be filled on JC) will be held in 2005.

The next JC meeting (open to guests) will be held in Copenhagen, tentatively on Sunday before the conference (21 August 2005). The JC meeting in 2006 – to be decided later.

Milestones – two were brought to our attention in 2004.

Doc. Ing. Zdeněk Koníček, CSc, Prague, Czech Republic, celebrated his 80th Birthday

In late summer 2004, Doc. Zdeněk Koníček of the Czech Technical University (CVUT), Prague, Czech Republic, celebrated his 80th birthday. Zdeněk has been an esteemed teacher and colleague to many of us for decades. He is one of those few who never grow old in their pursuit of new ideas and service to the profession, and thereby inspire many others. Doc. Koníček was born on 30 August 1924 in Pohorelice, Czech Republic. He obtained his Diploma-Engineer (M.Eng.) degree from the Technical University in Brno, and CSc. (Ph.D.) in sanitary engineering from the Czech Technical University in Prague. In 1970, he defended his Docent thesis and was appointed senior lecturer in the Department of Sanitary Engineering of the same university. His thesis on mechanical treatment of wastewaters was later expanded into a book entitled "Settling Tanks", published by The Academy of Sciences of Czechoslovakia. Over next 30 years, he focused on mechanical separation processes in wastewater treatment and produced almost hundred publications. His studies on grit chambers and the theory of the sludge thickening in secondary settling tanks are widely known and have been translated into foreign languages. Two of his books earned prestigious awards granted by Czech authorities. The results of his studies were put to good use in many Czechoslovak state standards, typology documents, projects and innovations of existing wastewater treatment plants. He has been involved as a consultant in many engineering projects, including the upgrading of the Prague Central Wastewater Treatment Plant and many industrial wastewater treatment plants. Lately, he has been working on wet-weather flow pollution and co-authored a draft guideline entitled "The conditions and a method of discharging wastewater during storm events". He also helped design combined sewer overflow regulators (swirl, vortex and helical bend separators) in many locations. Over the years, Zdeněk has helped to educate many sanitary engineers. Having learned the importance of experiments in teaching, he developed a unique course entitled "Experimental methods in Sanitary Engineering", which is now a part of Master's and post-graduate study programmes at CVUT.

I am sure that the whole urban drainage community will join me in wishing Doc. Koníček good health, personal satisfaction and enthusiasm in the upcoming years.

Prof. Dr.-Ing. W.F. Geiger celebrated his 60th Birthday

On 5 October 2004, a social event was held in Gelsenkirchen, Germany, to celebrate Prof. Geiger's 60th birthday and his appointment to a UNESCO Chair position for China. I had the opportunity to participate in this event and make a presentation on behalf of JC as well as of about a dozen of our colleagues who have worked closely with Wolfgang for many years (Messrs. Argue, Hemmerich, Herricks, Huber, Jayakumar, Marsalek, Nawang, Rauch, Sekhar, Umamahesh and Wong). A brief excerpt from my presentation follows.

Wolfgang entered the field of urban drainage through his work with Dorsch Consult conducting modelling of urban drainage systems, which was at that time truly pioneering work in this field. These activities continued with the development of the well known QQS model. His later work (during the 1970s and 1980s) dealt with modelling methodology, combining event and continuous simulation models, and combined sewage quality. His papers on field observations in the Harlaching, Pullach and Büsnau catchments are frequently cited with respect to the first flush phenomenon. On the international scene, Wolfgang worked with others on developing a UNESCO manual on urban drainage, under the International Hydrological Programme (IHP). The manual was published in 1987 in two volumes, Volume I on Planning and Design of Drainage Systems, and Volume II on Data Collection and Analysis for Drainage Design.

In the next phase of IHP, Wolfgang led many activities under the project on Integrated Water Resources Management in Urban Areas, including organisation of six courses on urban drainage, which were held from 1988 to 2000 in Delft, Essen, Bangkok and Warangal. These courses offered an integrated view of the storm and wastewater infrastructure in cities. During his visiting professorship at the Warangal National Institute of Technology, Prof. Geiger delivered a keynote lecture addressing the issues of sustainable management of water resources and defined several steps, including changes in university education, to achieve it. He also served on the JC as the representative of Germany (1989–1996).

During the past 15–20 years, Prof. Geiger's research focused on wet-weather flow management, with fundamental studies of urban wet-weather pollution sources and control on a watershed basis, stormwater infiltration and its effects on groundwater, the effects of combined sewer overflow detention on treatment plant efficiency, and the impacts of stormwater discharges on receiving waters. Other topics addressed included environmental sustainability in Chinese cities, water balance in urban areas, management and modelling of water balance, stormwater infiltration, and treatment and control of combined sewer overflows. Prof. Geiger's keen interest in promoting advanced stormwater management was reflected in his and H. Dreiseitl's book (1995) titled "Neue Wege für das Regenwasser" (New Ways of Managing Rainwater), which combines a scientific approach to stormwater management with engineering practicality and architectural aesthetics.

As we celebrate Prof. Geiger's 60th birthday and his appointment to a UNESCO chair professorship for China, we would like to congratulate him on his illustrious achievements, thank him for his leadership in science and engineering, international research and education, and wish him good health and all the best in future activities.

Jiri Marsalek
JC Secretary

4. WORKING GROUP REPORTS

4.1. International Working Group on Data and Models (IWGDM) (Chairman: Dr. Lothar Fuchs, ITWH, Engelbosteler Damm 22, 30167 Hanover, Germany; Phone: +49-511-971-9321, Fax: +49-511-971-9377, E-mail: L.Fuchs@itwh.de).

The main activity of the Working Group was the 6th International Conference on Urban Drainage Modelling – UDM '04, which was held in Dresden, Germany, Sept. 15-17, 2004. It was organised by the Institute for Urban Water Management, Dresden University of Technology and the itwh - Institute for Technical and Scientific Hydrology, Hannover, Germany. Details of the conference are reported by Prof. Krebs under the German national report (Section 8).

During the Dresden conference there was an attempt to recruit new active members for this working group, but without much success. The current working group active membership is just 4 members. There is a need to find young colleagues who are working in this field and are willing to contribute to the working group's activities. This membership drive will continue during the 10th ICUD conference in Copenhagen.

4.2. The Real-Time Control of Urban Drainage Systems (RTCUDS) Working Group (Chairman: Dr H. Colas, BPR-CSO, 5100 Sherbrooke St. E., Suite 400, Montreal, Quebec H1V 3R9, Canada; Phone: 001-514-257-2439, Fax: 001-514-257-2414, E-mail: Hubert.Colas@bpr-cso.com). Secretary: Dr Alberto Campisano, Department of Civil and Environmental Engineering, University of Catania, Viale Andrea Doria 6, 95125 Catania, Italy, Phone: +39 (0)95 7382711, Fax: +39 (0)95 7382748, e-mail: acampisa@dica.unict.it). Web site: http://www.dica.unict.it/users/acampisa/rtcwg/.

The RTCUDS group follows its work plan developed in Philadelphia, in 2003. Following the success of its pre-conference seminars (Portland, 2002; Philadelphia, 2003), the group held another such a pre-conference seminar at NOVATECH 2004 in June in Lyon. The workshop covered RTC hardware, software, control strategies, and case studies. Attendees came from universities, municipalities and water agencies. Good contributions were presented on behalf of such cities as Paris, New York City, Tokyo, Vienna, Barcelona, and Quebec City.

A paper entitled "Real time control of urban wastewater systems—where do we stand today?" was co-authored by several group members and published in the Journal of Hydrology, 299(3-4), Dec. 2004, p. 335-348, Elsevier Science. The paper provides an overview of real time control in urban wastewater systems.

Some members of the RTCUDS, who also belong to the German RTC WG, worked on the preparation of a CD publication titled "PASST – Planungshilfe Abflusssteuerung". PASST promotes the concept of RTC by providing information on the concepts of RTC and also by offering criteria for quick pre-assessment of the RTC potential of urban drainage systems. This "Planning Aid for Sewer System Real Time Control" is, so far, available only in German. However, an English language overview is available on request from Dr Manfred Schuetze (E-mail: manfred.schuetze@ifak-md.de). Additionally, the German RTC WG is working on a guideline document for planning RTC systems. This guideline document will provide thorough and detailed guidance in the essential steps of planning RTC systems. Its publication is envisaged in 2005.

The Stormwater Work Group of the French Association ASTE (formerly AGHTM) developed a State-of-the-Art Report on Real Time Control of Urban Drainage Systems in France and Canada. It contains 10 case studies of RTC systems in France and in Quebec, Canada. For more information, please contact Mathieu Ahyerre, Agence de l'eau Seine-Normandie (ahyerre.mathieu@aesn.fr).

Future activities: Real Time Control pre-conference seminar, ICUD, Copenhagen, Denmark, Sunday August 21, 2005

The Real Time Control Workgroup is organizing a special pre-conference seminar on Sunday August 21, 2005, Copenhagen, Denmark, as part of the 10th International Conference on Urban Drainage. Recognized international RTC experts will provide a comprehensive overview of the RTC technology and present some recent applications and results obtained using this technology. Sufficient time will be allowed for discussions and presentation of important case studies from around the world. For further information please contact Dr Hubert Colas (E-mail: Hubert.Colas@bpr-cso.com) or consult the group's web site (http://www.dica.unict.it/users/acampisa/rtcwg/).

The RTCUDS Work Group is exploring the possibility of organizing the 17th European Junior Scientist Workshop on "Real Time Control and Measurement in Urban Drainage Systems" in Barcelona, Spain. CLABSA has taken the lead to organize this workshop. Further information will be available on the group's website (http://www.dica.unict.it/users/acampisa/rtcwg/).

4.3. Sewer Systems and Processes Working Group (SS&PWG) (Chairman: Dr Jean-Luc Bertrand-Krajewski, URGC Hydrologie Urbaine, INSA de Lyon, 34 avenue des Arts, F-69621 Villeurbanne Cedex, France; Phone: +33 4 72 43 81 80, Fax: +33 4 72 43 85 21, E-mail: jean-luc.bertrand-krajewski@insa-lyon.fr. Vice-chairman and secretary: Prof. José Saldanha Matos, Technical Superior Institute of the Technical University of Lisbon, Av. Rovisco Pais, 1049-001 Lisbon, Portugal: jsm@civil.ist.utl.pt. Web site: http://www.sspwg.civil.auc.dk/).

The main activity of the group was holding the **4th International Conference on Sewer Processes and Networks (4th SPN)** in Funchal, Madeira Island, Portugal, 22–24 November 2004. The main objective of the 4th SPN organized by the SS&PWG of JC, DECivil – Architecture and Civil Engineering Department of the Technical University of Lisbon and APESB – Portuguese Association of Sanitary and Environmental Engineering, was to bring together scientists and practising engineers in the field of environmental process engineering and management of sewer systems, and provide them with an opportunity to present their results; express their views on and discuss physical, chemical and biological processes in sewers and the related sewer structural aspects; and develop a more comprehensive and multidisciplinary understanding of sewer system performance.

The conference was attended by 65 delegates from 15 countries. Thirty-six papers and some posters were presented in sessions dealing with: (a) integrated approaches and interactions; (b) water quality, hydraulics and hydrodynamics; (c) wastewater characteristics – pollution removal; (d) sewer solids; (e) in-sewer processes; (f) impacts, testing and operation, and (g) infiltration into sewers.

Thirty-six papers were selected in two stages (the first stage has corresponded to the abstract evaluation; the second one consisted in the selection of final papers for publication in the proceedings and for platform presentation). Some of these papers will be included in a special issue of the Water Science and Technology Journal. For more information about the 4th SPN, please contact José Matos at jsm@civil.ist.utl.pt

In May 2004, after about seven years of work by thirty SS&PWG members and associates, the book **"Solids in Sewers"** has been published by IWA Publishing as the Scientific and Technical Report no. 14 (S&TR 14; see also Section 6 of this Newsletter). The four main editors are R. Ashley, J.-L. Bertrand-Krajewski, T. Hvitved-Jacobsen and M. Verbanck. This 340 pages report is an extended synthesis of scientific and practical knowledge about solids in sewers (sources, characteristics, effects, management, future perspectives, etc.). For more information and placing an order, please visit the IWA Publishing website at:
http://www.iwapublishing.com/template.cfm?name=isbn1900222914

In November 2003 and February 2004, the SS&PWG organized two international Junior Scientist Workshops, respectively in Europe (Almograve, Portugal) and Asia (Malacca, Malaysia). Among the 37 papers presented by Junior Scientists from 16 countries, 16 papers have been selected, reviewed and revised and then published by IWA Publishing as a special issue of the new Water and Environmental Management Series (WEMS), entitled **"Sewer networks and processes within urban water systems"**. For more information and ordering, please visit the IWA Publishing website at:
http://www.iwapublishing.com/template.cfm?name=isbn1843395061

Additionally, the SS&PWG held two official meetings in 2004: first during the Novatech 2004 conference in Lyon, France, in June 2004 and second during the 4th SPN Conference in Funchal, Portugal, in November 2004. Among the most important decisions made at these meetings, one can cite the following:

- The **5th SPN conference** will be organised in autumn 2007, in The Netherlands, with François Clemens serving as the conference chairman.
- the **2nd SOM (Sewer Operation and Maintenance)** conference (the first one was held in Bradford, UK in 2002) will be organized as one of the SS&PWG activities in Vienna, Austria in November 2006. Thomas Ertl will be the conference chairman.
- F. Clemens and J.-L. Bertrand-Krajewski will launch a new initiative in 2005 establishing an informal collaborative network of researchers conducting long-term research in sewer experimental sites, in order to facilitate exchange of protocols, data, knowledge, etc.

The next SS&PWG meeting will be organised during the 10th ICUD in Copenhagen, Denmark in August 2005. A new vice-chairman of the SS&PWG will be elected during this meeting, and the current vice-chairman José Matos will become the new chairman for a 3 years term. For more information about the SS&PWG activities, please visit group's website at: http://www.sspwg.civil.auc.dk/

4.4. Working Group on Source Control for Stormwater Management (SOCOMA) (Chairman: Georges Raimbault, L.C.P.C., BP 4129, 44341 BOUGENAIS Cedex, France; Phone: +33 02 40 84 58 63, Fax: +02 40 84 57 08, E-mail: georges.raimbault@lcpc.fr), vice-chairman: Gilles Rivard, Aquapraxis Inc, 948 Donat-Belisle, LAVAL (Qc), Canada H7X3W5; Phone: 001-450-689-2967, Fax: 001-450-689-2969, E-mail: GRivard@aquapraxis.com; Secretary: Carsten Dierkes, Hydrocon, HefeHof 25, 31785 HAMELN, Germany, Ph.: 49 5151 100295, Fax: 49 5151 100296, E-mail: dierkes@hydrocon.de).

The working group studies source controls, which are defined as all measures applied to control stormwater before it enters sewers or the surface receiving waters. The group's objective is to facilitate the development of these techniques, by conducting research and experiments, and disseminating the results. The group sponsored three sessions of the NOVATECH 2004 Conference (Lyon, France, 6-10 June 2004): (a) Session 1.5: Porous pavements and reservoir structures, (b) Session 2.2: Stormwater source control: technical and institutional aspects, and (c) Session 2.5: At-source control of stormwater and wastewater. The group met during the NOVATECH conference. At the meeting, Tony Wong (currently working on establishing a new group entitled "Water Sensitive Urban Drainage group") made a presentation on one of his projects. If his group gets established, good links between SOCOMA and the new group will be required.

Gilles RIVARD proposed to prepare a synthesis paper on source controls for the 10th ICUD conference to be held in Copenhagen, Denmark. An extended abstract has been submitted by eight SOCOMA members.

The "Water University" of the Val-de-Marne County (near Paris, France) will organize jointly with the Cereve and the LCPC a workshop dedicated to young environmental scientists, i.e., doctoral or post-doctoral students, 10–13 May 2005. The SOCOMA working group will co-sponsor this workshop. The main topic is "Urban water discharges: a resource or risk?" with special attention paid to "source controls".

The next meeting of the SOCOMA working group will be held during the 10th ICUD conference (Copenhagen, Denmark, 21–26 August 2005).

4.5. Working Group on Urban Rainfall (GUR) (Chairman: Dr Guido Vaes, HydroScan, 't Veldeke 11, B-3040 Sint-Agatha-Rode, Belgium; Phone: +32-3-3666851, Fax: +32-3-8877490, e-mail: guido.vaes@hydroscan.be. Secretary: Dr Thomas Einfalt, Einfalt & Hydrotec GbR, Wakenitzmauer 33, D-23552 Lübeck, Germany. Ph: +49-451-7027333 Fax: +49-451-7027339, E-mail: thomas@einfalt.de. Group's web site: http://www.einfalt.de/GUR).

The 6th International Workshop on Precipitation in Urban Areas was held in Pontresina, Switzerland in December 2003 (a report is given in Section 7 of this newsletter). Selected papers from this workshop will be published in a special issue of Atmospheric Research scheduled for print in late 2004.

The GUR met at the NOVATECH conference in Lyon in June 2004. Several new members have joined the group in 2004. The next annual meeting will be held at the 10th ICUD conference in Copenhagen in August 2005. The GUR website has been updated , see www.kuleuven.ac.be/hydr/gur.

The GUR wrote a state-of-the-art paper entitled 'Towards a roadmap for the use of radar rainfall in urban drainage', which was published in *Journal of Hydrology*, Volume **299**, issue 3–4, Dec. 2004.

The GUR will organise a 'Radar seminar for hydrologists' at the ICUD conference in Copenhagen on 21 August 2004.

4.6. Technology Exchange, Transfer and Training Working Group (TETTWG) (Chairman: Dr Jozsef Gayer, VIKUTI Rt, P.O. Box 27, Budapest H-1453, Hungary; Phone: +361 215 61 40, Fax: +361 216 15 14, E-mail: gayer@vituki.hu; Secretary: Dr Jonathan Parkinson, Brazilian Association of Environmental and Sanitary Engineers, Goias Office, Avenida 2a Radial N. 440 Quadra 119 Lote 10, Setor Pedro Ludovico, 74934-590 Goiânia-Goiás, Brazil, Tel/Fax. +55 62 281 2954, E-mail: parkinsonj@bigfoot.com;
Group's website: http://www.datanet.hu/hydroinfo/vituki/int/tett.htm

Jonathan Parkinson and Ole Mark's book on "Urban Stormwater Management in Developing Countries" has been published by IWA Publishing. For further information, see Section 6, News from IWA Publishing in this newsletter (p. 13). Various members of the TETT group have assisted in the review process of the book. In addition, Jozsef Gayer and Jonathan Parkinson were involved in the review of Novatech conference abstracts and papers.

4.7. Urban Drainage in Cold Climate Working Group (UDCCWG) (Chair: Dr Maria Viklander, Division of Sanitary Engineering, Lulea University of Technology, S-971 87 Lulea, Sweden, Ph. 46 920 491 634, Fax: 46 920 491 493, Email: Maria.Viklander@sb.luth.se; Secretary Dr John J. Sansalone, Civil and Environmental Engineering, Rm. 3510 CEBA Bldg, Louisiana State University, Baton Rouge, LA 70803-6405, USA, Ph.: 001-225-578-6047, Fax: 001-225-578-8652, Email: jsansal@lsu.edu

The working group's mission is to pursue research on environmentally sound and cost-effective planning, design and operation of urban drainage systems in cold and/or Alpine climates characterized by snowfall and snowmelt. Ongoing activities include: (a) Preparation of the 2nd International Conference on Urban Drainage and Highway Runoff in Cold Climate, (b) Preparation of a pre-conference workshop at the 10th ICUD in Copenhagen, (c) Planning a Junior Workshop, and (d) Development of a web-based PhD course on UDCC. The next meeting of the Group will be held during the 10th ICUD in Copenhagen 2005.

4.8. Formation of a New Group on Water Sensitive Urban Design (Convener: Dr Tony Wong, Ecological Engineering, PO Box 453, Prahran, Victoria 3181, Australia, tel +613 9533 8445; fax +613 9533 7781; tony@ecoeng.com.au)

A new working group on Water Sensitive Urban Design is being formed to provide a forum for sharing research findings and implementation experiences on the integrated urban water cycle management in urban environments. Potential participants should contact the convener of this new group, Dr. T. Wong.

5. NEWS FROM IAHR AND IWA

IAHR News (reported by Dr Christopher George, IAHR Executive Director)

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

IAHR Secretariat reports the resumption of publication of Journal of Urban Water (JUW). IAHR has secured an agreement with the new publisher which includes a favourable membership rates: UK£ 30/ US$ 49 (full rate UK£76 or US$132) for the printed version (no on-line access). For 2005, IAHR launched a new "electronic" membership which includes all normal membership benefits except the printed Journal of Hydraulic Research. Also, for 2005 an electronic access to the Journal of River Basin Management is offered for 10 Euros.

The Seoul Congress of IAHR (Sep. 11-16, 2005; see Section 9 of this newsletter) should be of major interest to drainage specialists, with one of the main themes (Theme B) entitled "Urban and Industrial Flows - Analysis, Management and Security". Sub-themes are as follows:

B1. Internal flows in industrial systems
B2. Security of water resources and water services
B3. Combined sewer overflows
B4. Storm water management
B5. Flows in water supply pipe networks
B6. Hydro-machinery and fish passage
B7. Urban water system rehabilitation

The other main congress themes include (A) Hydroinformatics, Hydraulic Modelling, and Data: Competition or Integration?, (C) Protecting and Restoring the Aquatic Environment - Water Quality and Habitat Challenges, (D) Coping with Extremes in Water Resources, (E) Coastal Development, Dynamics, and Ecosystem Fragility - A Delicate Balance, and (F) Freshwater Crisis – Trends, Challenges, and Global Change. As always, the congress will also include a range of seminars and technical workshops. For full information visit the new Congress Website at: http://www.iahr2005.or.kr/.

Finally, the IAHR membership renewals are now due, for details, please contact the IAHR Secretariat (see the web site above).

IWA News

IWA Responds to Tsunami Disaster

The Tsunami which devastated the coastal areas of countries in South Asia on 26 December 2004 has lead to death, destruction and disease on a huge scale. Governments, the international community and individuals both in the region and internationally, have now begun to respond to the disaster situation. The International Water Association is no different. The IWA maintains that a three-fold approach is now critical:

1. Coordinated action: IWA will aim to work in partnership with, and through other agencies such as the World Health Organization, ensuring that efforts are coordinated to where the need is greatest
2. Integrated approaches: Re-establishing water supplies is clearly a top priority. In addition, adopting an integrated approach, including a focus on issues such as wastewater, excreta management and hygiene behaviour will ensure more comprehensive and sustainable support to those affected communities;
3. Efficient interventions: IWA aligns itself with and supports a focus on key interventions, such as household water treatment and hygiene practices. The right interventions at the right time in the immediate post-disaster situation will help reduce dramatically cases of morbidity and mortality.

Individually and collectively, IWA is responding to the Tsunami disaster. Here are some examples:

- **Access to key information**: IWA has collected together some of the most relevant guidance and documentation of use for those working on the ground in affected countries.
- **Forums:** A live discussion that allows affected countries and communities to seek advice from IWA membership on how to handle common problems following the Tsunami.
- **Tangible action:** IWA President László Somlyódy has been in touch with Budapest Water Works and the Hungarian Utility Association with a view to shipping a 30 000 cap/d water purification facility to Indonesia.
- **Volunteers:** More than 60 IWA members from around the world are willing to physically or electronically assist in working with specific communities affected by the Tsunami.
- **Equipment brokerage:** IWA is willing to act as a broker between needed equipment and supplies from countries and companies willing to assist those in need.

A website has been launched with the ambition to enable knowledge sharing and specialist help on particular issue (http://www.iwa-conferences.org/templates/HQ/HQ_blue.aspx?ObjectId=212294). The first step if you wish to help is to register your contacts and create your IWA website user account, thereby indicating your areas of expertise relevant to the Tsunami relief, and also upload a short biography that will enable us to broker your expertise and assist problem holders more efficiently. If you have advice for IWA or information of general interest that could be posted directly on these pages, please write to asianrelief@iwahq.org.uk

IWA Young Professionals Programme – 2005 will see the consolidation and implementation of a series of activities and initiatives aimed at young professionals (under the age of 35). One of the key activities of the first phase of implementation is the engagement of young professionals in specialist group activities – from being involved in specialist group management committees to assisting in the administration of specialist group conferences. IWA is happy to support the Urban Drainage Specialist Groups establishment of the Poul Harremoës commemoration prize and hope that this is the first of many initiatives to increase the participation of young professionals in this group's activities. If you have any ideas or comments on the young professionals programme, please email Tom Williams at IWA HQ (*Tom.Williams@iwahq.org.uk*).

Introducing Darren Saywell, Regional Director

I joined IWA this January as Regional Director, and have known about the Association since beginning work on water and sanitation issues in the early 1990s. My primary responsibility at IWA will be to lead the development of the network to emergent economies and lower income countries through regional development and regionally focussed activities, and moreover to assist the Association in communicating its work, impact and relevance to the wider world. My professional background covers 15 years of research, teaching, consultancy and advocacy experience, mainly focused on lower cost sanitary engineering solutions, first with the Water, Engineering & Development Centre at Loughborough University and most recently with the Geneva based international organization, the Water Supply and Sanitation Collaborative Council. During this time I've worked extensively in countries throughout Africa, South Asia and Latin America.

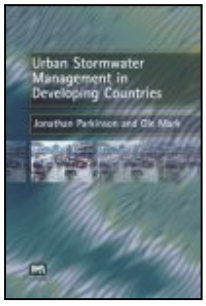
I recognize that the richness and diversity of IWAs Specialist Groups is one of the key strengths of the Association, and know of the joint IAHR/IWA group on Urban Drainage through the participation of colleagues in the network. One of the challenges for IWA as a whole will be how to communicate the wealth of its experience and expertise in different contexts and countries, both North and South: I look forward to working with IWA members and Specialist Groups in this task. Darren Saywell, Regional Director, Tel: +44 (0)20 7654 5542; Email: darren.saywell@iwahq.org.uk

IWA Membership Renewals

Membership renewal letters have now been sent to all IWA members. You can easily renew your membership in the following ways: on-line, using the link on the IWA homepage to the on-line renewal form, and by fax or post, using the membership renewal form that has been posted to you. Don't forget to renew your IWA membership for 2005 if you want to continue receiving this newsletter. If you have not done so already, you can renew online at www.iwahq.org.uk or using the membership renewals notice that was sent to you in December 2004. IWA recognises that your support, with that of our other members in more than 120 countries worldwide, is central to its success. We look forward to continued collaboration with you in 2005.

6. NEWS FROM IWA PUBLISHING

Urban Stormwater Management in Developing Countries



Authors: J Parkinson, O Mark

This book covers a range of methods and approaches to improve the understanding and ability of local stakeholders to solve drainage and hydrology problems. As well as structural interventions, the book describes various non-structural approaches for flood mitigation and pollution control.

Approaches to drainage system design are presented with a discussion of the factors affecting operational performance with specific reference to developing countries. The book encourages the reader to adopt an integrated approach towards stormwater management and considers the importance of institutional arrangements, participation of local stakeholders in planning, as well as aspects of financing and cost recovery.

ISBN: 1843390574 · April 2005 · 224 pages · Paperback
IWA Members Price: £26.25 / US$47.25 / €37.50
Non Members Price: £35.00 / US$63.00 / €50.00

Sewer Networks and Processes within Urban Water Systems
Selected Proceedings of the 18th European and 1st Asian Junior Scientists Workshops

Editors: J-L Bertrand-Krajewski, M Almeida, J Matos, S Abdul-Talib

The papers in this volume of the Water and Environmental Management Series (WEMS) were originally presented at the 18th European Junior Scientists Workshop (EJSW), Portugal, on 8–11 November 2003 and at the 1st Asian Junior Scientists Workshop (AJSW), Malaysia, on 7–10 February 2004. The workshops were organised by the SS&PWG (Sewer Systems and Processes Working Group) of the IWA/IAHR Joint Committee on Urban Drainage.

From the 37 full papers presented at the two workshops, 16 papers have been selected by independent reviewers from the SS&PWG for publication in Sewer Networks and Processes within Urban Water Systems. They reflect rather well the variety of topics presented during both workshops, and bring the high-quality work of these junior authors to the wider audience it merits.

Water and Environmental Management Series (WEMS)

ISBN: 1843395061 · November 2004 · 172 pages · Paperback
IWA Members Price: £48.75 / US$87.75 / €78.00
Non Members Price: £65.00 / US$117.00 / €104.00

Post-Project Monitoring of BMP's/SUDS to Determine Performance and Whole-Life Costs
WERF Report (Project 01-CTS-21T)

Author: LK Lampe

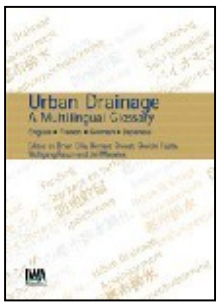
Over the past 20 years, the use of Best Management Practices (BMPs) in the United States has been instrumental in reducing both the detrimental impacts to receiving water quality and the exacerbated flooding caused by urbanization and storm water drainage. More recently, Sustainable Urban Drainage Systems (SUDS) have started to be used in the United Kingdom. Both SUDS and BMPs attempt to mimic the drainage patterns of the natural watershed, and can also provide a degree of treatment needed to improve the quality of the water discharged to an acceptable level.

This project includes a literature review and a survey of stormwater authorities and organizations in the U.S. and U.K. to identify the most commonly used BMPs and SUDS and to determine the availability of data on their cost and performance. It also involves establishment of protocols for whole-life costs and performance data for BMPs and SUDS.

WERF Report Series

ISBN: 1843397161 · November 2004 · 400 pages · Paperback
IWA Members Price: £77.25 / US$124.00 / €124.00
Non Members Price: £103.00 / US$165.00 / €165.00

Urban Drainage
A Multilingual Glossary

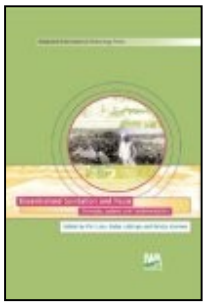


Editors: JB Ellis, B Chocat, S Fujita, J Marsalek, W Rauch

Urban Drainage: A Multilingual Glossary has been written by research engineers and scientists with substantial experience in the urban drainage field. It provides definitive descriptions of urban drainage terms in English, French, Japanese and German, giving guidance on their appropriate usage and context. The glossary also contains many diagrams, tables and technical discussions, and is a very practical tool to facilitate international technical communication in the urban drainage field.

ISBN: 190022206X · March 2004 · 528 pages · Paperback
IWA Members Price: £66.75 / US$113.25 / €93.75
Non Members Price: £89.00 / US$151.00 / €125.00

Decentralised Sanitation and Reuse
Concepts, Systems and Implementation



Editors: P Lens, G Zeeman, G Lettinga

Decentralised Sanitation and Reuse presents technical solutions for on-site collection and transport of concentrated waste streams, and focuses on the compromise between reliability and minimal water wastage. A whole range of available sustainable technologies, both low and high-tech, to treat concentrated (black water) and diluted (grey water) streams are addressed in detail from the fundamental scientific and engineering points of view.

It will be an invaluable resource for a wide academic and professional readership active in the fields of environmental protection and public sanitation.

Integrated Environmental Technology Series

ISBN: 1900222477 · March 2001 · 650 pages · Hardback
IWA Members Price: £67.50 / US$114.75 / €108.75
Non Members Price: £90.00 / US$153.00 / €145.00

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Urban Drainage Conference Proceedings

Selected Proceedings from Novatech 2004 will be published in *Water Science & Technology* **51**(2) in January 2005. For more details, please visit: http://www.iwaponline.com/wst/toc.htm

Selected Proceedings from Urban Drainage Modelling 2004 are provisionally scheduled for publication in WST later this year.

To keep up to date with the contents of IWA Publishing journals, you can register with ContentsAlert - this is a free pre-publication alerting service, delivered via email. For details, please visit: http://www.iwapublishing.com/template.cfm?name=iwapcontentsalert

7. REPORTS ON CONFERENCES

The 6th International Workshop on Precipitation in Urban Areas, "Measured and Simulated Precipitation Data Requirements for Hydrological Modelling", was held in Pontresina, Switzerland, 4–7 December 2003 (reported by Peter Molnar, IHW, ETH Zurich). The workshop was organised by P. Burlando (Institute of Hydromechanics and Water Resources Management), W. Schmid and B. Sevruk (Institute of Atmosphere and Climate) of ETH Zürich, T. Einfalt (einfalt&hydrotec) and B. Vieux (University of Oklahoma). It was sponsored by the Swiss NSF and held under the patronage of UNESCO, EMS and IAHR/IWA JC on Urban Drainage. The workshop was attended by 47 participants from 17 countries. It was organised in four oral presentation sessions and a poster session. Altogether 26 papers and 14 posters were presented.

The goal of the workshop was to report on the most recent scientific and technological advancements made in precipitation monitoring and modelling in the urban environment. The main discussion points in the individual themes of the workshop focussed on:

(1) Raingauge measurements and climate analysis. Problems of measuring precipitation were discussed in the context of observed spatial variability, anomalous regional climatic behaviour and adverse effects on the gauge catch. In terms of climate analysis, recent progress in the modelling of the regional climate in Europe was presented.
(2) Rainfall modelling. Modelling of the space-time variability in precipitation, with a special emphasis on rainfall extremes, was a core focus of the workshop. Scaling techniques used in precipitation analysis were examined in various applications, in particular in the disaggregating of precipitation into high resolution data. Several authors addressed this topic and provided examples, applications and model comparisons.
(3) Radar measurement and forecast. This session provided an update on the successes and problems of radar technology in general. Difficulties in determining the rain-snow distribution were demonstrated, aspects of optimal localisation of radars were discussed, and experiments on the influence of different rainfall types on wave attenuation were presented. A new method of precipitation measurement - the microwave link - was presented by several authors.
(4) Radar applications and hydrology. The last session focussed on the application of radar data to hydrological problems. The combination of rainfall measurements by raingauges, radar and microwave link was addressed. In terms of forecasting, a verification of short-term forecasts of heavy precipitation with radar and rain gauge data in Switzerland was presented.

The workshop reflected well the advances made in the field of precipitation monitoring and modelling in the recent past. A shortened version of all papers and posters was published in the conference proceedings. After a peer-review process, 33 full papers were selected for publication in a special issue entitled "Precipitation in Urban Areas" of the journal of Atmospheric Research (edited by T. Einfalt, P. Molnar, and W. Schmid), which was scheduled to appear at the end of 2004.

Novatech 2004, 5th International Conference on Sustainable Techniques and Strategies in Urban Water Management was held from June 6 to 10, 2004, in Lyon, France. It attracted 570 attendees from 31 countries over the period of three days. This conference is organised every three years since 1992 in Lyon (France), by the Graie, the Greater Lyon, INSA of Lyon, Rhone-Alps Region and Eurydice. The general theme of the conference was the design, implementation and operation of sustainable solutions for wet-weather flow in urban and suburban areas. This new edition of Novatech provided an opportunity to review the state of the art of sustainable techniques and strategies for urban water management. In about 200 papers published in the conference proceedings, the following ideas appeared to be most relevant to the conferences theme:

- The need for a global approach to combining urban planning with water management.
- The need to consider stormwater management in the very early stages of urban planning and development.
- The maturity of new techniques for stormwater management, combined sewer overflow treatment and economic source controls.

Perhaps the most important idea discussed was the integration of urban water management into a sustainable management of the city, striving for a balance between environmental, social and economic aspects.

During the conference, an exhibition was organised, with about twenty commercial exhibitors, about fifty posters selected from the submissions to the Novatech, and the presentation of nearly 10 research programmes in the field of urban hydrology.

In January 2005, the GRAIE will release a "Novatech" CD-ROM that will contain all the papers presented during the five Novatech conferences held from 1992 to 2004. For further information, visit http://www.novatech.graie.org / or contact: novatech@graie.org

The **6th International Conference on Urban Drainage Modelling** – UDM '04, Dresden, Germany, 15–17 September 2004. For a detailed report, see Section 8, p. 26 of this newsletter.

The **4th International Conference on Sewer Processes and Networks** (4th SPN), Funchal, Madeira Island, Portugal, 22–24 November 2004: a conference report is given in Section 4 (SS&PWG report).

8. NEWS FROM AROUND THE WORLD

Australia (reported by Dr. T. Wong)

WSUD2004 - International Conference on Water Sensitive Urban Design, Adelaide 21–25 Nov. 2004

This conference is part of a conference series hosted by the Australian Water Association, Engineers Australia and the Stormwater Industry Association. The theme of the conference was "Cities as Catchments" and it was attended by over 350 delegates of varying professional disciplines including water engineers, local government environmental officers, landscape architects, urban designers, planners and state government planning and environmental policy advisors and social scientists. Papers presented covered latest Australian and overseas research on BMPs that can be integrated into urban design at various scales, models for delivering sustainable urban water management through state and local planning frameworks, institutional reform for sustainable water futures, impediments to successful implementation of WSUD, and maintenance of WSUD elements.

This conference is the third WSUD conference with the first held in 2000 and the second in 2002. There was a distinct shift in interest and discussion amongst the participants in contract to the previous two conferences. There was a significant increase in papers describing case studies of WSUD practices

which demonstrates a maturity from the conceptual and theoretical discussions of WSUD at previous conferences. This maturity is also reflected by the active participation of planners and social scientists in discussions of WSUD implementation. Of particular note was a number of reports of inter-disciplinary research and industry-based projects directed at tackling key implementation issues such as institutional incentives, organization reform and community capacity development. The following keynote papers were presented: (a) Prof Herbert Girardet: Holistic Water Policies for the World's Cities, (b) Assoc Prof Tony Wong: Water Sensitive Urban Design – The journey thus far, (c) Prof Ian White: Small Island Water Supplies and Sanitation as the "Epitome" of Sustainability", and (d) Dr Rebekah Brown: Local Institutional Development and Organisational Change for Advancing Sustainable Urban Water Futures.

Keynote papers may be downloaded and proceedings of the conference are contained in a CD which is available for sale from the conference website http://www.plevin.com.au/wsud2004/

The next WSUD conference is scheduled for 2–7 April 2006 in Melbourne to coincide with the International Conference on Urban Drainage Modelling [UDM'06]. Both conferences are being hosted by the Institute for Sustainable Water Resources at Monash University, in conjunction with Engineers Australia, IWA, Australian Water and Wastewater Association, and the Water Services Association of Australia. Abstracts will called in late January 2005, with abstract submission closing by the end of April. Enquiries on the conference can be addressed to the co-Chairs [Ana.Deletic@eng.monash.edu or Tim.Fletcher@eng.monash.edu].

Australian WSUD Guidelines

The development of a national guideline for improved urban stormwater quality management, Australian Runoff Quality [http://www.arq.org.au/], by the National Committee on Water Engineering of the Institution of Engineers Australia is progressing. Industry consultation has now concluded and the authorship team has been reconvened by Editor-in-chief Associate Professor Tony Wong [tony@ecoeng.com.au] to prepare the document for a final round of technical review before publication. This document is scheduled for publication in September 2005.

A technical guideline entitled WSUD Engineering Procedure: Stormwater is now with the publisher and will be the first set of "step-by-step" engineering design procedure guidelines for the design of WSUD elements (structural BMPs) for stormwater treatment. The document contains guidelines for sizing BMPs for all regions within the State of Victoria using the City of Melbourne as a reference site. For more information contact Matt Francey, Melbourne Water Corporation at:

matt.francey@melbournewater.com.au .

Setting Urban Water Management Objectives (commentary by Dr Tony Wong)

With the recent drought affecting most of the major Australian cities, there are many initiatives being developed to promote integrated urban water cycle management in Australia. The desire to conserve potable water through a combination of demand management and seeking alternative sources of water for non-potable use is featured in many state and federal government policies on water in 2004. Initiatives to facilitate institutional reform for sustainable urban water management have provided a framework for integrating a range of seemingly non-technical disciplines (e.g., planning, social sciences, corporate sustainability) into the traditionally more physical science based arena of urban water management.

A number of state agencies and local municipalities of capital cities have commenced reviewing their urban water infrastructure planning policies with the view of facilitating sustainable urban water management as their cities continue to develop in density and spatial extent. Part of their review includes re-defining urban water management objectives that can be readily translated into "design objectives" for new developments and urban renewal projects (e.g., quantitative descriptions of a development's performance in terms of water conservation, minimization of wastewater discharged to receiving waters and stormwater quality improvement) – Australian cities have separate sewerage systems. These objectives are centred on achieving integrated water cycle management solutions for new and re-development projects linked to the Australian National Strategy for Ecologically Sustainable Development and focussing on:

- Reducing potable water demand through water efficient appliances and seeking alternative sources of water such as rainwater and (treated) wastewater reuse, guided by the principle of "fit-for-purpose" matching of water quality and end uses.
- Minimising wastewater generation and treatment of wastewater to a standard suitable for effluent re-use opportunities and/or release to receiving waters.
- Treating urban stormwater to meet water quality objectives for reuse and/or discharge to surface waters.
- Using stormwater in the urban landscape to maximise the visual and recreational amenity of developments.

One such a project is the review undertaken for the City of Perth. A panel of experts in urban water management consisting of engineers, scientists, ecologists and planners was convened to review and formulate an integrated set of water management objectives for the metropolitan area of Perth. The panel suggested that a desirable set of water-related "design objectives" would have the following characteristics:

- Be transparent and consistent across the greater metropolitan region (i.e. Perth in this case).
- Be relevant to the end of catchment water quality "targets" which are currently set for receiving water bodies (to include both receiving surface water and groundwater systems).
- Address the three parts of the water cycle (i.e., potable water conservation, stormwater drainage and wastewater).
- Provide certainty for the development industry, i.e., (a) Practical during the design stage (e.g., able to be tested via modelling), (b) Achievable by using 'best practice', and (c) Relevant to the urban environment.

The differentiation between water quality targets set for receiving water bodies and design objectives is an important and strategic one. While water quality targets relate to ultimate and aspired whole-of-catchment outcomes, best practice outcomes need to be practical, evolving to reflect the capabilities of new technologies and equitable within the context that new development and urban renewal are invariably of a piecemeal nature. The transition to sustainable urban water management in a large metropolitan area has a long timeframe and BMPs need to be implemented at both public and private water infrastructure levels. 'Best practice' is broadly defined as the use of proven measures with the greatest ability to achieve desired outcomes, for which design guidelines are available to industry (see article above on Australian WSUD Guidelines).

The expert panel suggested that percentage reductions in per capita potable water usage and wastewater generated that is discharged to the water environment are fairly well accepted design objectives. Wastewater minimisation is linked to demand management and reuse of treated wastewater and is closely associated with the objectives of water conservation. Its key sustainability indicator and target are thus also closely aligned. A draft objective of reducing per capita potable water consumption from 120 kL/yr to 36 kL/yr has been suggested and if implemented will be a significant driver for new developments to implement water demand management practices (e.g., water efficient fittings and appliances, xeriscaping garden design) and adopting alternative sources of water for non-potable use (e.g., rainwater harvesting, greywater reuse, sewer mining etc.).

In terms of stormwater quality, there is on-going debate about whether the design objectives should be based on meeting probabilistic pollutant concentration levels or mean annual load reductions from that typically generated from urban environments (in the absences of any intervention measures). Irrespective of the form in which design objectives for integrated urban water cycle management are established, performance measures need to be separated from any particular technologies that may be used to achieve performance (i.e., they need to be measures of the outcome not of a particular intervention). Water quality objectives for suspended solids and nutrients are best developed in Australian practice. While this is so, objectives for other urban contaminants such as metals, BOD_5 and hydrocarbon can be similarly developed.

Reductions in mean annual pollutant load need to be benchmarked against a reference and there is an on-going debate on whether the benchmark should be based on existing catchment loads or contaminant loads typically expected in urban catchments without BMP interventions. The expert panel favours the latter on the basis that this would be consistent with the adoption of best practice technologies irrespective of the pre-development conditions. Suggested best practice design objectives are the reduction in the mean annual loads of TSS, TP and TN of 80%, 65% and 45%, respectively, of the load typically generated from urban environments without any BMP implementation.

There have also been some other investigations undertaken to aid the determination of design objectives for protection of sensitive receiving waters such as wetlands and watercourses of high environmental values:

(a) Research work jointly undertaken at the Cooperative Research Centres for Catchment Hydrology [tim.fletcher@eng.monash.edu.au] and Freshwater Ecology [chris.walsh@sci.monash.edu.au] has developed a strong correlation between "impervious area connectivity" and ecosystem health in watercourses, showing a rapid decline in many ecosystem health indicators (e.g., macroinvertebrate community composition, algal biomass, P:R ratio, etc) as effective impervious area (i.e., impervious areas which are directly connected to receiving waters via pipes or drains) increases. The model shows a threshold (at around 5 or 10% effective imperviousness), beyond which these ecosystem health indicators do not decline any further. In other words, relatively low levels of effective imperviousness will result in ecosystems reaching their 'asymptote of degradation'. They are now working on developing WSUD strategies to facilitate development whilst maintaining very low levels of effective impervious area (using rainwater tanks, rain-gardens, porous pavements and infiltration systems, for example), and propose to undertake a large-scale "retrofit experiment" to trial these hypotheses.

(b) In a study undertaken for the Councils of the Lower Hunter and Central Coast (Hunter Council Inc. – contact: Meredith Liang remsdirector@huntercouncils.com.au), urban water management objectives for urban development upstream of sensitive wetlands included the preservation of key wetland hydrologic regimes and developed a framework which can be readily applied at the local government level. The procedure developed first identified and categorized natural wetland systems based primarily on their vegetation type and, depending on the type of wetland, determined the hydrologic characteristics of the wetland that needed to be preserved. In general, wetlands that were predominantly wet required their "drying hydrology" to be preserved while wetlands that were predominantly dry required both their flooding and drying hydrology to be preserved. Key hydrologic indicators to be used in quantifying the water management objectives include the low flow duration frequency curves and the dry spell frequency curve (drying hydrology) and the high flow duration frequency curves (flooding hydrology).

Austria (reported by Prof W. Rauch)

Mr. Th. Ertl of the University of Natural Resources and Applied Life Sciences, Vienna reports on a new national benchmarking internet platform www.abwasserbenchmarking.at . With this web-platform and under the guidance of the Austrian Society of Wastewater Engineers (ÖWAV) the continuous benchmarking process for sewerage and wastewater treatment operators will be established on the basis of the refined results of the 2000 research project. The installation of the platform is generously sponsored by the Ministry of Environment www.lebensministerium.at who also financed the earlier project.

In the field of training of sewer personnel the 14th sewer basic course on SOM, the 8th sewer cleaning course and the 6th and 7th sewer inspection courses have been carried out under the auspices of ÖWAV with great success.

A 1-day seminar on "Sewer Inspection" with special emphasis on the implementation of the European Standard "EN 13508-2 Coding of Inspection Results" in Austria has been organised for about 150 participating engineers, operators and officials at the University of Natural Resources and Applied Life Sciences in Vienna.

Gerald Gangl from the TU Graz reports on a project entitled "Examination, evaluation and guaranty of the operability of sewerage plants in Austria", which started in February 2004. The main goal of the project is on the one hand to provide a manual for maintenance including inspection of sewer systems as a main focus and on the other hand to provide a guideline for small and medium sized communities on initiating sewer record keeping, which data should be collected and with what accuracy, and what are the uses of such data. Participants in this project participates include representatives of agents (Austrian Federal Economic Chamber), principals (civil engineers, head of sewer systems), public administration offices and universities. The project is financed by the State of Austria and the regional government of Styria. By now, the first theoretical part has been nearly finished, and also the parts dealing with practical implementation were addressed. The theoretical module was divided into five parts and deals with high-pressure jetting, CCTV sewer inspections, data management, inspection strategies and performance indicators. So far, there is no standard control mechanism in Austria, which would provide quality management for proposal and when assessing the actual performance. Consequently, we have developed a standard contract document.

In preliminarily theoretical workshop with the operators we introduced the practical transformation of the quality management. Six sewer inspection companies were then invited to the same sewer section to deliver prescribed quality videos with coding after ATV M 143-2. Afterwards the inspection videos were examined by an external expert. The results of this Quality Control were discussed with the operators and the companies involved. Only the best companies meeting the given standard will be invited for tendering for the whole range of the sewer system inspection, which will be made with coding after the EN 13508-2 next year.

In data management we discussed the problem of interfaces between different software, the requirements of the drain register software, and the possible benefits of its use. As required by the ATV M 143/14, inspection strategies and their applications in small and middle communities were discussed.

In the last workshop, the topic was the use of performance indicators as a control mechanism. In a diploma thesis, the IWA indicators were theoretically tested for use by small- and medium-sized communities. As result of this workshop, we will perform further practical testing in our next year project.

In the next year, the main target will be practical testing of theoretical developments. The project will be finished in December 2005, and the guideline will be discussed by a working group of the Austrian Water and Waste Association.

Dr Gruber from the TU Graz reports on progress concerning a sewer online monitoring station in Graz operated since October 2002 and the installation of a second sewer online monitoring station in Vienna in November 2004. Both stations were designed for long term monitoring and should improve the knowledge about the complex processes in and outside sewer systems. The main goal of the monitoring stations is to measure pollution discharges in sewer systems and into receiving water bodies by means of UV-VIS spectrometers and ISE probes.

The catchment selected in Vienna serves a population of 275,000 inhabitants and has a total catchment area of 6,333 ha. The monitoring station is located in a pumping station where the overflow discharges from a CSO are pumped into the Danube River. The location of the station seems to be of great interest in connection with the just starting RTC project in Vienna. More information concerning these two online sewer monitoring stations is available on the project's homepage www.imw.ac.at.

The main progress in Graz this year was the development of a new flow-through ISE-sensor cell with which a continuous bypass from the sewer channel to the measurement container becomes operative. Further progress was also made in the fields of validation and calibration the UV/VIS spectrometer. The measured data from the UV/VIS-spectrometer in Graz are closer analysed in an ongoing Ph.D. program. The differences among several regression methods used to display the coherences of measured absorbance and the calculated equivalence parameters are determined. These results are considered in quality load modelling. Additionally, precipitation data from tipping bucket gauges and their correction are included in this modelling. The feasibility of overflow load prediction for a single storm event by means of a simple hydrological model and accurate measured input data will be shown. A statistical approach forecasts possible CSO emissions of this structure. The thesis will be presumably finished at the end of April 2005.

From the University Innsbruck, Institute of Environmental Engineering, Prof. Rauch reports on activities that have been set over the last year.

(1) CITYDRAIN©, a software currently being developed at the Institute of Environmental Engineering, is designed for modelling urban drainage systems (including the receiving water) in an integrated way. For the use in the daily engineering work such software tools are required to be simple in handling and to provide a certain flexibility to be adjustable for different scenarios. The purpose of CITYDRAIN© is to accommodate such requirements. Following the principle of block-wise modelling of integrated systems, CITYDRAIN© has been developed in a Matlab/Simulink© environment. The Simulink platform is widely used for different kinds of dynamic simulations and was found suitable as a hosting environment for the CITYDRAIN© software. The basic idea is to create a toolbox of different subsystems (catchment, CSO, WWTP,…), which can be freely arranged and connected to each other. From a programming point of view, the modelling of fully integrated systems has shown that the amount of data being handled (and subsequently the computational time) is a limiting factor. Therefore, the underlying models in CITYDRAIN© are kept simple on purpose, using fixed discrete time steps for dynamic simulation. Hydraulics is realized by using conceptual models that allow quick calculations. Mass transport of pollutants is implemented for conservative matter/tracer substances. The implementation of processes for conversion of matter is currently in progress. The open structure of the software allows the advanced user to add custom blocks and/or modify blocks. Underlying models may be refined in order to model specific aspects or processes if necessary.

(2) Investigation of possible pollution abatement by means of increased baseflow. The environmental pressure caused by CSO spills is of special concern for small receiving waters or low flow sections; the latter often resulting from hydropower operation or flood protection measures. The measure of "increased baseflow" is developed in order to temporarily increase the river flow by operating hydropower installations in order to gain sufficient dilution of substances. Pollutants to be addressed are of acute type impact only (e.g., unionized ammonia and heavy metals), where addressing delayed and accumulative impacts is questionable if not impossible. For operating hydropower plants, a concept is developed for coupling model-based predictive control with a short-term quantitative precipitation forecast (now-casting). The main task is the development of an operational scheme of the upstream located weir gate that is driven by water quality objectives. Up to now the measure has been tested off-line within a semi-virtual catchment using simple algorithms. Findings were that the measure is an interesting alternative to classical CSO mitigation techniques such as a large increase of detention basin volumes, both from an ecological and economical point of view. Ongoing research's objective is the enhancement of the discharge algorithm aiming towards a more "water saving" operation of the hydropower plant as this would improve the cost-efficiency of the measure. Second important issue is to explore and account for uncertainties and limitations associated with quantitative precipitation forecast (now-cast) being a vital element of this measure.

(3) Another topic analysed at the IUT is the temporal and spatial variation of rain. The use of historical, high-resolution rain series in simulation and design of urban drainage system structures has become standard practice in the field. However, it is a well known problem encountered in this methodology that rainfall differs significantly from location to location, depending on climatic and physiographic differences. The activities aim to provide a possible explanation of regional variations through adequate indicators. Furthermore, the temporal distribution plays an important role too. Even if modern computer systems allow to directly simulate historical rain data over long periods, the possibility to derive design storms with a certain frequency of occurrence is still an important tool in up-to-date sewer design guidelines. Thus the issue of uncertainty in the estimation of such rainfall properties is a relevant one. Climatic changes and random variations can cause significant temporal variations in the precipitation. Thus also the estimated extreme rainfall properties may vary significantly, depending on which period has been used for analysis. This problem implies the knowledge need of the number of years that should be used in the simulation of the performance of the sewer system, or of the methodology to use for the rain data choice.

Canada (reported by Drs Hubert Colas and Jiri Marsalek)

The Federation of Canadian Municipalities (FCM) and the National Research Council (NRC) have been working on the National Guide to Sustainable Municipal Infrastructure. This Guide is designed to assist Canadian municipalities in dealing with infrastructure issues, and specifically, it aims to provide: (a) a decision-making and investment planning tool; (b) a compendium of technical best practices (BPs); (c) a road map to the best available knowledge and solutions for addressing infrastructure issues; and (d) serve as a focal point for the Canadian network of practitioners, researchers and municipal governments dealing with infrastructure issues. So far, about 15 best practice documents have been produced, including those dealing with source and on-site controls for municipal drainage systems, infiltration/inflow control/reduction for wastewater collection systems, and wastewater source control.

A recently completed BP addressed stormwater management planning in a broad context, including flood protection, water quality protection and mitigation of environmental impacts, habitat values, community amenity objectives, compliance with regulatory requirements, life-cycle costs, the feasibility of implementation, systems reliability and sustainability, equitability of provided benefits and protection. Another BP, on end-of-the-pipe stormwater controls is entering into the final review phase. For further information, contact Dr Marsalek who is one of the leaders of this effort (jiri.marsalek@ec.gc.ca), or visit the Infraguide web site at: www.infraguide.gc.ca

RTC in Quebec City and Montreal (reported by Hubert Colas)

Quebec City (Quebec, Canada), with a population of 600,000 and both separate and combined sewers, is implementing a combined sewer overflow control program at a fast pace. As a part of a first phase implementation in 1999, the City implemented a Global Optimal Real Time Control System with radar rainfall prediction. After obtaining better than expected performance in terms of CSO volume reduction with this system, and, therefore, validating through real life operation the first such an advanced RTC system in the world, Quebec City started the design and construction of storage basins and other control facilities. Six storage basins were put into operation in 2004, while a seventh one will start operating in the spring of 2005. Total capacity of these seven storage basins is 40 000 m³ and they were constructed at a cost of $CA 45 million. Seven other storage basins are presently under design with a total capacity of 81 000 m³ for a total estimated cost of $CA 78 million. Construction will start in 2005 and all storage basins should be in operation by the end of 2007, in order to provide Quebec City's citizens with a great water quality improvement gift for 400 year anniversary of the City in 2008 (contact Hubert Colas, Hubert.colas@bpr-cso.com for more information).

The City of Montreal (Quebec, Canada) has had a supervisory real time control system at 36 of its 68 CSO regulators. This City of 1.8 million inhabitants, covering a service area of 270 km², decided to update and upgrade this control system with a decision support system, Csoft™ to improve the coordination and control of these regulators. The performance of the new global optimal real time control system is expected to improve by 21% in terms of combined sewer overflow volume reduction in an average year compared to the current conditions with a local reactive control strategy. The new upgrade has been put into operation in the fall 2004. The implementation of this system also enabled the City to develop a combined sewer overflow program with expected savings of approximately 50% compared to a more traditional approach that would not included the impact of real time control in the planning phase. (contact Hubert Colas, Hubert.colas@bpr-cso.com for more information).

A theme issue of Water Quality Research Journal of Canada: Managing wet-weather flows: on the road to sustainability is described in Section 10 of the Newsletter, Recent Publications of Interest.

France (reported by Prof B. Chocat and Dr Jean-Luc Bertrand-Krajewski)

OPUR: An Urban Pollutant Observatory in Paris

The research carried out by the CEREVE between 1995 and 2000 on the "Le Marais" experimental catchment area (42 hectares) has shown that the sewer network is a physico-chemical reactor, which affects by its characteristics the quality of urban water. In the light of these results, CEREVE, in partnership with the City of Paris, the SIAAP and the AESN, started in 2001 a new research program to study the impact of spatial scales on the characteristics and origins of pollutants in combined sewer network flows. This research has lead to the creation of an experimental catchment called OPUR (« Observatoire des Polluants URbains », Urban Pollutants Observatory). OPUR is composed of a network of six experimental catchment areas on the Right Bank in Paris, along the axis of the Clichy trunk. The catchments studied cover areas of 40 to 3,000 hectares, with network lengths from 1 to 13 km and populations from 12,000 to 650,000 inhabitants. It is a combined network. The experimental equipment used can quantify and describe the hydraulic flows and the pollutant flows at the outlets of the catchment areas studied. The pollution parameters studied are suspended solids, organic matter, nutrients and inorganic and organic micropollutants. Two research programs are carried out on the OPUR site: (1) The spatial evolution of the characteristics and origins of wet weather flow pollution in combined sewers, and (2) The analysis and development of operational calculation models for storm water pollutant flows in sewer networks. For more information, contact Ghassan Chebbo (chebbo@cereve.enpc.fr) or Marie-Christine Gromaire (Gromaire@cereve.enpc.fr) CEREVE (ENPC) – France.

Research Project DAYWATER

The DayWater project is a EU funded RTD project, which started in December 2002 and runs till November 2005. The main objectives are the characterisation of the decision making process; promotion of stormwater source control methods and integrated water management in urban policy making and catchment area management; dissemination of technical information about structural and non-structural best management practices (BMPs) for stormwater pollution control; provision of models for analysis of pollution loads, and environmental risk assessment. As the structural and non-structural "Best Management Practices" (BMPs) in stormwater source control are not uniformly distributed throughout Europe, the DayWater project aims to encourage the use of urban stormwater pollution source control measures by building a prototype of a relevant adaptive decision support system (ADSS). A major characteristic of the ADSS is its adaptability to internal (e.g., a variety of stakeholder viewpoints and knowledge, urban political constraints) and external (e.g., spatial scale, rain/snow patterns) conditions of the decision-making procedure. The DayWater project focuses on stormwater, which is treated locally in urban areas using various structural source control techniques, such as detention and re-use, swales and soakaways, catch-basins, wetlands, ponds, porous paving etc., or non-structural methods such as public measures (e.g., stormwater related taxes) or private actions (e.g., street sweeping). Runoff water management operations such as stormwater source control, encounter acceptance difficulties because of their numerous interactions with urban life and developmental issues. These aspects demonstrate the necessity of heterogeneous data collection and a complex decision-making processes involving numerous stakeholders (urban and civil engineering, as well as environmental associations etc). Contact: http://www.daywater.org

OTHU project

The OTHU - Field Observatory for Urban Water Management - has been launched in Lyon (France) in 1999. It is a long term field-observatory, which is set up on the drainage system of the urban community of Lyon and on some water bodies that receive its effluents. Its objectives are to collect reliable data on urban wet weather effluents and on their impacts on receiving waters, in order to provide results, knowledge and methodologies to assess the sustainability of urban water systems. From a scientific point of view, the OTHU project relies on a research consortium that brings together 15 research teams from 7

Universities or research institutes, all of them located in Lyon (BRGM, Cemagref, ECL, ENTPE, INSA, University Lyon 1, Lyon 3). It constitutes the working support of about 45 researchers interested in most fields of environmental research (climatology, biology, chemistry, hydrology, hydrogeology, hydraulics, health sciences, sociology, economy, ...). From an operational point of view, the OTHU project benefits from the support of main institutional and operational partners, which keep the project in touch with public decision making. The OTHU observatory is an open project that has been implemented to encourage collaborations among scientists from all over the world and promote data sharing. For further information, visit http://www.othu.org / Contact: info@othu.org

Laboratory UPR "Urban Hydraulic Systems" - ENGEES

In 2003, the research team worked on three principal tasks. The common points to these three research directions relate, on the one hand, to the scientific steps, namely an approach to coupling experiment, theory and modelling and, on the other hand, to two transverse sets of themes concerning the research of the best numerical and metrological tools.

1. Modelling of sewer system flows: this activity addresses the improvement of the numerical simulation of hydraulics of the sewer system and the transport of pollution load associated with the flow. Within the framework of a complex CSO, this work consisted in developing a methodology of validation of the results provided by a three-dimensional computer code. The objective is to check the ability of the software to simulate hydraulics in 3D in a CSO compared to experimental measurements in laboratory. In program RITEAU, a sensor MES-FLUX is being developed. The objective of the project consists in developing an ultrasonic sensor for the joint measurement of two parameters (flow and concentration of the suspended matter) in all types of conduits with a diameter smaller than 1 m.
2. Study of water treatment processes – this work is concerned with the development of a numerical code describing water treatment by bacterial cultures affixed on fine granular materials fed discontinuously and the optimization of the treatment system.
3. Impact of the wastewater effluents on the natural environment. The laboratory collaborates with the LCPC of Nantes on the development of protocols for characterization of sensors using the Doppler effect. A thesis has been completed on the ecological impacts of urban discharges on receiving waters (undertaken in collaboration with Michel LAFONT of the CEMAGREF of Lyon).

Additionally, the laboratory collaborates with the LCPC of Nantes on the development of protocols for characterization of sensors using the Doppler effect.

Meetings organised in France in 2004

On 27 January 2004, the "Stormwater" working group of the ASTEE (Scientific and Technical Association for Water and Environment), in collaboration with the French Seine-Normandie Water Agency and the "Urban hydrology" working group of the SHF (Hydrotechnical Society in France), organized a one-day conference on storage and settling tanks for pollutant removal in both combined and stormwater sewer systems. The morning and afternoon sessions were, respectively, devoted to (i) research and scientific aspects and knowledge, and (ii) practical experience and case studies. An open forum at the end of the day allowed an open discussion with all participants. The proceedings of this conference have been published as a special issue of the French journal TSM (Techniques, Sciences and Methods), No. 12, (December 2004), see http://www.astee.org/communication/tsm/archives/accueil.asp . More information is available by Ghassan Chebbo (chebbo@cereve.enpc.fr), Mathieu Ahyerre (ahyerre.mathieu@aesn.fr) or Jean-Luc Bertrand-Krajewski (jean-luc.bertrand-krajewski@insa-lyon.fr).

On Oct. 25 & 26, 2004, the first French PhD students conference on urban hydrology (JDHU 2004) was held in Lyon, France, with the support of the SHF, INSAVALOR and the sponsorship of the French consulting company SAFEGE. Nineteen papers were presented. The proceedings are available from Jean-Luc Bertrand-Krajewski (jean-luc.bertrand-krajewski@insa-lyon.fr). A selection of the best papers will be reviewed and published in French journals "La Houille Blanche" (SHF) and TSM (Astee).

On 28-29 June 2005, the SHF, the RGCU (French Research Network for Civil and Urban Engineering), the GRAIE and the ASTEE will organise a conference on metrology, stormwater quality modelling and their interrelationships. The call for papers is available on the GRAIE website at: http://www.graie.org/graie/index.htm, on the bottom of the page "Actualités".

Germany (Reported by Prof Peter Krebs and Dr Manfred Schütze)

The International Conference on Urban Drainage Modelling (UDM) was held in Dresden in September 2004. More than 100 participants attended this three-day event. Two non-urban-drainage-experts were invited as keynote lecturers. The meteorologist Prof. Bernhofer presented latest results from research on climate change. He showed that the predictions for the temperature development in the coming decades mainly depend on the economic development world-wide, with the main emphasis on China. Further, downscale procedures are developed to predict regional climate change as a consequence of the global scenario. As an example, although the annual rain depth will, depending on the regional conditions, increase or decrease, the frequency of extreme rain events will increase in most cases. A second interface was covered by Prof. Benndorf who is a limnologist. His approach attempts to manipulate the food chain in such a way that the resilience of the receiving waters is optimised. Depending on the receiving waters conditions and the events, the urban wastewater system may be operated differently as compared to today, in order to facilitate this eco-technology approach.

Two major trends in the presented urban drainage modelling papers can be identified - systems integration and the uncertainty analysis. The integration includes the joint consideration of sewer system, wastewater treatment plant (WWTP) and the receiving water for both design and operation, and an another type of integration describes the combination of water or wastewater quality modelling with computational fluid dynamics approaches. Uncertainty and sensitivity analyses become more and more an intrinsic part of modelling rather than to be seen as an add-on to model results. The aim is to show the probabilistic distribution of possible results and by this to improve the information for model and process understanding.

A series of simulation research workshops (*'Hochschul-Simulationsgruppe'*) in Germany was continued. In the spring 2004, a workshop was held at the CRTE research centre in Luxemburg, attracting participants not only from Germany, Austria and Switzerland, but also from Poland, Belgium and, of course, the hosts country of Luxemburg. Work was continued in the sub-groups focusing on (a) simulation guidelines for dynamic simulation of WWTPs (these have also been presented at the IWA conference in Marrakech) and (b) current status and developments of integrated modelling of sewer systems and WWTPs, including real-life case studies.

The "real time control" working group of the German Association for Water, Wastewater and Waste (ATV-DVWK, soon to be renamed as DWA) published a planning tool (PASST - Planning Aid for Sewer System Real Time Control), which allows to assess the real time control potential of sewer systems. Furthermore, it provides some materials introducing the user to the main concepts and benefits of real time control of sewer systems. PASST can be obtained for free, either from the ATV's website (www.atv.de) or by contacting Manfred.schuetze@ifak-md.de. In 2005, the publication of a guideline document for the planning and design of real time control in sewer systems is envisaged.

Japan (reported by Mitsuyoshi Zaizen and Hiroaki Furumai)

Typhoons caused a great deal of damage in many Japanese cities (reported by Mitsuyoshi Zaizen).
In 2004, natural disasters caused by severe rainfall events hit Japan many times. Specifically, there were 10 typhoons striking the Japanese main islands. This set a new record by a large margin; until now, the highest number of typhoons per year was six. It is thought that climate change influences the occurrence

of typhoons in the Sea of Japan. As described in the last newsletter (2004), the 'Inundation Damage Control Law for Specific Urban Rivers' came into effect in 2004 and was designed to promote co-operation between sewer system operators and river authorities in preventing inundation of urban areas. The typhoon disasters of 2004 made us to realize the importance of this law. Further promotion of countermeasures against inundation damages is expected.

A seminar on CSO modelling analysis with a GIS database (reported by Hiroaki Furumai)
A seminar on runoff pollution analysis for combined sewer overflows using distributed models was held at the University of Tokyo on November 17, 2004. There were more than 100 participants enjoying interesting reports and active discussion. Two years ago, a working sub-group was formed under the research project "Fate and transformation of environmental risk factors caused by CSOs", which was financially supported by the Ministry of Land, Infrastructure and Transportation (MLIT). This group is a consortium of university academics and experienced engineers from the Association of Water and Sewage Works Consultants of Japan. They carried out runoff pollution analyses in eight different drainage areas, using input CSO data obtained from the monitoring and sewer network of the Bureau of Sewerage of the Tokyo Metropolitan Government. The seminar served for publicizing the research results obtained. There were nine technical presentations as well as an overview paper describing the whole project. The seminar highlights can be summarized as follows:

- Application of an existing GIS database such as the Sewerage Mapping and Information System (SEMIS) of the Tokyo Government and Detailed Digital Information (DDI: 10 Grid Land Use).
- Appropriate modelling for pumping stations and other special structures in sewer networks.
- Importance and evaluation of localized sewer sediments/deposits for wet weather pollution analysis.
- Consideration of receiving river water levels affecting flow rate and pollutant flow to interceptor pipes.
- Calibration and verification of runoff quality model parameters.
- Effects of sewer pipe network lumping on runoff quantity and quality simulation results.

This seminar provided an important opportunity for sharing research findings and implementation experiences among university academics, consulting engineers and municipal officers. For further information, contact furumai@env.t.u-tokyo.ac.jp.

United Kingdom (reported by Prof R. Ashley)

There has been a lot of activity since the last newsletter. This may be considered in terms of Government initiatives and in parallel, research projects. These broadly fall into two areas, although they do overlap: quantity and quality.

The quantity aspects have focussed on both the lack (water resources and demands) and a surfeit (flooding). There is a need to build hundreds of thousands of new homes in the south east of the UK to accommodate the growing population demands in and around London. Ideally these should be low-cost and affordable by key workers, such as teachers and nurses. Unfortunately this part of the UK is both water stressed and also mostly in low-lying areas in flood plains. Hence in terms of urban drainage this initiative is challenging. Even existing systems in this area are under stress. In the summer of 2004, unseasonable rainfall led to millions of tonnes of raw sewage being discharged into the Thames from overflows. Plans to deal with this include a €2.5bn, 30km long interceptor storage sewer, possibly laid in the bed of the river. Thames Water utilities have been studying the possibilities for a number of years, but whatever solution is adopted will inevitably be costly. More technical details about the Tideway Project can be found in the papers presented at the annual UK conference in November - on the WaPUG website (http://www.wapug.org.uk/). Despite Thames Water's plans to build a new potable water desalination plant on the Thames, there seems to be no attempt to couple the solution to the excess storm overflows (with use of stormwater at source) with the growing demand for water.

The WaPUG (Wastewater Planning Users Group) meeting in November 2004 was well attended as it was the 20th anniversary. A number of international participants engaged in an R & D workshop that described the various UK projects and CityNet activities.

2004 has also seen the quinquennial review by the economic regulator (OFWAT) of the water companies in England and Wales. This review also decides on prices to customers over the period 2005-2010. The Companies submit business plans and by negotiation with OFWAT and Defra, agree on expenditure and priorities with inputs from the Environment Agency. This time the companies were allowed to raise revenue and spend some 50% of the amount that they initially asked for. Much of this expenditure is on fulfilling the obligations of EU Directives, particularly freshwater fisheries. However, a substantial amount is also prioritised for sewage flooding of properties and surrounding areas (www.ofwat.gov.uk) following customer consultation.

Government initiatives have looked at Future Flooding risks and responses (http://www.foresight.gov.uk/), and recently, a consultation document has requested feedback on the way in which the institutional management of water, including in urban areas, is arranged (http://www.defra.gov.uk/corporate/consult/waterspace/consultation.pdf). This sets out aspirations for a more integrated approach to the whole water cycle, overseen by one lead organisation in urban areas. In the UK, the place of Municipal Authorities does not include managing local flooding, and there are signs in the consultation document that UK Government would rather see this role given to private companies.

A number of major projects are underway. Those dealing with urban drainage include: AUDACIOUS (adapting urban drainage to climate change; (http://www.eng.brad.ac.uk/audacious/) and the Flood Risk Management Research Consortium (http://www.floodrisk.org.uk/). The latter over the next 4 years intends: in the short-term to deliver tools and techniques to support more accurate flood forecasting and warning, improvements to flood management infrastructure and reduction of flood risk to people, property and the environment; and establish a programme of high quality science that will enhance UK understanding of flooding and improve the ability to reduce flood risk through the development of sustainable flood management strategies. Academic leadership of the Consortium will be provided by Professor Ian Cluckie at the University of Bristol, with Professor Gareth Pender at Heriot-Watt University. Together with Professor Colin Thorne of the University of Nottingham, Dr. Joe Howe of the University of Manchester, Professor Adrian Saul of the Pennine Water Group at University of Sheffield, Dr Paul Sayers of HR Wallingford and Professor Howard Wheater of Imperial College. The Core Team will also be supported by Professor Keith Beven, who will provide leadership in the Risk and Uncertainty area. The Project Manager is Dr. Stephen Huntington of HR Wallingford.

Update on WaND: Water Cycle Management for New Developments

Readers may remember the WaND project from the last newsletter. The consortium aims to support the delivery of integrated, sustainable water management for new developments by provision of tools and guidelines for project design, implementation and management. The research team consists of 8 research institutions and more than 20 industrial collaborators (end users). The project kicked off with a two-day workshop to seek better understanding of the envisaged toolbox (WaND system), to identify cross cutting issues, to discuss sustainability aspects and future scenarios, to reflect on how health and social aspects could be effectively addressed and to identify potential case study sites.

Considering the complex nature of interdependencies and links between different work packages, a series of focused but flexible workshops has been initiated right from the project inception covering the following themes:

- Sustainable development and sustainability aspects in WaND (2 events)
- Health Aspects in WaND
- Whole life costing

Others planned include:

- Public awareness needs
- Case studies

- Future scenarios for sustainability assessment.

The work of the consortium is now well underway. Key developments in the first 18 months are:

- Conceptualisation of the WaND system workbench to allow accessibility, use and dissemination of all WAND outputs, tailored to end users' needs.
- Conceptualisation of a framework for sustainability assessment for new developments, taking into account the multiple stakeholders
- Development of prototype decision support tools in the following areas:
    - Screening of 'most promising' potential development sites at regional level based on sustainability criteria with an emphasis on water
    - Assessing the most suitable location for water management techniques within a development site, based on operational criteria
    - Optioneering water management options to maximise sustainability.

For more details, please contact Prof Butler (d.butler@imperial.ac.uk) or go to: www.wand.uk.net.

USA (reported by Eric Strecker, estrecker@geosyntec.com, and UWRRC of ASCE)

The report that follows is based on the activities of the ASCE (American Society of Civil Engineers) Urban Water Resources Research Council (UWRRC). The Council has been active for over 40 years on urban drainage issues through such activities as the sponsorship of major conferences and publication of manuals and guidance documents. The Council has a long-term history of collaboration with the Joint Committee. Currently, the sharing of information and collaboration between the Council and the JC is arranged through Eric Strecker and Jiri Marsalek, both of whom are affiliated with the Joint Committee and UWRRC. Tony Wong is also active with both the UWRRC and the JC.

The next Council meeting will be held during the 2005 Environmental and Water Resources Institute (EWRI) World Water and Environmental Resources Congress in Anchorage Alaska, May 15-20. The conference web site is: http://www.asce.org/conferences/ewri2005/. The likely Council meeting date is Sunday May 15, 2004. There will also be Task Committee Meetings on Saturday the 14th and Sunday the 15th as well. The Council met for its annual meeting at the Salt Lake City 2004 EWRI Congress in June. This update includes brief summaries of the Council's Task Committees (TCs) and general conference activities.

Task Committees:

1. Publication History of the Council (Jonathan Jones) – the draft document of the over 40 years of publications is currently in the form of a draft notebook. He reported that the document literature is as relevant now as when it was when first published. Publication procedure was discussed and will likely be in a book form; the book will be sold by ASCE.
2. CSO/SSO (Richard Field/Betty Rushton) The TC organized 2 sessions at the 2004 Salt City ERWI Congress. The TC is organizing a symposium with a number of sessions and workshops at the EWRI Anchorage Congress. The TC project goals are to evaluate long term control plans (LTCPs), looking at what has been done and what can be used to enhance them, develop a funding request to EWRI & WEF for this work and to develop a position paper on CSO/SSO LCTP.
3. Urban Streams (James Gracie) The TC sponsored a full symposium at the Salt Lake EWRI Congress, with the papers published in the proceedings. A separate proceedings of the 2003 symposium was one of ASCE's best sellers. Two new subcommittees were formed on (i) monitoring and (ii) protection in urbanizing areas with a recommendation for an engineering foundation conference on these topics. The committee is sponsoring a track of papers at the Anchorage Congress.
4. Low Impact Development LID (Mike Clar) – A national conference on LID was held at University of Maryland College Park in September, 2004, under this TC sponsorship. New subcommittees have been established for National/Regional Guidelines (Neil Weinstein) and Computational Methods (will prepare an engineering foundation conference (EFC; Wayne Huber, see below). Topics that are expected be included as part of an EFC on computational methods are LID and BMPs, emphasis on

modelling or tools now used and adaptation, and computational methods for analysis of integrated controls of CSO/SSOs. TC will participate in the Williamsburg ASCE Watershed Conference, sessions were proposed for Anchorage and cooperation has been extended to the 10th ICUD in Copenhagen.

5. BMP Technology Symposium (Richard Field). The symposium at Salt Lake EWRI Congress comprised 22 sessions with about 90 papers. The papers are being compiled into a book which will consist of expanded and peer reviewed papers. The TC is also organizing another BMP Symposium at the Anchorage 2004 EWRI Congress with about 24 sessions. The TC will also consider a separate publication for this event.
6. Manual of Practice (MOP) (Andrew Earles and Marcus Quigley). A review of the current Stormwater Management MOPs concluded that they stand in good relevance, reflecting the state of practice. The TC is discussing the development of an EWRI BMP guidance document that would focus on unit processes approach. Partnering with Water Environment Research Foundation (WERF) was recommended.
7. Gross Solids (Betty Rushton) The TC is working toward a guidelines report on measurement and classification of gross solids to be completed next year. Key issues include collecting and measuring all classes of gross solids, size characterization, and effects on other parameters will be addressed. Up to 93 categories of litter, sediments leaves, etc. will be considered. The Australian protocol that is two years ahead of TC's work and addresses three levels - administration, application and research, will be considered.

Other Council Activities:

Council BMP Database Project (Eric Strecker, Ben Urbonas and Jonathan Jones). The database is up to 200 BMPs with 60 more waiting to be entered. A key issue for the database has been funding. A funding coalition has been established providing US $60-80 thousand per year. A steering committee for funding and direction has been formed and a sub-committee for technical oversight, including a number of Council members. The principal investigators are considering development of a short course on how to use the Database and how to select, design, and monitor performance of BMPs. The activities planned for this year (2005) include entering new studies into the database, improving the project web site and developing protocols for distributed BMP systems (LID, SUDs, etc.). A number of US communities/agencies (Washington DC, Portland, OR, California Department of Transportation) as well as the Auckland, New Zealand area are considering using the Database for storage of BMP performance data.

2004 International Watershed Conference (Shaw Yu). Sponsorship agencies include EPA, EWRI, and the local Watershed agency for this conference held in Shenzhen, China, December 2004. Objectives of the conference were to exchange technology and research and establish formal ties between EWRI/UWRRC and agencies in China. A pre-conference workshop was held in Hong Kong. Conference website can be accessed through www.virginia.edu

US representation to IAHR & IWA. (Eric Strecker, assisted by Jiri Marsalek). Eric and Jiri are providing correspondence from the Council to the JC. A key issue has been and continues to be getting US participation in and collaboration for JC activities and conferences. It is recommended that such efforts focus on specific areas of interest to both parties, including hydrologic source controls, real time control, sewer systems, urban rainfall, and urban drainage in cold climates. The possibility of the 2006 JC meeting in conjunction with an engineering foundation conference (EFC) was identified. In addition the Council is encouraging members to submit abstracts for the 10th ICUD (as reported in Section 9 of this newsletter, more than 50 US abstracts were submitted) and will provide paper reviewers as requested. Tony Wong is also interested in working with the council to develop more interaction specifically on the expansion of knowledge and coverage of urban drainage issues. The driving issue being an overall system integrated into design including potable water, wastewater and stormwater creating a sustainable urban environment (e.g., reuse of grey water and black water requires an integration of efforts).

Eng Foundation Conferences (EFC) (Eric Strecker & Wayne Huber). Topics for the next EFC have been discussed by the membership at length. Two primary topics were considered 1) the management, operation and implementation issues in urban drainage and 2) computational methods for new technologies. A vote of the membership was held and the computational methods topic was approved for a 2006 EFC, while a 2007 EFC will focus on Urban Drainage Master Planning. Wayne Huber will chair the 2006 committee, with Eric Strecker chairing the 2007 committee.

9. FUTURE MEETINGS AND CONFERENCES

Louisville Metropolitan Sewer District (MSD) Real Time Control Seminar, Louisville, KY, April 21–22, 2005.
Louisville MSD is implementing a real time control system using global optimization and radar rainfall prediction. It will become operational in early 2005. Because of the interest for such systems in the United States, Louisville MSD decided to organize a seminar on real time control. The focus of the Seminar will be the Louisville MSD system but other communities in the US will also be invited to present their work with this technology. The seminar will not only present the significance of using RTC to help save more than $ 100 million on Louisville's combined sewer overflow control program, but also some operational results collected during the first few months of operation of the system. Field visits will help participants understand local and central station set-ups and provide opportunities for discussing operational issues. The Real Time Control Workgroup is sponsoring this Seminar. For further information please contact Dr Hubert Colas (Tel. + 1-514-257-2439, E-mail: Hubert.Colas@bpr-cso.com).

NATO Advanced Research Workshop on Transboundary Floods: Reducing Risks and Enhancing Security through Improved Flood Management Planning, Oradea (Baile Felix), Romania, May 4–8, 2005.

NATO Advanced Research Workshops (ARW) are advanced-level meetings focusing on special subjects of current interest. The main purpose of this ARW is to review the state of the art of managing transboundary floods, with respect to reducing risks and enhancing security through improved flood management planning. Emphasis will be placed on discussing actual case studies dealing with transboundary flood management issues. Financial support for selected applicants (meeting NATO conditions) is available. To apply, please contact the workshop secretariat: Mrs. Corina Alecu [corina.alecu@meteo.inmh.ro], and/or Mrs. Anisoara Iordache [anisoara.iordache@meteo.inmh.ro], or Jiri Marsalek [jiri.marsalek@ec.gc.ca].

World Water and Environmental Resources Congress, May 15–19, 2005, Anchorage, Alaska. Sponsored by EWRI of ASCE. The preparation of this event is well advanced. Rich Field and his team are working on a BMP and CSO mini-symposium held during the Congress. So far, an impressive program with more than 15 sessions (each contains four papers) has been prepared. For further details, contact Rich Field or Scott Struck at US EPA (Field.richard@epamail.epa.gov , Struck.scott@epamail.epa.gov).

10th International Conference on Urban Drainage, Copenhagen, Denmark, Aug. 21–26, 2005
The conference preparation continues as planned. The organizers were pleased that almost 600 abstracts were submitted to the conference, with a somewhat uneven distribution among the 34 conference topics. The members of the Advisory Scientific Committee helped identifying an international group of 130 reviewers. All abstracts were reviewed by at least 2 independent reviewers and on this basis they were ranked and a threshold level for acceptance was determined. For the abstracts that fell below the threshold the reviewers typically mentioned such problems as: (i) unclear description of methodologies, (ii) lack of results (indicating that the research is still in an early stage), (iii) unclear problem formulations, and (iv) lack of originality. In the case of some rejected abstracts there were also linguistic problems, which made it impossible for the reviewers to assess them. However, the general quality of the received abstracts was rather high, and 90% of the abstracts were hence approved.

A total of 44 countries are represented, and among the nations best represented are Germany, USA and Great Britain (more than 50 abstracts each), Australia (>40), France, Denmark and Japan (>30), The Netherlands and Italy (>20), Canada, Sweden and India (>10) and Austria, Belgium, Brazil, Czech Republic, Malaysia, Spain and Switzerland (>5). It was particularly gratifying to note that more than 100 authors wish to compete for the Poul Harremoës Award for the Best Urban Drainage Paper by a Young Author.

At this stage three types of sessions are planned at the conference: (i) oral platform sessions, moderated by session chairmen, in which speakers will typically make presentations using MS PowerPoint, (ii) featured poster sessions, moderated by session chairmen, in which posters are selected to complement each other and presenters will have opportunities to make demonstrations using their own portable computers, and (iii) poster sessions, in which participants are free to contact any of the presenters on their own - such sessions may contain posters on different topics, and especially posters on case studies. Furthermore, there will be courses/workshops on Sunday prior to the conference, technical excursions on Wednesday afternoon and various meetings during the evenings.

The deadline for paper submission is February 1, 2005; detailed instructions and a paper template can be downloaded from the conference website (http://10icud.er.dtu.dk). Please note that abstract acceptance is an invitation to submit a full paper – it does not guarantee that the final paper will be accepted for the conference. Submitted papers will be carefully reviewed before final acceptance. Final selection of papers will be based on the following criteria:

- Papers that received high ratings by reviewers with respect to scientific quality and/or practical relevance will be given preference; case studies or papers demonstrating less innovation will primarily be considered for poster sessions.
- Papers must normally be presented at the conference by the principal author (the first author). In special cases, another co-author can present the paper, with a prior approval by the Executive Committee (i.e., before registering for the conference). Accepted papers may be removed from the conference program, if the presenting author does not register for the conference.
- Each presenting author is generally allowed to present one paper at the conference; multiple presentations are allowed in special cases depending on the available program space.
- Papers must comply with all format requirements (see the paper template) and be written in English.
- Late papers and papers failing to comply with the format and layout requirements may be rejected.

A selected set of papers will be considered for publication in *Water Science & Technology* and *Urban Water* Journal after the conference – and possibly also in another journal published by IAHR. A special review process will be set up in this respect.

The conference organisers will continue their detailed planning efforts as soon as the final papers have been received. Joint Committee working groups and selected individuals will be contacted to assist identifying reviewers and help planning the final conference themes and sessions.

For further information check the conference website (http://10icud.er.dtu.dk) which is updated regularly. If you have any queries re the conference, send email to 10icud@er.dtu.dk .Also, if you have not done this yet, create a user account at the website: this will ensure that you are notified about important updates.

XXXI IAHR Congress, Seoul, South Korea, Sep. 11–16, 2005. The congress will address six major themes, (A) Hydroinformatics, Hydraulic Modelling, and Data: Competition or Integration?, (B) Urban and Industrial Flows: Analysis, Management and Security, (C) Protecting and Restoring the Aquatic Environment - Water Quality and Habitat Challenges, (D) Coping with Extremes in Water Resources, (E) Coastal Development, Dynamics, and Ecosystem Fragility - A Delicate Balance, and (F) Freshwater Crisis - Trends, Challenges, and Global Change. As always, the congress will also include a number of seminars and technical workshops. For full information visit the new Congress Website at: http://www.iahr2005.or.kr/.

XXXII IAHR Congress, Venice, Italy, 2007

The 11th International Conference on Urban Drainage, the Edinburgh International Conference Centre, Edinburgh, UK, August 31 – September 5, 2008. The conference will be organised by the UK community of urban drainage specialists. Please add these dates to your diary. More details will be available in the next newsletter, or from Prof R. Ashley (r.ashley@sheffield.ac.uk)

10. RECENT PUBLICATIONS OF INTEREST

Andrieu, H. and B. Chocat (eds) (2004). **Urban Hydrology**. A theme issue of the *Journal of Hydrology*, Vol. **299**, issues 3–4, Dec. 1.

J. Marsalek, D. Sztruhar, M. Giulianelli and B. Urbonas (eds) (2004). **Enhancing urban environment by environmental upgrading and restoration**. Series IV, Earth and Environmental Sciences Vol. 43, Kluwer Academic Publishers, Dordrecht/Boston/London, The Netherlands, ISBN 1-4020-2692-7, 394 p. These edited selected proceedings of a NATO workshop contain 33 papers on upgrading stormwater management facilities, retrofitting/upgrading combined sewer overflow facilities, optimizing/upgrading sewage treatment plant performance, stream restoration, and challenges in restoring urban environment.

Managing Urban Wet-Weather Flows: on the Road to Sustainability. A theme issue of the Water Quality Research Journal of Canada, Vol. 39, No.4. A collection of 15 papers dealing with: overview of the Great Lakes Sustainability Fund program in municipal pollution control; water balance modelling in support of low impact development; examination of a guidance document on stormwater management planning; means of detecting stormwater discharge impacts on receiving waters with respect to hydrology, erosion, water quality and ecology; on-line treatment of stormwater; experience with the master planning for a large-scale stormwater (and CSO) control project; a novel method of CSO treatability assessment; description of a guidance document for planning CSO control; high rate treatment of CSOs in retention basins; numerical modelling of enhancing suspended solids removal in a CSO facility; and, a practical perspective on real-time control of CSOs. Contact Jiri Marsalek, who has some free copies of this journal issue (jiri.marsalek@ec.gc.ca)**,** once these are gone**,** copies can be ordered from the journal's Managing Editor, Kristin May (Kristin.may@ec.gc.ca).

11. WORKING GROUP CONTACTS

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