IAHR
AIRH

Newsletter 5

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Congratulations Oleg!

Prof. Oleg F. Vasiliev, Member (Academician) and Councillor of the Russian Academy of Sciences, and former IAHR council member, has been honoured by the Siberian Branch of the Russian Academy of Sciences, which celebrated his 75th anniversary on 1st September, 2000 in Novosobirsk.

Prof Vasiliev is a wellknown expert and authority on such fields as computational and experimental issues of environmental fluid mechanics and hydraulics, hydrology and ecology of lakes, reservoirs and river systems, and more generally the modelling of surface and groundwater processes.

He has worked for more than 40 years in the Siberian Branch of the Russian Academy of Sciences and from 1980 until 1987 he was Director of the Laboratory of Hydrophysics and Ecology of Water Bodies, Lavrentyev Institute of Hydrodynamics, Novosobirsk. From 1977 - 1980 he was a Deputy Director of the International Institute for Applied Systems Analysis (IIASA, Austria), and from 1994 - 1996 was a Council member of IAHR.

Oleg Vasiliev played a major role in maintaining good relations between hydraulicians in the USSR and the rest of the world during a period when political relations were sometimes tense.

Cheryl's note: Oleg you are one of the world's gentlemen, it is an honour to be able to call you a friend.

Quote of the month: "Sometimes our light goes out but is blown into flame by another human being. Each of us owes deepest thanks to those who have rekindled this light." - Albert Schweitzer

Cheryl

IAHR News

29th Biennial Congress in Beijing China in 2001.

Over 1200 abstracts for our Congress have been received!! Is yours amongst them?? If not hurry; the closing date is November 1, 2000.
Contact: Prof. LI, Guifen and Prof. WANG, Lianxiang, LOC of XXIX IAHR Congress, China Institute of Water Resources and Hydropower Research, P.O. Box 366, Beijing 100044, China
tel: +86-10-68412173,
fax: +86-10-68412316
e-mail: lxwang@mail.iwhr.com
internet site: www.2001iahr.iwhr.com

Invitation To Submit Proposals For Council Election

For two years Council has been developing a new election procedure that is more democratic, while respecting the culture of represented countries and ensuring the continued geographical diversity that is fundamental to the Association.
Following recent Council approval of new By-Laws governing the nomination of Council Members (see page 77 for details) all IAHR

Secretariat address, telephone, e-mails and fax numbers

Rotterdamseweg 185, 2629 HD Delft, the Netherlands
Telephone (general): +31-15-285.8819;
Telefax: +31-15-285 8417, e-mail: iahr@iahr.org

Direct lines:
Dr. Christopher George Executive Director;
tel.: +31-15-285.8879
e-mail: christopher.george@iahr.org
Henk Jan Overbeek, Secretary General;
Marjorie Keuning, *Programme Coordinator;*
tel.: +31-15-285.8526 e-mail: keuning@iahr.org
Cheryl van der Zee, *Publications Manager*
tel.: +31-15-285.8819 e-mail: zee@iahr.org
Jolien Mans, *Membership and subscriptions;*
tel.: +31-15-285.8557 e-mail: mans@iahr.org
Wil Dumay, *Finances;*
tel.: +31-15-285.8460 e-mail: dumay@iahr.org

homepage: **http://www.iahr.org**
You can also reach us at our general e-mail address: iahr@iahr.org

Our monthly electronic newsletter "NewsFlash" complements the bi-monthly IAHR Newsletter. "NewsFlash" publishes information which would be outdated if published only in our bi-monthly Newsletter "NewsFlash" is available free of charge to anyone interested in hydraulics; if you know of anyone who would like to receive it please ask them to forward their e-mail address to us."NewsFlash" is also available on our homepage: http://www.iahr.org

Editor Newsletter / Newsflash:
Cheryl van der Zee

Members are invited to submit Proposals to the Nominating Committee and Nomination by Petition for the election of the regular Council Members at the Beijing September 2001 Congress.

Nominations by petition must be submitted by eight months before the Congress. A valid petition requires the signature of at least 15 members from at least five countries, or a group of countries representing 10% of the IAHR membership.

If you require any further information please contact Christopher George at the Secretariat

Composition of IAHR Council 2000/2001

President: F.M. Holly Jr, USA *
Vice Presidents: M. Hino,* Japan, E.P.D. Mansard, Canada,* A. Müller, Switzerland
Secretary General: H.J. Overbeek, The Netherlands*
Members: A. Armanini, Italy, M. Berezowsky Verduzco, Mexico,* R. A. Falconer, UK,* J. Gao, China,* J.M. Grassa Garrido, Spain, Mrs. J. Muskatirovic, Yugoslavia, D. Stephenson, South Africa*
Co-opted members: M.D.Carelli, USA, G.S. Rodenhuis, The Netherlands, P.L.Viollet, France,

*Those members eligible for re-election.

Call for applications IAHR Lecturer Award 2001

The IAHR Lecturer Award was established by Council in 1985. The award is made annually to an IAHR lecturer who has been selected by an IAHR Section in response to a need expressed by an institute of hydraulic engineering and research, or university. It is intended to honour the awardee and to help institutes and universities anywhere in the world to initiate or improve their curricula on water resources, river and coastal hydraulics, risk analysis, energy, environment, disaster prevention, industrial processes. The award consists of travel funds and a honorarium for the nominee.

Who can apply? Institutes of hydraulic engineering and research, or universities wishing to host an IAHR lecturer in any of the subjects listed above. Preference will be given to institutions based in lesser developed countries.
The official application should contain: a full description of the institution and its activities; required profile of the lecturer and in which subject; required period in the second half of 2001 (at least 7 days); preliminary programme; the final programme will be established in consultation with the elected lecturer; statement to provide suitable board and lodging for the lecturer.
Deadline for submissions is: 1 November 2000. Submissions can be sent to: Marjorie Keuning, programme co-ordinator, IAHR Secretariat, Rotterdamseweg 185, 2629 HD Delft, the Netherlands, e-mail: keuning@iahr.org The Secretariat passes the submission on to the Section most closely related to the subject in which the lecturer is required. The Section tries to find a distinguished lecturer who matches the requirements and nominates him/her for the lectureship to the IAHR Awards Committee. The Awards Committee collects the nominations and presents a recommendation to Council, which subsequently appoints the IAHR lecturer for 2001. The institution and lecturer will receive recognition in the IAHR Newsletter. The lecturer receives a travel allowance and honorarium from IAHR, as well as a certificate of award. Upon completion of his assignment the lecturer submits a report of his findings. The report will be published in the IAHR Newsletter.

IAHR homepage advertising

It is now possible for advertisers interested in hydraulic engineering to place an ad on the home page of the IAHR web site. The banner ad space displays a different ad each time the page is accessed and links directly to the web site of the advertiser. For more information contact Chris George. Or see our website: www.iahr.org

Introducing:

Rainer Helmig, New Chairman of the Groundwater Hydraulics Section And Angelos Findikakis, New Secretary of the Groundwater Hydraulics Section

With the beginning of the year 2000 the positions of chair and secretary of the Groundwater Hydraulics Section have changed. As the new chair, Rainer Helmig and the new secretary, Angelos Findikakis we would like to introduce ourselves to you.

At this point we would first like to thank Fritz Stauffer as the former chair for his great work and commitment to the section. He certainly has brought new ideas and impulses.

Rainer Helmig has taken over the position of chair from Fritz Stauffer.

In 1993 he finished his PhD-thesis "theory and numerics of multiphase flow in fractured-porous media" at the University of Hannover. From there he moved to the Institute of Hydraulic Engineering at the University of Stuttgart where he graduated with a thesis on "coupled flow and transport processes in the subsurface - a contribution to the modelling of hydrosystems".

Since 1998 he has a full professorship at the Institute of Computer Applications in Civil Engineering at the Technical University of Braunschweig. In the near future he will return to the Institute of Hydraulic Engineering in Stuttgart again, where he was offered a full professorship as the successor of past IAHR President Helmut Kobus.

His main research areas are the theory and the numerics of multiphase-multi-component flow and transport processes in fractured or porous media. At the moment the main focus of his

work is on upscaling methods, remediation techniques and enhanced discretization methods.

Angelos Findikakis took over the position as secretary from the beginning of 2000. Angelos received his PhD from Stanford University and he is working as a Principal Engineer with Bechtel Systems & Infrastructure Inc. in San Francisco, where he works on a variety of groundwater problems and other environmental and water resources projects. In 1998 he was appointed a Bechtel Fellow, an honour that comes with the responsibility of acting as Bechtel's technical ambassador and special technical advisor to upper management. Angelos is also a Consulting Professor at Stanford, and the current chair of the ASCE Groundwater Hydrology Committee. In the following we would like to shortly present our plans and aims for the future work of the section.

Aims of the section:

- planning of special symposia and conferences (e.g. Bay Area Conference in San Francisco in March 2002: Bridging the gap between measurements and modelling in heterogeneous media, http://www.iahr.org/groundwater2002
- co-operation with other societies (e.g. IAHS, ASCE)
- support of research
- publications

Furthermore we would like to set up a webpage for the section with the following items:

- newsletter for the section
- announcement of international conferences, meetings, events
- education (contacts for students, announcement of short course, etc.)
- job centre
- personal friends and links

We would like to invite your thoughts and comments on our suggestions, and ask your support and active participation in the Section's work. We are looking forward to hear from you all.

Yours sincerely

Rainer Helmig Angelos Findikakis

In this issue

Introducing :

Frank Molkenthin, Secretary European Graduate School Environment Water

In 1983 a young civil engineering student (myself) discovered a small memorial plaque at the TU Berlin, Germany: In this laboratory Konrad Zuse in 1941 developed the first electronic computer to reduce the manual effort to solve equation systems in engineering. Fascinated by the potential of computer and network applications in engineering I joined the "Bauinformatik" institute at the TU Berlin for study (1988 Dipl.-Ing. degree) and research (1994 Dr.-Ing. degree).
In 1994 I went to Cottbus a small city in the former East Germany, 120 km in the south east of Berlin. At the BTU Cottbus Prof. Holz founded a new institute for Bauinformatik, focusing on 'Hydroinformatics' related research and education.
Out of the world in a lovely countryside environment (wood, fields, lignite mining) we were forced to use in Cottbus the Internet for our scientific international collaborations with partners all over the world.
So no wonder "WWW based Hydroinformatics Systems" is the topic of my special research and education activities.
My private activities are still centered in Berlin. To avoid getting lost in the virtual world of the Internet I use my free time for rowing on the lakes and rivers around Berlin and sometimes abroad - to do team-sport in the natural water environment which brings relaxation and inspiration to me. In wintertime when the water changes its state I spend two weeks skiing in the Alps with friends.
Since 1997 I am a member in the IAHR-EGW steering group on the topic hydroinformatics. My main motivation for this activity is fun in international co-operations.
To bring scientists from all over Europe together to exchange knowledge and experience. One example for this activity is the IAHR-EGW summer school 'Hydroinformatics Systems': this year for the third time lecturers and students from more than 12 countries will participate.
A new way in education is the experiment 'WWW based Collaborative Engineering', which will run this year in co-operation with colleagues in Budapest, Delft and Grenoble. Students at different locations are solving hydraulic engineering problems in the WWW - new working methods and forms of collaboration have to be introduced in education and practise.
I will try to promote these IAHR-EGW education activities in the future to push the European idea in water-related research, education and practice.

Dr.-Ing. Frank Molkenthin
Brandenburg University of Technology at Cottbus
Institut fuer Bauinformatik
Universitaetsplatz 3-4 . D - 03044 Cottbus
tel.: +49 355 69 3754
fax.: +49 355 69 2188
e-Mail: mailto:frank@bauinf.tu-cottbus.de

Report on the 4th Biennial Congress of the African Division in Windhoek, Namibia, 7-9th June 2000

The 4th Biennial Congress of the Division was held in Windhoek this year. The theme of the congress was Conserving and Sharing Water in a Water Scarce Environment. The conference was organised by Kai Lund assisted by members of the African Division and other IAHR members.

The Congress was attended by 91 delegates, of which unfortunately only half a dozen were IAHR members. The majority of the delegates were in fact from Namibia with representatives from NamWater, the Department of Water Affairs and Windhoek municipality in particular, those organisations having a real water-scarcity problem that has had to be solved. Other delegates were from as far away as Canada, United States and Europe. A large delegation attended from South Africa but there was not much representation from the rest of Africa, probably due to the economic climate. Of the papers presented, two were by Namibian authors, twelve by South African authors and ten from other countries. A large number of the papers concentrated on problems peculiar to Namibia, such as groundwater recharge, alternative sources of water and demand management in order to constrain consumption. There were also a number of papers on catchment management and topics related to integrated management of water resources. Fortunately, the papers were not all descriptive and indeed many were blue-skied papers or at least extreme ideas, which could be followed up at a later date. Alternative sources of water ranged from icebergs to the Congo River and these were discussed from a technical point-of-view as well as in many cases from a legal and institutional side.

Various representatives chaired the sessions and the highlight was the spit-braai on Thursday evening with game meat a speciality.

Congress proceedings are obtainable at a cost of US$ 30.00 pre-paid.. Proceedings will be mailed by surface mail only.
Contact: Kai Lund, Lund Consulting Engineers, e-mail: Lundk@LCE.com.na
Tel. +264-61-234081
Fax. +264-61-232478

African Division New committee was elected during the Congress:

Chairman: Prof M Saad, Director Hydraulic Research Institute, Delta Barrage, Egypt
Members: Mr Jean Boroto, c/o DWAF, P Bag X313, Pretoria, 0001, S.A., tel.: +27 12 336 8244, e-mail: borotoj@dwaf.pwv.gov.za
Prof Mtalo, Univ. Dar-es-Salaam, Tanzania, mtalo@wrep.udsm.ac.tz.
Mr K Lund (Treasurer/secretary), Namibia, Lce@Lce.com.na.
Prof Rooseboom, Univ. Stellenbosch, S.A.
Co-opted: Prof Adebayo Adeloye, Dept. Civil Eng., Herriot Watt Univ., Edinburgh, UK. tel: +44 131 449 5111, adebayoa@civ.hw.ac.uk.
Mr A Ilemobade, Nigeria, adesola@civil1.civil.wits.ac.za,

Report on the International Workshop for the Mozambique Flood

By Hideaki ODA, Secretary General of the Third World Water Forum

The International Workshop for Mozambique Flood, which was requested by the Mozambique government at the Water in Rivers session of the 2nd World Water Forum, was held on August 8, 2000 in Maputo, Mozambique. What I was most impressed with was the enthusiasm and high expectation of the Mozambique Government shown to the workshop.
This Workshop was our first activity as the Preparatory Secretariat for the Third World Water Forum and our follow-up work as the Water in Rivers Secretariat. And we saw its success as an important step towards the International Conference for Mozambique Flood, organised by several international bodies and concerned countries and scheduled to take place this October.

The staff members of the Secretariat were in Maputo, Mozambique from 3rd through 9th to organise the International Technical Workshop for Mozambique Flood with the government of Mozambique and IAHR, which was held on August 8, 2000.

As a result of a series of cyclones in southern Africa in late February and March of this year, unprecedented flooding has occurred in southern Mozambique. The damage is enormous, even now flooded water persist in Maputo City and in Xai-Xai City along the lower reaches of the Limpopo, a major international river.

The 2nd World Water Forum was held just after these major flooding incidents in Mozambique. At the forum, the Government of Mozambique officially requested that an international workshop be held. The Japanese representative at the Forum immediately announced Japan's support for such a workshop. Aimed at minimising damage from future floods, the International Workshop was held at the Hotel Polana, Maputo on August 8, 2000. As well, the International Conference for Mozambique Flood will be held in Maputo from 25th through 28th, October 2000. They are our first official participatory acts to create an advance framing of the 3rd World Water Forum as a matrix for concrete activity rather than abstract discussion.
At the workshop, some 40 representatives were in attendance, mainly from domestic administrative organisations. There was animated, detailed discussion of flood disaster issues and flood-related events since February of this year. The Mozambique government provided detailed explanations of flood issues and dynamics, and four experts presented proposals based on their personal experiences of the flood.

As for the proposals made by the experts, please see our web site (http://www.water-forum3.com).

In addition to those proposals, the second half of the workshop consisted of a panel convened by the four experts. Heated discussion developed, and continued until the last minute, with almost every delegate making a contribution.

Although the workshop was only one day long, many people were able to meet and share insights and thoughts about future actions, given impetus by the immediacy of the tragic flood disaster.

The damage is extensive and rebuilding will be difficult in the extreme. The city is not yet liveable. The government is entertaining the thought of establishing a new urban site in the location where evacuees have taken up temporary domicile.

The evacuees are living in a resettlement site on a hilltop provided by the government. We heard the people cheer the announcement of a government program to provide food for inhabitants who will work to rebuild public facilities. We, the Secretariat staff, will endeavour to co-ordinate connections in the world of water, and to provide support for activities related to the resolution of world water issues.

IAHR-EGW Course: WWW based Collaborative Engineering in Hydroscience "A European Education Experiment in the Internet"

How to collaborate in the WWW to solve hydroengineering projects?

This question was the key topic in the IAHR-EGW course 'WWW based Collaborative Engineering' running in June 2000 in co-operation between five universities: TU Budapest (Prof. Josza), BTU Cottbus (Prof. Holz), IHE Delft (Prof. Price), TU Delft (Prof. van der Veer), INP Grenoble (Prof. Belleudy).

The idea of this course was simple: 52 Students from these different locations got a task from hydroengineering which had to be solved during one week in seven distributed teams using WWW based tools and techniques. Each team operated as an independent unit. This means that a team as a whole was responsible for the performance of the given engineering task without any order or influence from outside. Each team was composed of students from different locations to ensure an international and interdisciplinary collaboration. Organisation structure, work plan, work distribution and the team members themselves defined co-ordination inside the teams. All collaboration (communication, co-ordination and documentation) was done in the WWW environment. The team members were free to choose their method of collaboration inside the team to find a suitable solution for the engineering task in competition with the other teams. In opposite to the reality in practice, nobody could really lose in this game - the collection of knowledge, experience and competence by success or failure is always a profit in the view of education. By this experience they might be better prepared for future challenges: to operate on a global market in international and interdisciplinary project environments - one task of the IAHR-EGW in general.

The given engineering task in the course was the design of a flood protection system for a given river: the river Vida in the south of Denmark. The river is highly controlled by weirs and gates as well as some limited dredging to protect the river from tides and surges, to ensure the passing of floods from upstream and to allow navigation with small pleasure craft boats. DHI Water & Environment provided the necessary engineering software systems.

The course platform was designed to overcome the spatial distribution using available WWW technology. Local facilities (PC, Internet connection) supported the participants at their working location and defined the individual work environment. The shared facilities in the WWW supported the collaboration inside the different teams as well as the organisation, observation and consulting by the supervisors of the course.

The result of the teamwork was amazing. All seven teams were able to develop a suitable engineering solution in a short time using the WWW as a collaboration platform to overcome the spatial distribution. The seven solutions were different in the type and the locations of the river management objects/structures (like weirs, dikes, dredging) but demonstrated typical engineering alternatives in the management of the river. The solution proposals of the seven teams are documented on the course platform (see http://hydroweb.bauinf.tu-cottbus.de).

More important in this education experiment was the acquisition of knowledge and experience in WWW based collaboration. This target was reached - all teams made a lot of new experience in the application of WWW tools like email, bulletin boards, NetMeeting and chat for collaboration as well as in distributed team work, project co-ordination and reporting ('Learning by Doing').

Besides this experience in the application of WWW tools the participants improved their ability in teamwork and social competence. The seven student teams were composed by students with a heterogeneous background in language, mentality, education, culture and habit. It was observed that all teams started their communication actively but also in a reserved and formal way. During the week the communication became more and more open including private aspects. Inside the teams the members found their role in the joint work mostly determined by competence (e.g. in WWW application, numerical simulation, project management). They learnt to accept each other by the different competence and to combine all individual abilities towards the common success of the team. The joint work inside the teams led to better understanding of the different characters and backgrounds. Just within one week the students acquired a lot of 'social competence' and 'soft skills' inside the teams as well as inside the whole course community.

Nevertheless there is one important improvement desirable for repetition: a face-to-face meeting of all participants as a kick-off meeting was missing. Main reason: no funds for travelling :-(The net cannot substitute the personal impressions and relationships of a personal meeting and social event with common drink and talk in the evening.

It can be foreseen that such kinds of courses will become a standard part of academic education programmes in the near future. The course 'WWW based Collaborative Engineering' demonstrated the need for international co-operation in education - a task for the IAHR-EGW.

Frank Molkenthin

HydraLab Meeting of European Users of Hydraulic Laboratories

Representatives of leading European research institutes meet in Delft.

The final Round Table Conference of the first period of the European Union funded HYDRALAB Concerted Action (1997 2000) recently took place in Delft, The Netherlands.

The Hydralab concerted action brings together in a network facility providers, users and independent experts in the field of experimental hydraulics research, geophysical fluid dynamics and ice engineering. Around 25 users and owners of major facilities for hydraulics research attended the final meeting in order to discuss future European research needs and priorities.
There was a general feeling that as far as hydraulic, geotechnical, fluid dynamics and ice engineering is concerned no urgent need for new and maybe larger facilities is imminent. On the contrary, a better, more efficient, use of the existing facilities in Europe will provide ample opportunities for experimental research; by doing so, a European knowledge base in this field can be built. Standardisation of procedures (benchmarking) will make the results from the various facilities in Europe and abroad comparable and interchangeable, improvement of measuring and control techniques will make the results from the facilities more compatible with results from other research tools.
This Round Table Conference was also the starting point for the second period of HYDRALAB (2000 - 2004).
For more information contact Project Co-ordinator Ad van Os of Delft Hydraulics Ad.vanOs@wldeflt.nl

Droplets

The Earth Charter Initiative
EVENTS & INITIATIVES

Earth Charter Initiative
On Thursday, June 29th, 2000 a new phase of the Earth Charter Initiative was officially launched in The Hague, the Netherlands. The purpose of this occasion was also to celebrate the accomplishments of the consultation process and the release of the final Earth Charter document. For over a decade diverse groups throughout the world have endeavoured to create an Earth Charter that sets forth fundamental ethical principles for a sustainable way of life.
Jim Poirot, Vice President of the World Federation of Engineering Organisations, made the following comments on the charter" What will be the engineering profession's legacy in the year 2100, as to engineering involvement in shaping the Principles, Ethics and Policies of how humanity will live harmoniously with the earth?
Among many environmental groups, non-government organisations of volunteer groups, and other global and local groups, engineers are the cause of the world's environmental problems. After all, the sewer systems that collect raw sewage and discharge it into open waters, with minimal treatment if any, the coal-fired electric power plants that discharge pollutants into the atmosphere, the hydro-electric dams that diminish fish migration and the highways that have constant traffic congestion are all products of engineers.

Engineers will be expected to be knowledgeable of and use the Earth Charter principles in their work. Individuals should become aware, and engineering associations should provide training, guidelines, standards and codes of ethics, to help practicing engineers. The Sustainable Development Guidelines developed by numerous associations should be updated to address the Earth Charter Principles."
Website: http://www.earthcharter.org

Delft3D evaluation version for Windows
Delft3D is the Delft Hydraulics' software system for 2 and 3-dimensional flow, water quality, ecology, short wave propagation and morphology. A free evaluation version of Delft3D for Microsoft Windows 9x and NT is now available from the Web site: http://www.wldelft.nl/soft/d3d/eval/index.html. The following modules are included: Delft3D-FLOW: 2- and 3-dimensional hydrodynamics and transport Delft-RGFGRID: Curvilinear grid generator Delft-QUICKIN: Data manipulator for data on a curvilinear grid Delft-GPP: General visualisation and animation program All modules are fully functional for an unlimited period, but the total number of grid cells is limited to 1000. This means you can solve a depth averaged model of up to, for example, 100 by 10 grid points, or a full 3D model of 10 by 30 grid points in the horizontal and 3 layers in the vertical.

Delft Hydraulics has also launched a new version of it's WANDA software for pipe system modelling.

E-mail coastal management newsletter icoast
You can subscribe to an e-mail coastal management newsletter called icoast.

icoast is sent monthly, free of charge. Instructions on how to subscribe at http://www.coastalmanagement.com

Announcement for Watsave Annual Awards - 2000
ICID launches the third Watsave awards for innovative contributions to water saving. Three awards will be made in the following categories:
ICID Watsave technology award 2000 for US$ 1500
ICID Watsave innovative water management award 2000 for US$ 1500
ICID Watsave young professional award 2000 for US$ 1500
The awards to the value of US$1500 each, which are sponsored by the government of India with continuing support from the Netherlands, will be presented at the ICID annual meeting in Cape Town, Republic of South Africa, October 2000. Full details for applicants will be posted on our website by shortly. Website: http://www.icid.org/

Competition for young scientists Deadline 22 November 2000
INTAS (international association for the promotion of co-operation with the scientists from the Newly Independent States of the former Soviet Union) has set up a writing competition for young scientists.
The prizes for the competition are 400 EURO for the first prize, two prizes of 200 EURO and three prizes of 100 EURO. Candidates must have successfully completed an INTAS fellowship during 1999 to 2000 to enter.
e-mail: chellingsworth@intas.be, website: http://www.intas.be

Latest Hydrology News from SonTek (August, 2000)
New Enhancements to Argonaut Side-Looking (SL) Systems
A new acoustic Doppler Velocimeter (ADV) called Argonaut has been developed to precisely measure flows in storage detention ponds; water as shallow as 25mm can be measured.
RiverCat Video on the Web
RiverCat is a mini-ADF Catamaran mounted fully integrated river discharge data collection system.

For more information on these systems see www.sontek.com

Global Water Partnership Names Canadian As New Chairperson

The Global Water Partnership (GWP) has elected a new chairperson at its meeting in Stockholm last weekend.

The appointment of former Canadian diplomat Margaret Catley-Carlson is effective immediately. She succeeds retiring Ismail Serageldin who has chaired the GWP since its foundation in 1996. Catley-Carlson's 30-year career in economic development has included terms as president of the Canadian International Development Agency, Deputy Executive Director of UNICEF and chair of the Geneva-based Water Supply and Sanitation Collaborative Council.

She currently serves on the boards of a number of national and international organisations, primarily in the field of economic development.

"The Partnership is very fortunate to have an eminent person like Margaret Catley-Carlson willing to take on the responsibilities of chairing the Global Water Partnership," said Khalid Mohtadullah, Executive Secretary of the GWP. "This is especially important as the Partnership is facing newer and greater challenges that emerged this year as a result of the Second World Water Forum in The Hague."

The GWP facilitates the exchange of knowledge and experience in integrated water resources management, an approach to water management that seeks to balance human, industrial, agricultural and environmental needs.

In accepting the position, Catley-Carlson noted that water issued are closely connected to the status of women in developing countries and to economic development. "If you want to improve the status of women, water is an important place to start, because they are the ones usually responsible for obtaining it for their families," she said. "And if you want to take on the fight against global poverty, this is a substantial part of it."

For more information contact: GWP Communications Office: GWP, Sida, 105 25 Stockholm, Sweden. Tel: +46-8 6985384. Fax: +46-8 6985627. e-mail: gwp@sida.se, Website: http://www.gwpforum.org/

Can you help?

I am writing an article for Metropolis Magazine about the Los Angeles River. I am hoping to find an expert who can help me compare hydraulics work done on the LA River to work done on similar semi-arid Mediterranean climate river systems in other parts of the world. If you know of anyone who has worked on rivers that are dry much of the year, experience occasional extreme flooding, and can easily change beds, I would be grateful for a referral.

Thank you,

Adam Davidson
672 S. Lafayette Park Place, Suite 25
Los Angeles, CA 90057-3234, USA
tel: +1-213-480-0606
fax: +1-213-383-2695
adam@adamdavidson

Just Published

WMO has published a new report "**Precipitation Estimation and Forecasting**", WMO Operational Hydrology Report No.46 by C.G.Collier (WMO-No.887). website: http://www.wmo.ch/

The Mathematics of Finite Elements and Applications X (MAFELAP 1999), edited by J.R. Whiteman. Website: http://www.elsevier.nl/locate/isbn/0-08-043781-8

World Resources 2000-2001: People and Ecosystems: The Fraying Web of Life, by C. Rosen. Publication: September 2000 website: http://www.elsevier.nl/locate/isbn/0-08-043781-8

New trends in water and environmental engineering for safety and life, Eco-compatible solution for aquatic environments. Proceedings of an international conference, Capri, 3-7 July 2000. Edited by U. Maione, B. Majone-Lehto and R. Monti. . Website: http://balkema.ima.nl/

Flow-Induced Vibration, Proceedings of the 7th international Conference, Lucerne, Switzerland, 19-20 June 2000. Edited by Samir Ziada and Thomas Staubli. Website: http://balkema.ima.nl/

Seas at the Millennium, Subtitle: An Environmental Evaluation
Edited by:C. Sheppard, University of Warwick, Coventry, UK. Prices: 0-08-043207-7 Hardbound NLG 1804.00 Publication: September 2000. 0-08-043207-7 Hardbound USD 915.50 Publication: September 2000. Website: http://www.elsevier.nl/locate/isbn/0-08-043207-7

Sightseeing

Centre for Ecology and Hydrology
http://www.ceh-nerc.ac.uk/

European Desalination Society (EDS)
http://www.edsoc.com/

European Network of Fresh Water Research Organisations (EurAqua)
http://www.euraqua.org

International Institute for Land Reclamation and Improvement (ILRI)
An Institute that collects and disseminates knowledge for sustainable use of land and water.
ilri@ilri.nl

Journal called "Stochastic Environmental Research and Risk Assessment (SERRA)"
http://link.springer.de/link/service/journals/00477/index.htm

Global Directory of Environmental Technology,
http://eco-web.com/

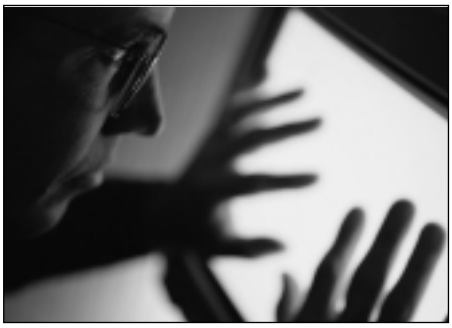
Global Energy and Water Cycle Experiment (GEWEX)
http://www.gewex.com

Global Environment Monitoring System. Freshwater Quality Programme. (GEMS)
http://ww.cciw.ca/gems/

The International Association for Environmental Hydrology
http://www.hydroweb.com/welcome1.html

The Port and Harbour Research Institute has been established as a testing laboratory of the Ministry of Transport. PHRI
http://www.phri.go.jp/outline/phflm01e.html

USGS Ground-Water Software (free)
http://water.usgs.gov/nrp/gwsoftware/



Sites for coastal models
www.wallingfordsoftware.com/products/coasts.asp
www.coastal-guide.com/
www.isni.net/~hubertz/sites.html

Models for estuaries
www.hrwallingford.co.uk/projects/ERP/
and follow "Survey of Estuary Models"

If you have other interesting links please forward them to us: zee@iahr.org

Job Announcements

JGahagan & Bryant Associates, Inc., (GBA) is seeking qualified candidates to fill the following positions in our Baltimore, MD office.

Coastal Engineer
Knowledge of basic coastal engineering analysis. Experience with numerical modelling software in coastal engineering a plus. This is an entry-level position (B.S./M.S. in coastal/ocean/civil engineering).

For the more Job announcements please see our NewsFlash www.iahr.org

New members and Roll of Honour

Welcome to New Members!
We would like to warmly welcome the following new members who have recently joined IAHR. We invite you to take an active role in our Association and take full advantage of the services which we have to offer. We especially invite new members to join the activities of our sections.

Many thanks go to the IAHR members who are spreading the good news about our Association! We remind you that there will be a draw for a free trip to our next Biennial Congress in Beijing, China in 2001.

New members	introduced by:
Jalaluddin M. Abdul Hye, Bangladesh	Roger Bettess, United Kingdom
Jordan Marinski, Bulgaria	Roger Bettess, United Kingdom
Zhiyong Dong, China	Guifen Li, China
Zhenren Guo, China	J.H.W. Lee, Hong Kong
Qingxue Li, China	Jianhua Tao, China
Yongsheng Wu, China	Zhao-Yin Wang, China

Fundamental Hydraulic Research for Coastal Areas by using Large-scale Facilities of the Hydro-Lab-Cluster North Germany

- Supported by the European Community under the Enhancing Access to Research Infrastructures Action of the Improving Human Research Potential and the Sozio-economic Knowledge Base Programme of the Fifth Framework Programme of the European Community -

Second Call for Proposals

Computer Facilities for Numerical Simulations

Restricted-Water Ship Towing Tank Marienwerder

2-D Wave Channel Schneiderberg

3-D Wave Basin Marienwerder

The European Community has signed a contract with the Franzius-Institute for Hydraulic, Waterways and Coastal Engineering of the University Hannover, financing access for user groups from the Member States and Associated States of the European Community to the **"Hydro-Lab-Cluster North Germany"**, which is composed of physical and numerical modeling facilities offering the absolutely state-of-the-art and rather rare opportunity in the European Community to combine physical and numerical modelling in the fields of hydraulic (e. g. pump intakes, water inlet and outlet structures, scour and bed protection, weirs, ...), waterways (e. g. ship operation on rivers and channels, channel maintenance, ...) and coastal engineering (e. g. offshore structures, coastal protection, wave transformation and wave loads on structures, breakwaters, morphology of forelands, ...) at the same time. The project runs by April 2003 and provides access for user groups free of all charge, including all infrastructual, logistical, technical and scientific support.

In detail, within the „Hydro-Lab-Cluster North Germany" the Franzius-Institute for Hydraulic, Waterways and Coastal Engineering of the University Hannover offers access to the following facilities and to its State-of-the-Art measuring devices, data-acquisition and processing systems, and modern support facilites, such as a library.

Computer Facilities for Numerical Simulations: This facility is composed of both commercial programme-systems for numerical simulations of hydrodynamics, waves, and sedimentation and erosion processes and a computer network of highest level of development.

Restricted-Water Ship Towing Tank Marienwerder: A 52 m long and 3.75 m wide channel for variable water depths up to 0.45 m. The channel is equipped with a towing-unit for accelerating self-propelled and unpropelled model ships up to a velocity of 2.5 m/s.

2-D Wave Channel Schneiderberg: A 110 m long and 2.2 m wide channel for variable water depths up to 2 m. The channel is equipped with one wave-generator for regular and irregular waves. With wave periods between 1.5 s and 10 s, it is possible to generate wave hights up to 0.5 m.

3-D Wave Basin Marienwerder: A 45 m long and 24 m wide basin for variable water depths up to 0.7 m. The basin is equipped with five wave-generators for regular and irregular waves. With wave periods between 1.5 s and 10 s, it is possible to generate wave hights up to 0.4 m.

User groups requesting access to the "Hydro-Lab-Cluster North Germany" are required to submit both proposals describing the project to be carried out in detail not exceeding more than ten pages and for each user the curriculum vitae and the main list of publications to the Franzius-Institute for Hydraulic, Waterways and Coastal Engineering of the University Hannover by **December, 31th 2000**. The proposals will be evaluated by an international user group selection panel and approved by the European Community. Evaluation criteria of the proposals include the scientific merit taking into account the interest of the European Community. Furthermore, priority will be given to user groups who have not previously used the "Hydro-Lab-Cluster North Germany" and who are working in regions of the European Community where few such research infrastructures exist. The selection will also take into account that visits up to three months are intended. Following a positive evaluation of any proposal details on the project will be discussed on a personal meeting in Hanover.

Further information on the contract between the European Community and the Franzius-Institute for Hydraulic, Waterways and Coastal Engineering of the University Hannover and the facilities of the „Hydro-Lab-Cluster North Germany", as well as general conditions for participation and detailed guidelines for proposals can be found on the Internet at **http://www.fi.uni-hannover.de/proj99/TNA.html** and/or will be specified upon request to the contact mentioned below.

Franzius-Institute for Hydraulic, Waterways and Coastal Engineering
Att.: Prof. Dr.-Ing. C. Zimmermann / Dr.-Ing. A. Matheja / Dipl.-Ing. T. Linke
Nienburger Straße 4
30167 Hannover - Germany
Phone: +49 (0) 511 762 - 5481 / - 3738 / - 8942
Fax.: +49 (0) 511 762 - 4002
e-mail: sekretariat@fi.uni-hannover.de

Latest News on Events

2000

Water Symposium on "Innovation in Sedimentation", Technical University of Graz, Austria, 19-21 October 2000.
Contact: knob@kwb.tu-graz.ac.at

Conference on Preserving Coastal Environments Monterey, CA, November 2-4, 2000.
The Third Water Information Summit Program Committee has organized a very interesting Internet-oriented program in November 3-5, 2000 Miami, Florida.
Contact: Florida Center for Environmental Studies, 3932 RCA Blvd., Suite 3210,
Tel: +1 (561) 691-8557
Fax: +1 (561) 691-8540
e-mail: tdodge@ces.fau.edu
website: http://www.waterweb.org/

International Seminar-cum-Workshop on Environmental Issues in Industrial Infrastructure Development, 16-18 November 200, Bhubaneswar, India
e-mail: bibhu@ximb.ac.in website: www2.ximb.stpbh.soft.net

Technical Exhibition in the Fourth International Conference on Coasts, Ports and Marine Structures (ICOPMAS'2000), 21-24 November 2000, Shahid Rajaee Port Complex, Iran.
Contact: Secretariat of ICOPMAS, Ports and Shipping Organization, (P.S.O), 751, Enghelab Ave., Tehran 15994, Iran
Tel: +98(21)8904096 & 8807956
Fax: +98(21)8904193
*e-mail: **icopmas@ir-pso.com***
Website: http://www.irpso.com/_private/

International Conference on Marine Waste Water Discharges Genoa, Italy 28 November - 1 December, 2000. *The Conference will cover engineering, scientific and legislative issues concerned with marine disposal and is particularly focussed on using sea outfalls. Deadline for Papers July 30th, 2000. Sponsoring organisations: AMGA, Techware, IAHR. Contact for more information Dr Carlo Avanzini at mecc.cav@pn.itnet.it*

2001

International Symposium "Frontiers in Urban Water Management: Deadlock or Hope?", Marseille, France, 18-20 June 2001,
Contact: J. Alberto Tejada-Guibert, Division of Water Sciences, UNESCO, 1 rue Miollis, 75732 Paris Cedex 15, France
tel. +33 (0)1 4568 4096
fax +33 (0)1 4568 5811
e-mail: Ja.tejada-guibert@unesco.org

Third International Conference on Future Groundwater Resources at Risk, Lisbon, Portugal, 25-27 June 2001.
CVRM-Geosystems Center, Instituto Superior Técnico, Av. Rovisco Pais, 1049-001 Lisboa, Portugal
tel: +351-21-841 72 47
fax: +351-21-841 74 42
e-mail: fgr@alfa.ist.utl.pt
Website: http://alfa.ist.utl.pt/~cvrm/FGR

Originally planned for May 14-16, 4th international conference on innovative technologies in urban storm drainage Novatech has changed to June 25, 26, 27, and the technical tour to June 28, 2001, at INSA of Lyon, France.

10th International Trade Fair and Conference Sensor 2001, Nuremberg, Germany, May 8-10, 2001.
Contact: AMA Service GmbH, Von-Münchhausen-Straße 49, D-31515 Wunstorf, Germany
Tel.: +49 (0) 5033-2015
Fax: +49 (0) 5033-1056,
e-mail: info@sensorfairs.de
Website: www.sensorfairs.de

The inaugural EWRI Congress, "World Water & Environmental Resources Congress" to be held May 20-24, 2001 in Orlando, FL.
Topics: In addition to exploring engineering and environmental responsibility, attendees will hear about critically threatened ecosystems such as the Everglades and the effort to develop integrated solutions to solve the environmental problems and restore the ecosystem for future generations to enjoy. Daily plenary discussions and debates will cover: Balancing Water Management & the Environment-A Global Perspective, Everglades Restoration: Restoring the Flows, Dam Removal: Will Free Flow Recreate Habitats & Species?, Water Management for Restoration - The Florida Perspective. There will be two specialty symposiums presented as part of the overall program. They are the: Integrated Surface and Ground Water Management Symposium, and the Urban Drainage Modelling Symposium
Contact: EWRI, attn: Brian Parsons, 1801 Alexander Bell Drive, Reston, VA 20191-4400,
Fax: +1-703-295-6132
e-mail: ewri@asce.org
Website
http://www.asce.org/conferences/wwercongress/

The American Society of Naval Engineers (ASNE) and the Society of Naval Architects and Marine Engineers (SNAME) are co-sponsoring a marine environmental symposium May 31-June 1, 2001 at the Double Tree Hotel in Pentagon City, Virginia.
Topics: The symposium will examine marine environmental issues from a more holistic perspective; thus examining environmental issues ranging from inland watershed management to estuary protection and conservation to coastal zone management to offshore naval and marine engineering. In short, the intention is to host a symposium that transcends a broad range of study regarding the sustainability and improvement of the marine and coastal environments.
Contact: Symposium Co-Chair - Mr. Glen Ashe gashe@eagle.org or Ben Nicholson BNicholson@comdt.uscg.mil or Paul Cojeen HCojeen@comdt.uscg.mil

Membrane Technology for Wastewater Reclamation and Reuse, International Conference, 9-13 September, 2001, Tel-Aviv, Israel.
Contact: mmbrnext@bgumail.bgu.ac.il
website:
www.membranext.com

Coastlines, Structures and Breakwaters 2001, 26-28 September 2001, London, UK. Conference and Exhibition. Contact: **Sue.Frye@ice.org.uk**
www.icenet.org.uk/meeting/meeindex.asp

IAHR 8th International Symposium on Flow Modeling and Turbulence Measurement (8th ISFMTM), Tokyo, Japan, December 4-6, 2001. *Topics to be covered will include: Environmental Fluid Mechanics, Industrial Fluid Mechanics, Fundamentals Of Fluid Mechanics ,Turbulence Measurement. Sponsoring organisations: IAHR, Central Research Institute of Electric Power Industry (CRIEPI) Contact: Dr. N. Tanaka, Director, Hydraulic Dept., Abiko Research Laboratory, Central Research Institute of Electric Power Industry, 1646 Abiko, Chiba 270-1194 Japan. Tel: +81-471-82-1181 Fax: +81-471-84-7142 e-mail: n-tanaka@criepi.denken.or.jp*

2002

Environmental Flows for River Systems, An international working conference on assessment and implementation, Cape Town, South Africa, 3-8 March 2002*, incorporating The Fourth International Ecohydraulics Symposium. Sponsoring organisations: South African Water Research Commission, Southern Waters Ecological Research and Consulting (Pty) Ltd, Ecohydraulics Section of the International Association of Hydraulic Engineering and Research, International Aquatic Modelling Group Contact: Ros Townsend, Environmental Flows Conference Secretariat, Southern Waters Ecological Research and Consulting, P.O. Box 13280, Mowbray 7705, South Africa Fax: ++27-21-650 3887 e-mail: conference2002@southernwaters.co.za Website: http://www.southernwaters.co.za The website contains an interactive electronic response form for those wishing to receive the second circular.*

Solving Coastal Conundrums, 28th International Conference on coastal engineering, 7-12 July 2002, Cardiff, Wales.
contact: Sue Frye, ICCE 2002 Conference Office, Institution of Civil Engineers, One Great George Street, London SW1P 3AA, UK
Fax: +44 (0)20 7233 1743
e-mail: ICCE2002@ice.org.uk
website:
www.icenet.org.uk/meeting/meeindex.asp

New Council Election Procedure

(Art. 4 of the By-Laws)

1. Introduction

For two years Council has been developing a new election procedure that is more democratic, while respecting the culture of represented countries and ensuring the continued geographical diversity that is fundamental to the Association. In addition, it is a procedure that permits the Nominating Committee to complete its activity prior to, rather than during, the biennial Congress. This document summarises the background for the change and presents the new procedures.

At its recent meeting in Iowa City, USA at the end of July 2000, Council adopted the new election procedures according to a modified Art. 4 of the By-Laws and decided to follow the new rules in the coming Council elections as a trial run.

1. Requirements for the election procedure:

The election procedure has to be a compromise between:

- world-wide representation of the membership and the selection of a small active group which is capable of leading the Association;
- continuous renewal with new members yet with assurance of the necessary continuity;
- avoidance of self perpetuation of the Council;
- assessment of the performance of Council members.

The question is, how can we ensure an election process, that has wisdom, does not burden members during the Congress, has regional representation, gets the membership involved democratically, and has no direct vested interest in Council composition?

Based on the present Council Composition President:

- 3 Vice-Presidents (coming from three different countries)
- Secretary General (always eligible for re-election)
- 8 regular elected council members, (maximum of two from the same country)
  Up to three co-opted members.
- 4 Regional Division Chairmen (attendance without voting rights)
- 3 Technical Division Chairmen (attendance without voting rights)

Council adopted the following changes:

2. Proposals

2.1. World-wide Representation

In order to ensure a regional balance of Council members the new election procedure:

- Requires that each of the 3 Vice-Presidents comes from a different region. The “regions” are defined by the four regional divisions, additionally, in this respect, North America is considered a region.
- Requests the Council to include the Regional Division Chairs as co-opted members with voting rights, in addition to the three co-opted members according to Art. 18 of the Constitution.

2.2. Democratic election process

Two elements of a democratic involvement of the membership are proposed:

- Independently of the Nominating Committee, members are invited to submit nominations for the election of the eight regular Council Members by petition.
- The candidate list for the Executive Committee (President, 3 Vice-Presidents, Secretary General) is prepared entirely by the Nominating Committee, which may draw from any

IAHR-member eligible for a particular office. However the written ballot includes the possibility of write-in other eligible candidates for the EC positions.

2.3. Nominating Committee (NC)
2.3.1. Composition
At its meeting 12 months before the biennial congress, the IAHR Council appoints a Nominating Committee (NC) of nine members recruited from active IAHR-members currently not serving on council or chairing a Regional or Technical Division. The Secretariat proposes the number of NC-members of each region proportional to the number of IAHR-members. A person with experience in the conduct of IAHR business is appointed as chair of the Nominating Committee. Possible candidates for Council should not be appointed as members of the NC.

2.3.3 Charge to the NC
The NC collects proposals from individual members through appropriate channels (personal, Newsletter, IAHR website announcements), searches itself for candidates, and evaluates the performance of present Council members in view of their possible re-election. It must consider the alignment of candidates with Council composition requirements, in particular the question of succession of members to Vice Presidential positions or to the Presidency.

The Nominating Committee proposes just one candidate per vacant position after discussion at an appropriate meeting.

2.4. Election Procedure
Independently of the Nominating Committee, IAHR members are invited to submit nominations for the election of the eight regular Council Members by petition **eight months** before the congress. A valid petition requires signatures of 15 members from at least five countries or a group of countries representing 10% of the IAHR membership *(at present ca. 210).* The NC is free to include or not to include nominations by petition in its own candidate list, which is finalised at a meeting six months before the congress.

Two months before the biennial Congress, a list of candidates comprising the NC slate for the five Executive Committee positions, and a slate of candidates for the eight regular positions including both those proposed by the NC as well as those submitted by valid petition, is subjected to a vote through a written ballot distributed by the Secretariat with appropriate mechanisms to assure the viability of submitted ballots. Written ballots shall include the possibility of a write-in candidate for all positions.

Closing of the ballot is Wednesday during the Biennial Congress; under normal conditions, the election results are announced at the General Members Assembly on the last day of the Congress. If the total voting turnout is less than 15% of the membership, the President declares the election invalid according to the By-Laws, and a new, definitive written ballot, based on the same proposed slate of candidates as described above is held at the GMA, with election results announced via electronic and print media as soon as feasible after the close of the Congress.

For each of the Executive Committee positions, the candidate receiving the largest number of votes shall be elected. In case of multiple candidates for Vice-President from the same region, only the regional candidate receiving the largest number of votes can be elected, any other candidates being disqualified during processing of the election results.

The candidates for the eight regular positions receiving the largest number of votes are elected. In case of multiple Council candidates from the same country, only the two candidates from that country receiving the largest number of votes are elected, any other candidates being disqualified during processing of the election results. In enforcing the two per country rule, positions should be assigned in following order: (1) President, (2) Secretary General, (3) Vice-Presidents, (4) Council members. The NC will be asked to resolve any ambiguities arising from cases, where two or more candidates receive equal votes.

3. Revised Article 4:

Nominations for council membership shall be in accordance with provisions of the constitution, specifically articles 18 and 19, and shall be in accordance with the following procedure:

(a) A nominating committee (NC) of 9 members (including a chairman) currently not serving on council or chairing a regional or technical division shall be appointed by the council one year prior to a general members assembly that coincides with the biennial congress of the association. Each member of the NC shall be elected from a different country and shall be an active member of IAHR. The number of seats of each region in the NC is proportional to the number of IAHR-members of that region, as determined by the Secretariat. Possible candidates for council should not be appointed as members of the NC.

(b) The council names a person with experience in the conduct of IAHR business as chair of the NC.

(c) Members of the association shall be encouraged to contact the NC with respect to nominees. The NC collects proposals from individual and corporate members, searches itself for candidates, and evaluates the performance of present council members in view of their possible re-election.

(d) The IAHR membership is invited through the secretariat, and independently of the NC, to submit nominations for the election of the eight regular Council Members by petition eight months before the congress. A valid petition requires signatures of 15 members from at least five countries or a group of countries representing 10% of the IAHR membership.

(e) The NC completes its work at an appropriate meeting within six months. It proposes just one candidate per vacant position, and is free to include or not to include nominations through petition.

(f) The candidates are notified and requested to supply their resume including their professional career, their involvement in IAHR, and a statement on their planned contribution as council members.

(g) Two months before the biennial Congress, a list of candidates comprising the NC slate for the five Executive Committee positions, and a slate of candidates for the eight regular positions including both those proposed by the NC as well as those submitted by valid petition, is subjected to a vote through a written ballot.

(h) Written ballots shall include the possibility of a write-in candidate for all positions.

(i) Closing of the ballot is Wednesday during the Biennial Congress.

(j) If the turnout is less than 15% of the membership, the President declares the election invalid according to the By-Laws, and a new, definitive written ballot is held at the GMA.

(k) For each of the Executive Committee positions, the candidate receiving the largest number of votes shall be elected. In case of multiple candidates for Vice-Presidents from the same region, only the candidate from that region receiving the largest number of votes can be elected, any other candidates being disqualified during processing of the election results.

(l) The candidates for the eight regular positions receiving the largest number of votes are elected. In case of multiple Council candidates from the same country, only the two candidates from that country receiving the largest number of votes can be elected, any other candidates being disqualified during processing of the election results.

(m) In enforcing the two per country rule positions should be assigned in following order: (1) President, (2) Secretary General, (3) Vice-Presidents, (4) Council members.

(n) The NC will be asked to resolve any ambiguities arising from cases, where two or more candidates receive equal votes.

(o) The election results are announced at the Congress.

Abstracts of papers in JHR Volume 38 (2000) Issue 5

Sediment Re-Suspension By Turbulent Jet In An Intake Pond

Meilan Qi, K. Fujisaki and K. Tanaka

Modern thermal or nuclear plants need cooling water from river or sea. Therefore an intake pond for the water delivery system is a requisite component where sediment frequently deposits. An impinging jet is a functional measure for sediment re-suspension and a precaution against sediment deposition. This paper predicts the consequences of this new measure using theoretical analysis and laboratory experiments. The jet diffusion discharged into an ambient flow field, and the jet velocity at bottom, are predicted by the governing equations using an integral method. Equilibrium scour is obtained after the process of scour asymptotically finished for a limited depth sand layer. The non-dimensional equation derived can predict well the particle re-suspension. Critical jet condition is obtained for the sediment re-suspension by experiments. The effect of the jet angle and jet height on sediment re-suspension is also included and discussed. The results obtained for the scour to a limited sand bed by an impinging jet through cross flow is especially significant to the engineering design of intake ponds and culverts etc.

Sand Wavelets In Laminar Open-Channel Flows

Stephen E. Coleman, Burkhard Eling,

The results of experimental investigations indicate that sand wavelets can be generated from plane-bed conditions in open-channel laminar flow, the lengths, shapes and patterns of generation for these wavelets being consistent with observations for alluvial flows. Wavelets are of a preferred wavelength which is relatively insensitive to the characteristics of the applied flow and primarily a function of the size of the sediment, these wavelengths l for alluvial and laminar open-channel flows over beds of quartz and lightweight sediments of size d = 0.2 mm to d = 1.6 mm being simply described by $l = 175d^{0.75}$, where l and d are expressed in millimetres. The laminar-flow sand-wavelet data present significant implications to contemporary understanding of bed-form mechanics, with both ripples and dunes being postulated to subsequently develop from these wavelets for alluvial flows. The data also raise significant questions as to whether the generation of ripples and dunes in alluvial flows can be attributed to an organised structure of turbulence within the flow.

In-Stream Flow Impact On River Water Temperatures

Bashar A. Sinokrot, John S. Gulliver,

The Central Platte River often experiences high water temperatures during sunny, hot summer days. A 128-km reach of the Platte River downstream of two hydropower dams (Kingsley Dam and North Platte/Keystone Diversion Dam) was studied to determine the relationship between river summer water temperatures and river flow-rate, and the impacts of in-stream flow requirements upon peak water temperatures. This reach serves as a habitat for eight federally listed or endangered species, as well as over 300 species of migratory birds, including 500,000 sandhill cranes and 7-9 million ducks and geese. Hourly water temperatures were simulated using a dynamic numerical model (MNSTREM) with and without in-stream flow requirements. It was found that a clear relationship exists between river water temperatures and river flow-rate. In addition, it was found that the occurrence of high water temperatures can be attributed to low river flow-rate and can be reduced, but not eliminated, with minimum in-stream flow requirements.

Investigation Of The Compressibility Of Extra-High-Velocity Aerated Flow
J. F. Zhao, W. Li

Some fundamental topics of compressibility influence of the extra-high-velocity aerated water flow in hydraulic engineering are studied in the present paper. A closed system of simplified basic equations of the aerated water flow is deduced using the two-fluid model. A general formula of sound velocity in aerated water flow is derived using sound analysis. It is found that the Wood adiabatic sound formula is a good approximation for calculating sound velocity in aerated water flow. Using the analysis of the order of the magnitude, it is found that compressibility is important in the following cases. 1) Sound motion in the aerated water flow. 2) Aerated water flow with extra great depth. 3) Steady extra-high-velocity aerated water flow in which mixture velocity is of the order of the sound velocity in it. It is shown that the adiabatic Mach number may act as the compressibility criterion in steady aerated water flow. For the case of steady homogeneous aerated water flow, a detailed compressibility standard is obtained, which is just the same as that in aerodynamics.

On The Effects Of A Negative Step In Pressure Fluctuations At The Bottom Of A Hydraulic Jump.
V. Armenio, P. Toscano, V. Fiorotto

Experimental evidence of the statistical structures of turbulence pressure fluctuations at the bottom of hydraulic jumps over a negative step is brought out in this paper.
Special attention is paid to the definition of the extreme values and of the spatial correlation structures of the anisotropic field of fluctuating pressures in view of their relevance in the structural design of the lining in spillway stilling basins.
The analysis is performed in the case of B-jump and Wave-jump considering two different heights of the drop for Froude numbers ranging between 6 and 9.5. Moreover, the effect of the shape of the drop on the hydraulic jump has been investigated using the abrupt step as well as the rounded one. The experimental results herein reported may be helpful in the design of a stilling basin with a negative step, with particular reference to the thickness of the concrete slabs required to ensure the stability of the linings.

Implicit High-Resolution Methods For Modelling One-Dimensional Open Channel Flow
Delis, C. P. Skeels, S.C. Ryrie

Three implicit high-resolution total variation diminishing (TVD) schemes are presented for solving the Saint-Venant equations. The applicability, performance and validity of these methods are investigated. Recently created benchmark solutions are reproduced for a wide range of cases, which include friction, non-uniform bed slopes, transitions between subcritical and supercritical flow, non-prismatic cross sections and hydraulic jumps. The tests produce satisfactory results without resorting to excessively fine grids. All the methods also produce satisfactory results for an idealised dam-break problem.

Modelling Flow Over An Initially Dry Bed
Abdul A. Khan,

The one-dimensional groundwater flow equations are coupled with the St. Venant equations to simulate the flow resulting from a sudden removal of a dam over an initially dry downstream bed. The St. Venant equations are solved using a Petrov-Galerkin finite element scheme, while the groundwater flow equations are solved using the Bubnov-Galerkin finite element scheme. The comparison of the computed water surface and discharge per unit width profiles with the corresponding analytical solutions, for a dambreak over frictionless horizontal bed, show that the model possesses excellent phase accuracy, for both positive and negative waves, and can predict the discharge distribution accurately. Also, the computed water surface profiles are compared with the available measured data for the dambreak flows over smooth and rough surfaces of horizontal and sloping channels. In addition, the results obtained from only the St. Venant equations with minimum depth criteria are presented for comparison with the above model.

Applicability Of Euler-Lagrange Coupling Multiphase-Flow Model To Bed-Load Transport Under High Bottom Shear
Abbas Yeganeh (Bakhtiary), Hitoshi Gotoh, Tetsuo Sakai,

Bed-load transport at high shear stress is numerically simulated with the aid of the two-phase flow model, in *k-e* turbulence model in unidirectional flow condition, while the sediment motion is expressed by the numerical tracing of the saltating particles. The fluid/particle interaction, as the main interaction mechanism, is explicitly introduced into the governing equations in the present model. The characteristics of the mean-flow velocity profile of the saltation dominant flow, namely two-layer profile, is reproduced well with the present model. Experimental results show the existence of the three-layer type velocity profile under the high bottom shear, while the present model cannot reproduce such characteristics. The limitation of the assumption in the present model by neglecting the existence of the interparticle collision will be discussed on the basis of the results of the simulation.

A Simple Method for Measuring Shear Stress on Rough Boundaries
S. Wu and N. Rajaratnam

This technical note presents a simple method for the real time measurement of bed shear stress with a LabView Program for turbulent flow over uniformly rough boundaries, based on the classical logarithmic velocity distribution equation. The method is based on a step-wise linearization of the additive coefficient in the classical logarithmic velocity distribution equation.