

Trash Rack

Gate

Turbine

Siphon Pipe

Tailwater

Shaft power  
plant design

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2011 Executive  
Committee Report

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Prof. Michele Mossa  
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## *Questions which we cannot afford to put off answering any longer*

In recent months there have been many dramatic events which have had a serious impact on our world and all of these deserve to be analyzed in the pages of our magazine. One of these events is the earthquake in Japan with the consequent tsunami which has been responsible for thousands of victims and destruction in the North of the country and for enormous difficulties for the population as a whole. This raises many problematic questions. For example, whether nuclear energy should be considered as safe as declared by some experts, or whether a nation's best energy plan should be reconsidered and reanalyzed after the latest events, for example giving greater consideration to alternative and new energy sources.

I would have been glad to offer our readers some articles on the Japanese earthquake in the current issue, but as you might imagine, the situation in Japan is extremely difficult at present and many Japanese friends and colleagues who were contacted to write an article on this subject understandably asked me for more time. Therefore I can promise our readers that we will deepen this point in the next issue, having also more time to clearly analyze the situation which is still ongoing. It is still too soon to know just how much devastation the Japanese earthquake and tsunami have caused, in human or economic terms. The death toll may climb into five digits. Damage to Japan's nuclear power plants could result in sickness and dislocation for hundreds of thousands more. The country's economy, which has already endured two decades of stagnant growth, is now threatened by a stock-market collapse and a massive increase in national debt. And yet things could have been far worse. Had an earthquake of comparable scale hit just about any other Asian country, the loss of life would almost surely have been dramatically higher. The Japan quake was more than 500 times stronger than the tremor that hit Haiti in January 2010, which was not followed by a catastrophic tsunami, and yet the death toll in Haiti was 10 to 20 times higher

than it appears to be in Japan. The ultimate consequences of the disaster on Japan's society and economy will be staggering, but few countries in the world are better positioned to recover.

One question that I would like to deepen in this issue is the state of the art in alternative energy sources and nuclear energy.

In fact, the earthquake in Japan has also posed many questions concerning the security of nuclear power stations. In this issue's article "10 questions to..." we ask Prof. E. Egusquiza (Center Industrial Diagnostics, Polytechnic University Catalonia, Spain), vice chair of IAHR Committee on Hydraulic Machinery and Systems, his opinion on how safe nuclear power stations are and his opinion on the latest generation of power stations.

Should nuclear power still be considered as a viable source of energy or, since the risk is so great, should we increase funding for alternative energy sources? We should consider how our community could deepen research into the development of new systems which could produce alternative energy, such as wave, sea current or wind energy.

The recent dramatic events in Japan will raise questions which we cannot afford to put off answering any longer, such as the necessity to develop new machinery for the production of alternative energy, like wave, sea current, wind energy, or other forms of alternative energy. We should also ask ourselves if we are now in the position to completely change our energy sources or whether new energy sources should still be considered as simply supplementary sources of energy.

Of course it is also important to consider economic factors, even though, in my opinion, it essential to give priority to the environment and to human safety.

## IAHR International Association for Hydro-Environment Engineering and Research

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### Shaft power plant design

Invention in the field of renewable energies from the Technical University Munich enables hydroelectric power generation at thousands of unused locations

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### 10 QUESTIONS TO...

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The River flow conference was held from 8 to 10 September 2010 at the Technische Universität Braunschweig, Germany.

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### 2011 Executive Committee Report

The IAHR Executive Committee recently held its annual meeting in Madrid.

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## renewable energies



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# Shaft power plant design

Report published in [www.technology-transfer-blog.com](http://www.technology-transfer-blog.com). Reprinted with permission

A new invention in the field of renewable energy from the Technical University of Munich, Germany could enable hydroelectric power generation at thousands of unused locations and is designed to let fish pass along with the water– small is beautiful, and good for the environment. The invention can be licensed or purchased at the Bayerische Patentallianz GmbH, the central technology transfer organisation of 28 Bavarian universities and universities of applied sciences.

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Hydroelectric power is the oldest and the "greenest" source of renewable energy. In Germany, the potential would appear to be completely exploited, while large-scale projects in developing countries are eliciting strong criticism due to their major impact on the environment. Researchers at Technische Universitaet Muenchen (TUM) have developed a small-scale hydroelectric power plant that solves a number of problems at the same time: The construction is so simple, and thereby cost-efficient, that the power generation system is capable of operating profitably in connection with even modest dam heights. Moreover, the system is concealed in a shaft, minimizing the impact on the landscape and waterways. There are thousands of locations in Europe where such power plants would be viable, in addition to regions throughout the world where hydroelectric power remains an untapped resource.

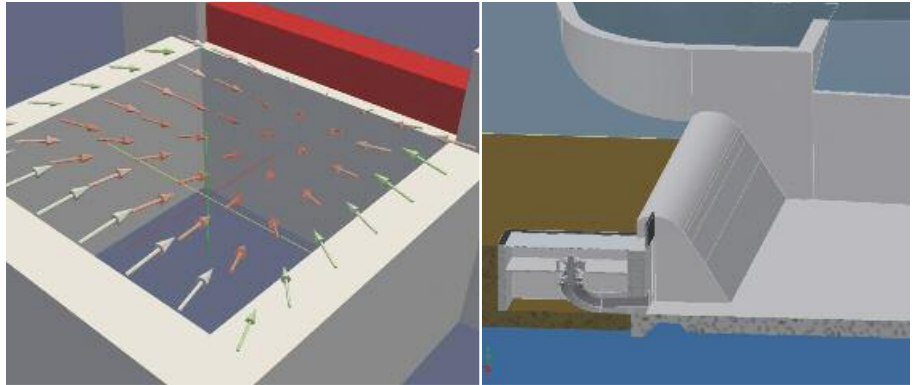
In Germany, hydroelectric power accounts for some three percent of the electricity consumed – a long-standing figure that was not expected to change in any significant way. After all, the good locations for hydroelectric power plants have long since been developed. In a number of newly industrialized nations, huge dams are being discussed that would flood settled landscapes and destroy ecosystems. In many

underdeveloped countries, the funds and engineering know-how that would be necessary to bring hydroelectric power on line are not available.

Smaller power stations entail considerable financial input and are also not without negative environmental impact. Until now, the use of

hydroelectric power in connection with a relatively low dam height meant that part of the water had to be guided past the dam by way of a so-called bay-type power plant – a design with inherent disadvantages:

- The large size of the plant, which includes concrete construction for the diversion of water and a power house, involves high



# invention from the TUM



2<sup>nd</sup> IAHR Europe  
Congress, Munich  
27th-29th June 2012  
[www.iahr2012.tum.de](http://www.iahr2012.tum.de)

Prof. Rutschmann is  
Chair of the LOC of  
the Congress

construction costs and destruction of natural riverside landscapes.

- Each plant is a custom-designed, one-off project. In order to achieve the optimal flow conditions at the power plant, the construction must be planned individually according to the dam height and the surrounding topography. How can an even flow of water to the turbines be achieved? How will the water be guided away from the turbines in its further course?
- Fish-passage facilities need to be provided to help fish bypass the power station. In many instances, their downstream passage does not succeed as the current forces them in the direction of the power plant. Larger fish are pressed against the rakes protecting the intake of the power plant, while smaller fish can be injured by the turbine.

A solution to all of these problems has now been demonstrated, in the small-scale hydroelectric power plant developed as a model by a team headed by Prof. Peter Rutschmann and Dipl.-Ing. Albert Sepp at the Oskar von Miller-Institut, the TUM research institution for hydraulic and water resources engineering. Their approach incurs very little impact on the landscape. Only a small transformer station is visible on the banks of the river. In place of a

large power station building on the riverside, a shaft dug into the riverbed in front of the dam conceals most of the power generation system. The water flows into a box-shaped construction, drives the turbine, and is guided back into the river underneath the dam. This solution has become practical due to the fact that several manufacturers have developed generators that are capable of underwater operation – thereby dispensing with the need for a riverbank power house.

The TUM researchers still had additional problems to solve: how to prevent undesirable vortex formation where water suddenly flows downward; and how to best protect the fish. Rutschmann and Sepp solved two problems with a single solution – by providing a gate in the dam above the power plant shaft. In this way, enough water flows through to enable fish to pass. At the same time, the flow inhibits vortex formation that would reduce the plant's efficiency and increase wear and tear on the turbine.

The core of the concept is not optimizing efficiency, however, but optimizing cost: Standardized pre-fabricated modules should make it possible to order a "power plant kit" just like ordering from a catalog. "We assume

that the costs are between 30 and 50 percent lower by comparison with a bay-type hydropower plant," Peter Rutschmann says. The shaft power plant is capable of operating economically given a low "head" of water of only one to two meters, while a bay-type power plant requires at least twice this head of water. Series production could offer an additional advantage: In the case of wider bodies of water, several shafts could be dug next to each other – also at different points in time, as determined by demand and available financing.

Investors can now consider locations for the utilization of hydropower that had hardly been interesting before. This potential has gained special significance in the light of the EU Water Framework Directive. The directive stipulates that fish obstacles are to be removed even in smaller rivers. In Bavaria alone, there are several thousand existing transverse structures, such as weirs, that will have to be converted, many of which also meet the prerequisites for shaft power plants. Construction of thousands of fish ladders would not only cost billions but would also load the atmosphere with tons of climate-altering greenhouse gas emissions. If in the process shaft power plants with fish gates and additional upstream fish ladders were installed, investors could shoulder the costs and ensure the generation of climate-friendly energy over the long term – providing enough power for smaller communities from small, neighborhood hydroelectric plants.

Shaft power plants could also play a significant role in developing countries. "Major portions of the world's population have no access to electricity at all," Rutschmann notes. "Distributed, local power generation by lower-cost, easy-to-operate, low-maintenance power plants is the only solution. For cases in which turbines are not financially feasible, Rutschmann has already come up with an alternative: "It would be possible to use a cheap submersible pump and run it in reverse – something that also works in our power plant."

For more information visit [www.baypat.de](http://www.baypat.de)

# 10 QUESTIONS TO... Dr. Eduard Egusquiza

Interviewed by Michele Mossa, Editor of Hydrolink and Chair of the Committee on Education and Professional Development (EPD)

**The IAHR-Committee on Hydraulic Machinery and Systems deals with the advancement of technology associated with the understanding of steady and unsteady flow characteristics in hydraulic machinery and conduit systems connected to machinery. What innovations are there in the field?**

With the constant trend to increase power concentration and to extend operation at off-design conditions, dynamic problems are becoming more important. Flow analysis when machines are operating at extreme off-design condition, system response to large hydraulic excitation forces, cavitation, are a few of the hot topics in our field. Advanced sensors and instrumentation for sophisticated experiments as well as complex numerical methods to simulate the fluid-structure interaction are being investigated.

*“Hydropower is a clean, efficient renewable energy source that is poised to play a larger role in future.”*

**It is well known that physical model tests carried out in laboratories must be scaled down from the prototypes, studies of size and pressure scale effects are also a central research field. In your opinion are physical models still useful in Hydraulic machinery research, and how could they be combined with numerical models?**

Physical models are and will be necessary in hydraulic machinery research. What is true is that numerical models are becoming more important every day. They are substituting physical models in design and performance calculation tasks. Today, the number of experimental tests necessary to determine machinery performance has been drastically reduced. However, in complex situations like off-design performance, dynamic behavior and cavitation they are still absolutely necessary.

Both run more or less in parallel: any complex phenomena discovered by experiment can be later simulated with numerical models. A better

simulation allows an increase of machine performance which leads to new problems that have to be investigated experimentally and so on.

Sometimes, before carrying out an experiment, a previous simulation is very informative for optimizing the tests.

**Hydropower is both cost-effective and environmentally responsible. The increasing atmospheric content of carbon dioxide related to pollution from thermal power plants, is one of the most significant threats to our global ecology. What can you tell us about the latest developments in hydraulic machinery which could also help to solve environmental problems?**

Hydropower is a clean, efficient renewable energy source that is poised to play a larger role in future. Machines with 1000MW capacity, with larger head per stage as well being more efficient and reliable are under development. Fish-friendly turbines as well as innovative marine turbines can help to solve environmental problems. Another contribution of hydraulic machinery is that they can enhance the use of other renewable energies. Using Pumped-storage plants the surplus energy generated by wind mills can be stored and used later at peak hours when energy is needed.

**One of the biggest problems is the increase of global temperatures and changes in climate which may also result in flooding in some parts of the world. What is your opinion on this point?**

I think that the increase in global temperatures is a real fact. Taking into account the world levels of development and increase in population it seems that there is no way back at least in a near future.

Although hydropower has some disadvantages it can offer storage capacity for flood control. Today the challenge is how to harness the large amount of energy generated by phenomena related to this increase in temperatures.

**Do you think that hydraulic machinery could have had an important impact on the increase of global temperature?**

The storage of large amounts of water in dams to be used later by hydraulic machinery could have had an impact. Anyway it is probably much less than the effects of other non renewable energies.



Dr. Eduard Egusquiza is Professor of Mechanical Engineering at the Universitat Politècnica de Catalunya (UPC) in Barcelona since 1988. His research interests are in the dynamic/vibratory behavior of large hydraulic machinery, with application to condition monitoring and diagnosis. At present he is Director of the Center for Industrial Diagnostics and Fluid Dynamics and Vice-chairman of the IAHR-Committee on Hydraulic Machinery and Systems.

**The earthquake in Japan has also posed many questions concerning the security of nuclear power stations. In your opinion how safe are nuclear power stations around the world and what is your opinion on the latest generation of power stations?**

I do not have information and expertise enough to talk about this topic. Anyway what has happened in an advanced country like Japan has opened concerns about security and has to be reconsidered.

**Should nuclear power still be considered as a viable source of energy or, since the risk is so great, should we extend funding for research and funds on alternative energy sources?**

What is clear is that much more funds have to be invested in alternative energy sources to increase little by little its share in electricity generation. However, unless we reduce energy consumption nuclear power could be still necessary.

**How do you think the Hydraulic Machinery Committee of IAHR could help the development of new systems which could produce alternative energy, such as wave, sea current or wind energy?**

One of the most important characteristics of our Committee is that it is well balanced between academia and industry. This fact cannot be found in many other organizations which generally are for academics or for end-users. The interaction between academics and company engineers has generated a large body of knowledge and a strong partnership. This can be used to tackle large projects with complementary groups to develop new machine and systems. Moreover some of the companies participating in the committee have divisions in ocean energy. IAHR has recently established a Working Group in Marine Renewable Energy chaired by Martin Wosnik which is specifically addressing these issues.

**What is your opinion on the new machinery for wave, sea current or wind energy? And how valid are they from an economic point of view? Are we now in the position to completely change our energy sources or are new energy sources to still be considered**

*“In Spain in March this year for the first time, the principal production of electrical energy was wind energy.”*

**as simply supplementary sources of energy? If so, when do you think the industry might be ready to completely change all energy sources and consequently the machines used for their production?**

Machinery for wave and marine energy although still in its infancy is showing a large potential. These machines have to be deployed and monitored for some time before definitive conclusions could be extracted.

When talking about economics we must not be short-sighted. The long-term benefits of these renewable energies to reduce carbon emissions and boosting energy security are so large that have to be taken into account.

I do not think we can completely change our energy sources. Anyway, taking into account the available resources if there is the political will and the necessary investment renewable energies could have a predominant role in a near future. For example, in Spain in March for the first time, the dominant source of production of electrical energy was wind energy..

**As usual, the last question is not exactly a question. You are free to direct to our readers to send them a message of yours on a topic that is dear to your heart.**

I would like to send a message to young engineers and professionals about the importance and interest of hydraulic machinery. This is a multidisciplinary field in which Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA) and experiments are used. From fluid flow analysis to residual life analysis several interesting areas are covered. Careers with good perspectives and dealing with real world problems can be developed in this field.



## Useful Information for Congress Delegates

Brisbane, political and art capital of Queensland, has a world-class cultural calendar, thriving nightlife, and perfect climate. Known as “Brizzie” to the locals it is a popular tourist destination along Australia's majestic east coast.

Written by:

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Visitors come to enjoy the city's vibrant atmosphere, many outdoor parks and gardens and famous Eagle St Pier and Portside Wharf developments. The city is served by Brisbane International Airport which has excellent direct international links. See *Hydrolink 3/2010* for more information on Brisbane.

### Travelling to Brisbane

You must obtain a visa before travelling to Australia. Please allow enough time for this! Congress delegates from over 30 countries are eligible for the online ETA visitor visa – which is probably the easiest way to obtain a visa. Please check the Government Immigration website! About 30 international airlines serve Brisbane – the third busiest airport in Australia - from Europe, Asia, and New Zealand, and North America with direct flights. But if you wish to visit other parts of Australia you can also arrive in

Sydney or Melbourne and connect to Brisbane. Qantas offers special discounts on domestic flights called the “Aussie AirPass” for international travellers when bought together with an international ticket. Within Australia several low cost airlines such as Jetstar and Tiger airlines offer the cheapest fares. Rex Airlines has a special backpacker travel pass with one month unlimited standby travel for around 500AUD. There is a very efficient frequent train service from the airport to the city centre. It takes 20 minutes and the most convenient stations in the city centre are South Brisbane which is right next to the Congress Centre, Central Station which is right in the city centre, and Roma Street which is the main railway station – where it is easy to find taxis. There are also buses and taxis to the city.

### Weather in June /July

Our Congress will be held during winter in Australia. However, Queensland is in the north-east and during our Congress the climate should be rather pleasant with average daily temperature ranges from 22°C in the daytime to 12 at night. This is also the driest time of year with June mean rainfall at about 70mm.

### City Centre, Congress and Hotel Locations

Brisbane is a compact city and the Central Business District (CBD) stands on the original settlement of Brisbane situated inside a bend of the Brisbane River approximately 15 kilometres from its mouth at Moreton Bay. The metropolitan area extends in all directions along the floodplain of the Brisbane River valley between the bay and the Great Dividing Range. The centre of Brisbane is modern, clean, safe and walkable, and the IAHR Congress will be held in the Brisbane Convention Centre which is on the south bank of the river a ten-minute walk from the centre. Most of the hotels are in this area which is also close to the Queen Street Mall one of the most important pedestrian shopping malls in Australia. Grocery and department stores generally open seven days a week, with late night trading until 9pm on weeknights.

The Convention Centre is also very well-connected by public transport with outlying areas – with a main railway station behind, a free city bus loop service connecting with the CBD, a boat terminal ferry with frequent ferries up and down river and two bus stations.





## Before and After the Congress

The north of Queensland which averages 300 sunny days a year is home to two World Heritage sites: the Great Barrier Reef and the Wet Tropics Rainforest. The IAHR Congress coincides with the best time of year to visit the Reef and Rainforest! The winter season extends from the month of June to August and is usually considered to be the most comfortable season. The area is accessed by flying to the town of Cairns which is two hours flying time north from Brisbane and has a tropical monsoon climate. During this season Cairns faces less rainfall with comfortable, sunny days and pleasantly cool at night. It is relatively the coolest season with the daytime average temperature of this season at 26 degree Celsius and the level of humidity relatively lower. Cairns airport is also an international gateway to Queensland with direct flights to Hong Kong, Tokyo and Singapore. You can also hire a car and drive north from Brisbane to Cairns (see Top Ten Destinations driving north from Brisbane in the information below). You can also arrange to drive from Sydney to Brisbane (or the return) – allowing five days.

### Web Sites of interest

Congress website:  
[www.iahr2011.org](http://www.iahr2011.org)

Visa Information:  
<http://www.immi.gov.au/visawizard/>

Congress Registration Brochure  
(including map of centre showing hotels):  
[http://www.iahr2011.org/FileLibrary/iahr\\_registration\\_brochure\\_final20dec.pdf](http://www.iahr2011.org/FileLibrary/iahr_registration_brochure_final20dec.pdf)

Transport to City Centre:  
[www.airtrain.com.au](http://www.airtrain.com.au)

Frommers Guide- Brisbane:  
<http://www.frommers.com/destinations/brisbane/0073020009.html#ixzz1Gs9FeLVd>

Top 10 Queensland destinations driving north from Brisbane:  
<http://www.footprintsdownunder.com.au/travel/destinations/top/item/81-top-10-queensland-destinations-driving-north-from-brisbane>

Award-winning Places to Visit in Queensland:  
[http://www.news.com.au/travel/feature/australias-best-named-at-qantas-tourism-awards/story-fn4cjal3-1226020869109#ixzz1Gs6CgCebungle Surfing Canopy Tours \(QLD\) Queensland Tourism Site: http://www.queenslandholidays.com.au/index.cfm](http://www.news.com.au/travel/feature/australias-best-named-at-qantas-tourism-awards/story-fn4cjal3-1226020869109#ixzz1Gs6CgCebungle Surfing Canopy Tours (QLD) Queensland Tourism Site: http://www.queenslandholidays.com.au/index.cfm)

## The Great Barrier Reef

The marine park stretches over 3000 km (1800 miles) almost parallel to the Queensland coast, from near the coastal town of Bundaberg, up past the tip of Cape York. The reef, between 15 kilometres and 150 kilometres off shore and around 65 km wide in some parts, is a gathering of brilliant, vivid coral providing divers with the most spectacular underwater experience imaginable.

A closer encounter with the Great Barrier Reef's impressive coral gardens reveals many astounding underwater attractions including the world's largest collection of corals (in fact, more than 400 different kinds of coral), coral sponges, molluscs, rays, dolphins, over 1500 species of tropical fish, more than 200 types of birds, around 20 types of reptiles including sea turtles and giant clams over 120 years old.

Because of its natural beauty, both below and above the water's surface, the Great Barrier Reef has become one of the worlds most sought after tourist destinations.

### Queensland Rainforest: licuala state forest & cassowaries

The World heritage listed rainforest covers about 900,000 hectares but the surrounding national parks are just as interesting and includes mountains such as Mount Bartle Frere and Bellenden Ker and Australia's longest single-drop waterfall, the 305 metre (1,000 foot) Wallaman Falls west of Ingham. The area includes about 600km of scenic drives and a huge number of walks – everything from gentle strolls to up-hill all day hikes; the Licuala State Forest has amazing walks through the rare fan palm forests near Mission Beach. These are about half of all fan palm forests in Australia.

Cassowaries are large flightless birds native to the area. The Southern Cassowary which is found in the Mission Beach area is the second largest flightless bird in Australia. Cassowaries are frugivorous, eating mainly fruit, but they'll also eat insects, frogs and snakes.

### New Caledonia and other Pacific Islands

Brisbane is also the nearest point in Australia for cruises visiting the pacific islands of New Caledonia, the Loyalty Islands and Vanuatu - Nomea. The P&O Cruise Ship Pacific Dawn will leave Brisbane on July

## 2010 Australia Tourism Award

**Jungle Surfing Canopy Tours – you fly through the tress on ziplines stopping at five tree platforms to take in spectacular birds eye views over the treetops down to cascading streams and out to the great barrier reef.**  
**Unique tours where your feet don't touch the ground**

2nd immediately after the IAHR Congress for a one week cruise to these destinations.

### Lone Pine Koala Sanctuary

This is the best place in Australia to cuddle a koala -- and one of the few places where koala cuddling is still allowed. Banned in New South Wales and Victoria, koala cuddling is allowed in Queensland under strict conditions that ensure that each animal is handled for less than 30 minutes a day -- and gets every third day off! When it opened in 1927, Lone Pine had only two koalas, Jack and Jill; it is now home to more than 130. You can cuddle them anytime and have a photo taken holding one for A\$16 (US\$14/£6.75); once you've purchased a photograph, your companions can take as many photos of you as they like with their own cameras. Lone Pine isn't just koalas -- you can also hand-feed kangaroos and wallabies and get up close with emus, platypus, snakes, baby crocs, parrots, wombats, Tasmanian devils, dingoes, lace monitors, frogs, bats, turtles, and other native wildlife. There are two gift shops, a restaurant and two cafes with wireless internet access.

Read more: <http://www.frommers.com/destinations/brisbane/A19120.html#ixzz1Gs9UJT8s>

### Newstead House, Brisbane

Brisbane's oldest surviving home has been restored to its late Victorian splendor in a peaceful park overlooking the Brisbane River. Wander the rooms, admire the gracious exterior dating from 1846, and on Sunday afternoons (2-4:30pm) between March and November, take Devonshire tea. The U.S. Army occupied the house during World War II, and the first American war memorial built in Australia stands on Newstead Point, on the grounds.

Read more: <http://www.frommers.com/destinations/brisbane/A19125.html#ixzz1Gs9kYSu7>



## Convocation of 2011 General Members Assembly

All IAHR Members are cordially invited to attend the Annual General Members Assembly which will be held on Thursday, June 30th in Brisbane, Australia.

Venue: Brisbane Convention Centre  
Date: Thursday June 30th  
Time: 13:00-13:30

### Agenda

- Approval of Minutes of the GMA held in Vancouver 2009
- Announcement of Division Change - Latest Results of 2011 Council Elections
- Results of 2011 Council Elections
- Financial Statement, Report on IAHR Activities

Members wishing to propose topics for inclusion in the GMA agenda should contact the Executive Director, Dr. Christopher George, by May 31st 2011.

## CALL FOR PROPOSALS FOR HOSTING the 19<sup>th</sup> IAHR-APD in 2014.

Proposals are invited for hosting the 19<sup>th</sup> Congress of IAHR Asia Pacific Division. The 18<sup>th</sup> Congress will be held in Korea.

The details of APD-IAHR are available in [www.iahr.org](http://www.iahr.org) under Organization/ Regional Divisions. All the applications will be discussed during the Executive Committee meeting to be held in June during the IAHR World Congress.

For more information contact the APD Secretary or IAHR Madrid Secretariat.

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## IAHR Council Elections IAHR is your Association – please take part!

As part of continuing efforts to modernize our association, and involve members more directly the slate of candidates for the council elections this year contains for the first time multiple candidates for most posts – including two candidates for President!

All members with a valid e-mail address on record, and up-to-date with fees, will receive an e-mail at the end of April containing a link to the voting site. Full information on the process is given on the IAHR website.



If you would prefer to vote by paper ballot please contact Elsa Incio at the IAHR Secretariat in Madrid ([membership@iahr.org](mailto:membership@iahr.org)). Ballots can also be submitted at the Brisbane Congress up to the final deadline on Wednesday June 29, 2011.

### For President: 2 candidates for 1 position

#### Prof. Aronne Armanini

*Professor of Hydraulics  
Head of the Department,  
University of Trento, Italy*



#### Prof. Roger Falconer

*Halcrow Professor of Water Management  
Director Hydro-environmental Research  
Centre. School of Engineering, Cardiff  
University, UK*



# River Flow 2010

## September 8-10, Braunschweig, Germany

River Flow 2010 was held from 8 to 10 September 2010 at the Technische Universität Braunschweig, Germany. The venue, attended by 285 delegates from 36 countries, was the 5th in a highly successful series of River Flow conferences of which the first was held in Louvain-la Neuve, Belgium (2002) followed by Naples, Italy (2004), Lisbon, Portugal (2006), and Cesme, Turkey (2008).

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The River Flow conferences, organised under the auspices of the IAHR Fluvial Hydraulics Committee, are the ideal platform for exchange between scientists and engineers with respect to fluvial hydraulics and river-related disciplines. This becomes apparent from the main conference topics which have been related to river hydrodynamics, river morphodynamics and sediment transport, and river engineering. These topics were addressed in five exceptional keynote lectures: Christoph Heinzelmann (Federal Waterways Engineering and Research Institute, Germany) introduced innovative methods in waterways engineering; Stephen Coleman (University of Auckland, New Zealand) addressed important issues related to fluvial sediment transport and morphology; Wolfgang Rodi (Karlsruhe Institute of Technology, Germany) reported on latest developments on large eddy simulation of river flows; Heidi Nepf

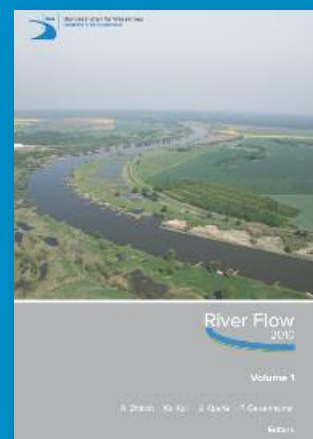
(Massachusetts Institute of Technology, USA) provided an overview on flow and sediment transport in and around vegetation patches; and Donald Knight (University of Birmingham, UK) discussed solutions for solving various open channel problems.

The Local Organizing Committee of River Flow 2010 received 487 abstracts, of which 284 were considered to be aligned with the conference topics. Subsequently, 235 papers were submitted by engineers and researchers of 32 countries. The International Scientific Committee selected 223 to be included in the proceeding books. Of these, 74 % were considered for oral presentation and 26 % were selected for the poster sessions. A distinctive feature of River Flow conferences has been the Master Classes taking place the day preceding the formal opening of the Conference. In Braunschweig, the response to this initiative exceeded the best initial expectations: 7 master Classes were conducted and organised by 14 masters, enrolling 58 students from 14 countries. This is an indication of the vitality of fluvial hydraulics and a contribution for the continuity of the IAHR.

The success of the conference was ensured by the lively and highly motivated audience but also by the generous support of the sponsors BAW, DFG, EWE, IAHR, LWI, and TU Braunschweig.

The River Flow Proceedings (editors A. Dittich, Ka. Koll, J. Aberle, and P. Geisenhainer) are presently available online ([https://vzb.baw.de/publikationen.php?file=int\\_konf/0/RiverFlow2010.zip](https://vzb.baw.de/publikationen.php?file=int_konf/0/RiverFlow2010.zip)) and contain all scientific papers that were presented during the conference, either as oral or poster presentation.

They are also published in 2 printed volumes and on CD-ROM by Bundesanstalt für Wasserbau (<http://www.baw.de>; email: [info@baw.de](mailto:info@baw.de)) ISBN 978-3-939230-00-7





IAHR Member **Rollin H. Hotchkiss** has been elected as President of EWRI. This will enhance IAHR-EWRI links. Congratulations. [See you in Brisbane!](#)

**Prof. John Pigram**, former President of IWRA has passed away. Prof Pigram was a specialist in water policy and played a key role in water resource management in Australia.

**Dr. Nikolas Kraus** from Vicksburg was not an IAHR member but was he important in the community - do you advise informing our community in the People and Places section of Hydrolink?

**Aldo Tamburrino** from University of Chile has passed through us some happy news regarding to **Prof. Yarko Niño**, Vice Chair of the IPD Division. He has almost recovered communication skills and he is full of energy and he is slowly coming back to his university duties.

**Prof. Hitoshi Tanaka**, Chair of IAHR Asia Pacific Division, has recently been appointed to be the Vice-Dean of the Department of Civil Engineering Tohoku University, Sendai.

Prof Tanaka and his family have notified us that he and his family are fine although his institute in the university, one of the seven former imperial universities of Japan, is severely damaged.

**Nicholas Odd** has retired from HR Wallingford.



**Dr. Hyoseop Woo** has been elected as President of KWRA (Korea Water Resources Association) by a general vote. The tenure started from March 1 and is

for two year. KWRA has about 3,000 members of water-related specialists in Korea For more information visit <http://eng.kwra.or.kr/>.

**Prof. Dr. Kunihiko Ogihara** from the Tekisui Environmental Hydraulic Institute Tokyo Japan has passed away.

IAHR member **Shigeru Kawai** has informed the Secretariat that he will be retired shortly and he will move to Otsu, Shiga prefecture. His e.mail address is [shigekawai345@gmail.com](mailto:shigekawai345@gmail.com)



The University of Oxford has appointed **Jim Hall** to be the next Director of the Environmental Change Institute. Prof. Hall is an expert in flood risk analysis,

system modelling, uncertainty analysis and adaptation to climate change and former Secretary of IAHR Probabilistic Methods Section. His new contact details are as follows: Prof. Jim Hall

Environmental Change Institute  
Oxford University Centre for the Environment  
South Parks Road, Oxford, OX1 3QY  
01865 275846

Email: [jim.hall@eci.ox.ac.uk](mailto:jim.hall@eci.ox.ac.uk)



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Organizers:



# Risk Analysis of Water Pollution

2nd Edition by Jacques Ganoulis, Wiley, 2009, 311p. ISBN: 978-3-527-32173-5

Written by:

**Professor Slobodan P. Simonovic,**  
**Department of Civil and Environmental**  
**Engineering**  
**The University of Western Ontario**  
**London, Ontario, Canada**

Risk Analysis of Water Pollution (second revised and expanded edition) follows the structure of the first edition and covers a very broad range of topics. At over 300 pages, with 6 chapters and 3 appendices, this book presents risk and uncertainty as a support for water quality decision-making processes. The main objective of the text is to offer in one place a comprehensive discussion of relevant issues related to uncertainty, risk and reliability as they relate to water quality management. The topics included in this book usually form the subject matter of a graduate course on risk and reliability in water resources. The six chapters of the book include water resources quantity and quality, risk identification, risk quantification, risk assessment of environmental water quality, risk management and case

studies. Two appendices are devoted to the probabilistic approach and fuzzy set theory.

This new edition of the book reflects the European Union Water Framework Directive and the new paradigm of water pollution, where water quality is closely connected to aquatic, ecological and biological characteristics. The first chapter presents water quantity and quality issues linking water pollution and risk analysis. The second chapter defines risk and presents the sources of uncertainty in water pollution problems. The third chapter is more theoretical in the discussion of risk quantification using both the probabilistic and fuzzy approaches.

The main strength of the book (as introduced in the first edition) is the combination of the two approaches to risk quantification. The fourth chapter presents details of water quality risk assessment. A large number of water quality problems, from coastal water pollution, over river water quality, to groundwater contamination are presented in this chapter.

Risk management is the topic of the fifth chapter. Discussion includes performance indices, basic

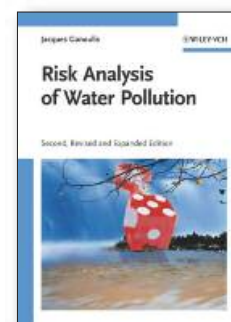
decision theory and elements of the utility theory. The final chapter follows the structure of the fourth

chapter and presents case studies on three main areas, such as (1) coastal pollution, (2) river water quality and (3) groundwater pollution.

A book with such a clear focus does not sacrifice depth for breadth. Many topics of importance for civil and environmental engineering are incorporated and well addressed in the book. The presentation of the three main areas of water quality problems (both in theory and using case studies) is of high value for both water resources practitioners and researchers.

The book could be well used by senior undergraduate and beginner graduate students, as well as by water resources practitioners.

This book is an excellent addition to a civil and environmental engineering library as a source in one location of many risk concepts related to water quality.



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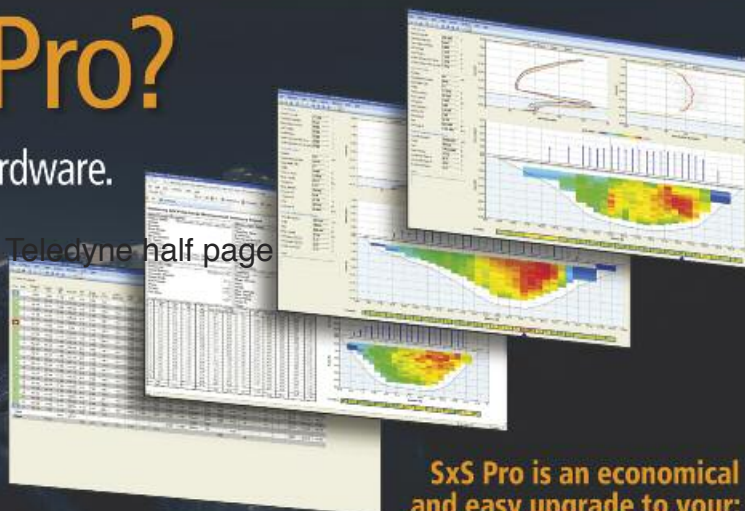
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# 2011 Executive Com

The IAHR Executive Committee recently held its annual meeting in Madrid. The meeting was chaired by IAHR President Prof. Nobuyuki Tamai (Japan) and included: Prof. Dr. Joseph Lee (Hong Kong, China), Prof. Peter Goodwin (USA), Dr. Jean Paul Chabard (France), Dr. Ramon Gutierrez-Serret (Spain) and Dr. Christopher George (IAHR).



Back row from left: Jean Paul Chabard (Vice President), Peter Goodwin (Vice President), Joseph Lee (Vice President), Jose Maria Grassa (CEDEX, Director Ports and Harbours), Christopher George (Executive Director); and front row: Ramon Gutierrez Serret (Secretary General, and CEDEX), Nobuyuki Tamai (IAHR President), Juan Manuel Ruiz Garcia (CEDEX Director Inland Waters), and Cristobal Mateos (Chair IAHR Spain National Chapter)

## Developments on Publications

Prof. Vladimir Nikora (UK) will take over the reins as Editor of the Journal of Hydraulic Research from Prof Willi Hager (Switzerland) this summer. Thanks to excellent management of papers by the outgoing Editor T&F is optimistic that the Impact Factor will rise again this year. The Executive Committee has decided not to publish further JHR Special Issue to ensure a healthy journal backlog unless external funding is available in which case papers will need to be reviewed to normal paper standards. The Executive Committee also agreed that papers in all areas covered by Committee activities are to

be encouraged.

Prof. Paul Bates (UK) continues as Editor of the Journal of River Basin Management and T&F is hoping to get the Journal accepted shortly in the Scientific Citation Index. Both Journals have been published on behalf of IAHR by Taylor and Francis since January 2010. The Journal of Hydro-Environment Research (the Journal of IAHR Asia Pacific Division) is published by Elsevier as a joint venture of IAHR with the Korean Water Resources Association. Prof Joseph Lee is Editor and the journal has recently been accepted for the Thomson Scientific Citation index.

The IAHR house magazine, Hydrolink, is published directly in Madrid. Prof Michele Mossa was appointed as first editor last year and has worked hard with Estibaliz Serrano in Madrid to improve the editorial content. The Executive Committee endorsed plans for an emphasis on special issues, more interviews with leading members of our community in the "Ten questions to..." Mossa also intends to publish more articles of interest to engineers in practice.

The IAHR Books Series has now also been outsourced to T&F – with the first two publica-

# mittee Report



IAHR President Prof. Nobuyuki Tamai visited the 2000 year-old roman aqueduct in Segovia the day before the annual IAHR Executive Committee meeting in Madrid. He was accompanied by Patricia Otones González, Director of the Segovia Tourism Office and Michele Mossa.

tions due for publication in time for Brisbane: a Monograph on "Groundwater Management Practices", and the Design Manual "Users Guide to Physical Modelling and Experimentation. Experience of Hydralab III Network". A further new monograph on Environmental Fluid mechanics edited by Wolfgang Rodi is also planned.

## **New Association Management System and Membership Platform**

The Executive Committee gave final go-ahead to a new system for managing the Association. A Task Force chaired by Peter Goodwin carried out detailed analysis of a

range of solutions proposed by various vendors. There was unanimous approval for adopting the US iMIS software widely used by thousands of associations around the world.

## **Council elections**

The Elections this year for Council will for the first time involve a competition for places, and The EC is setting up a small group to monitor the election process – so that we are sure it works well!

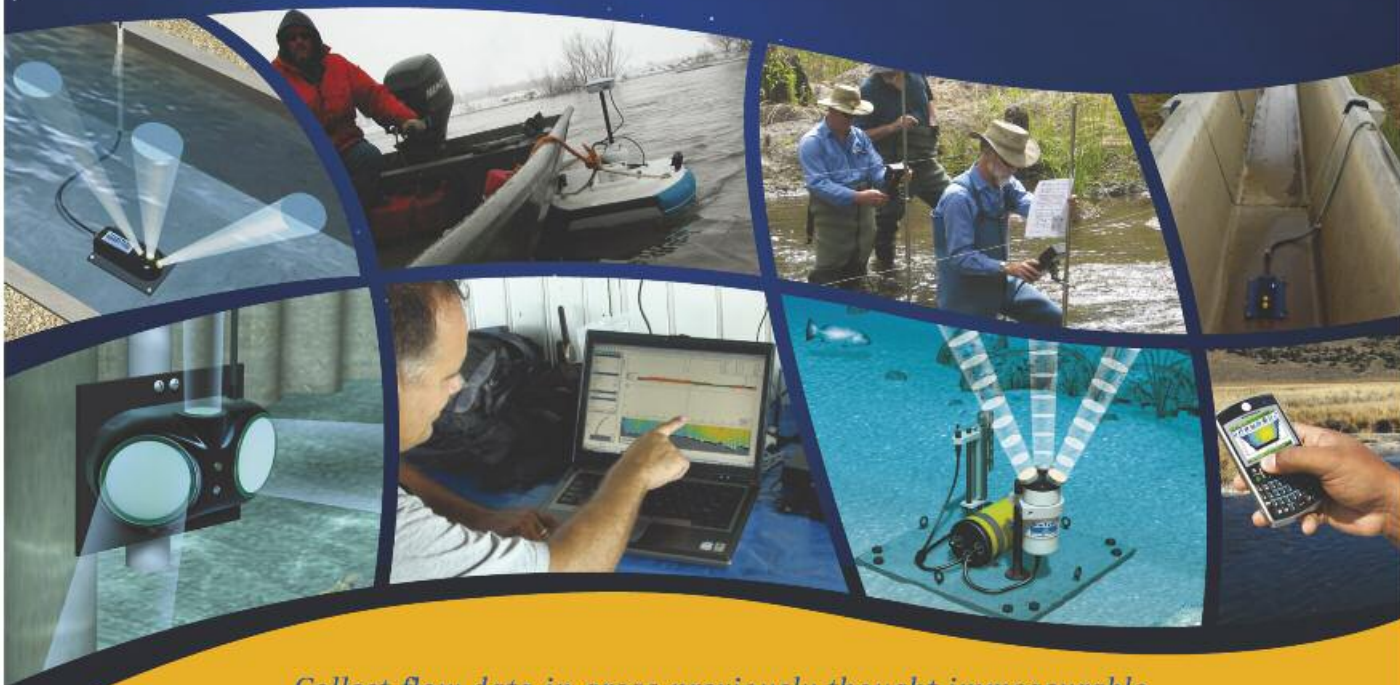
Introducing Vladimir Nikora,  
JHR Editor



Professor Vladimir Nikora is the Sixth Century Chair in Environmental Fluid Mechanics at the School of Engineering, University of Aberdeen, UK. Before coming to Scotland in February 2006, he was Principal Scientist and Manager of the Hydrodynamics Group at the National Institute of Water and Atmospheric Research in New Zealand that he joined in 1995. Dr. Nikora's main research accomplishments relate to improved understanding of stream turbulence, development and applications of the double-averaging methodology for describing and predicting rough-bed turbulent flows, novel concepts for erosion and transport of cohesive and non-cohesive sediments, and interactions between water flows and biota. Dr. Nikora has also contributed to the advancement of measurement techniques and instruments for field and laboratory studies of flow turbulence, sediment dynamics, and flow-biota interactions. A growing part of his current research involves development of the Hydrodynamics of Aquatic Ecosystems as an interfacial branch of fluid mechanics, biomechanics, and ecology. Dr. Nikora has served as an Associate Editor of the ASCE Journal of Hydraulic Engineering and AGU Water Resources Research, and is a member of the Editorial Board of Springer's Acta Geophysica. He has also served as Chair and Past Chair of the IAHR Hydraulic Instrumentation Section (now Committee on Experimental Methods and Instrumentation). Dr. Nikora is the recipient of 2010 Hunter Rouse Hydraulic Engineering Award of the American Society of Civil Engineers and a Fellow of the Royal Society of Edinburgh, Scotland's National Academy.

[SOUND PRINCIPLE NO. 53]

# Believe in infinite possibility.

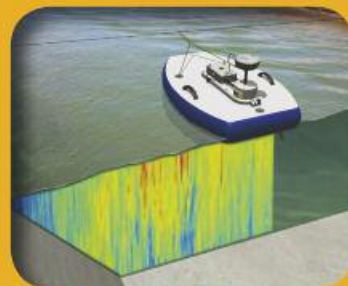


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