

**THE 16th CONGRESS OF ASIA AND PACIFIC DIVISION OF THE
INTERNATIONAL ASSOCIATION OF HYDRAULIC ENGINEERING
AND RESEARCH**

and

**THE 3rd INTERNATIONAL SYMPOSIUM ON HYDRAULIC
STRUCTURES**

October 20-23, 2008, Nanjing, CHINA

General

The 16th IAHR-APD and 3rd IAHR-ISHS were held parallel in the Wentian Building of Hohai University in Nanjing, China, from October 20 to 23, 2008. The congress/ symposium was organized by Hohai University and co-organized by the Nanjing Hydraulic Research Institute, assisted by the IAHR China-Chapter and supported by the International Association of Hydraulic Engineering and Research (IAHR), the National Natural Science Foundation of China, the Chinese Society of Hydraulic Engineering, the China Society of Hydropower Engineering, the State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering, the National Engineering Research Center of Water Resources' Efficient Utilization, the Engineering Society, and the Jiangsu Society of Hydropower Engineering.

The theme of the congress **“Water and Humanity — Friendship, Harmony and Sustainable Development”** was discussed under six sub-themes. Two forums addressed the recent challenges and crises that Asia-pacific countries currently face. A total number of 410 delegates from 28 countries and regions participated in the conference. Six technical sessions were held in parallel and there were 23 invited lectures. 280 participants shared their research ideas and exchanged new results via oral presentations. A total number of 392 papers were printed in the conference proceedings, out of which 264 were from APD side and 128 from HS side.

Outline of the conference

During the Opening Ceremony, Professor Zhang Changkuan, Chairman of the LOC and President of Hohai University, gave a passionate speech to welcome the delegates and guests. Professor Nobuyuki Tamai, Chairman of the IAHR, Professor Vallam Sundar, Chairman of the APD-IAHR, and Professor Jorge Matos, Chairman of the IAHR-HS also addressed the gathering. This was followed by six keynote lectures. Three of the keynote lecturers were from the IAHR-APD side while three were from the IAHR-ISHS side, the details of which are provided below.

Key note lecturers

No.	Speaker	Nationality & Position	Title of the Keynote Lectures
1	Zhaoyin Wang	China, Professor, Tsinghua University	Avalanches and landslides triggered by the Wenchuan Earthquake and management strategies of quake lakes.
2	Vallam Sundar	India, Professor, IIT, Madras	Research on Tsunami Mitigation Strategies
3	Huib de Vriend	Netherlands, Professor, Delft University of Technology	Eco-Hydraulics in Estuaries and Coastal Areas
4	Lisheng Suo	China, former Deputy Minister of Water Resources, China	The Way of Water-Resources & Hydropower Development in China
5	Philip Burgi	USA, former Chairman of IAHR-HS Section	The Role of Hydraulic Structures in Meeting Future Water Challenges
6	Arturo Marcano	Venezuela, Chairman of Venezuela's Association of Hydraulic Engineering	Hydraulic Structures of 17.700 MW Lower Caroni Hydroelectric Complex- Developments, Incidents and Lessons

The Welcome Reception was held on the first day evening in the Parkview Dingshan Hotel. Delegates had an opportunity to meet, discuss and thus facilitated exchange of ideas. On the second day evening, a "Culture Show" was organized in Hohai Hall during which a team of students from Hohai University exhibited their talents. The technical visit to the Tiexinqiao Water Experiment Center of the Nanjing Hydraulic Research Institute and the ecological restoration project on the Qinhuaihe River were arranged for the afternoon of the third day. In the evening, two lectures entitled "How to write a good quality paper for a top international journal" and "Journal of Hydraulic Research – Everything the author needs to know!" were delivered later that evening by Professor Joseph Hun-wei Lee and Professor Mohammed Ghidaoui, respectively.

The afternoon visit around and to Hohai University Campus & Labs was one of the major activities on the final day of the conference. The Closing Ceremony was held in the Wentian Building. Professor Zhang Changkuan, Chairman of the LOC and President of Hohai University, summarized the Congress / Symposium. Prof. H Tanaka and Prof. Jorge Matos both delivered speeches of thanks. Dr. Gregory Shahane De Costa and Ms Guinever Nalder from New Zealand then introduced and invited delegates to the 18th APD-IAHR congress to be held in Auckland in Feb. 2010. Dr. Philip Burgi also briefly addressed the gathering and invited the delegates to participate in the 4th IAHR-ISHS symposium. A representative of the host of the 9th International Conference on Hydro-informatics, from the Tianjin University of China issued invitations to the delegates.

A Farewell Banquet was held in the Huadong Hotel in the evening on the last day. Awards Committee Chairman, Professor Joseph H W. Lee announced the winners for the "Best Paper Awards." The awards were presented by Professor Joseph H W. Lee and LOC

Chairman, Professor Changkuan Zhang, to the winners during the banquet.

YOU need to mention the details of the winners here

Technical Analysis

A. IAHR-APD Congress

1) “Water Resources and Hydrology” Session

The session was held in Room 113 of the Wentian Building. The presentations focused on: hydrology modeling and real-time flood forecasting; flood management, risk analysis and hazard evaluation; surface and groundwater hydrology, urban hydrology and drought and efficient utilization of water resources.

Four invited lectures were given by Prof. A. Das. Gupta from Thailand, Prof. Xingnan Zhang from Hohai University, Prof. Ming-hsi Hsu from National Taiwan University and Prof. Yangwen Jia from China Institute of Water Resources and Hydropower Research. These lectures included themes of “Optimization Techniques in Reservoir Operation and Application,” “The Distributed Xinanjiang Hydrological Model,” “Flood Forecasting Model with Real-time Feedback Routing Technique” and “Urban flooding and its Countermeasures.”

Other experts and scholars presented excellent results including “Distribution of system deviation in real time correction of hydraulic model,” and “Genetic programming to forecast stream flow.”

2) “Environmental and Ecological Hydraulics” Session

This session was held in Room 207 of the Wentian Building. The **discussions** focused on the following: environmental effects and management of water resources; flow, jet, plume and stratified flow, hydraulics and ecological hydraulics; contaminant transport modeling and water quality control; and ground water pollution. There were also three invited lectures: Prof. Ling Liu from Hohai University, Professor Il Won Seo from Korea and Prof. Lin Luo from China. The titles of their lectures were: “Research on pollution control of Taihu Lake,” “Non-point Source Pollution Study in Taihu Lake Basin,” “Determination of Transverse Dispersion Coefficient” and “Environmental Flows of Mountain Rivers.”

There were a total of 37 **authors from** Hong Kong, Japan, Korea and China who **discussed their research findings**. Participants reported on studies including the diffusing and mixing characteristics of **pollutants through experimental** methods and the appraisal of the

water quality by adopting numerical models was quite popular. The study on blue/green algae caused by the eutrophication has particularly received much attention recently. Some authors introduced new research results and control methods. In addition, a 3-D water environmental model for the dissolved oxygen for the estuary of Yangtze River was set up and introduced by presenters. Researchers paid careful attention to the study of environmental and ecological hydraulics. Encouragingly, Chinese authors, especially young researchers, were quite active in the fields concerning almost all aspects of environmental and ecological hydraulics with great development potential.

3) “Fluvial Processes and River Engineering” Session

The session was held in Room 104 of the Wentian Building. The presentations focused on the following: scour, sediment transportation, river dynamics and fluvial processes; flood control and defense and river rehabilitation; sediment problems in environment and ecology; and soil erosion and watershed management. Prof. Guangqian Wang from Tsinghua University gave an invited lecture on “Mechanisms and Simulation of Sediment Yield and Transport in the Middle Yellow River Basin.” Prof. Helmut Knoblauch from Austria provided ideas in his invited lecture entitled “Reservoir sedimentation and desilting methods in the Alpine region.”

Authors introduced their theoretical results concerning: the energy consumed by sediment for the suspension in flow, the evolutionary trend of Yangtze River after the construction of Three Gorges Project, influence of engineering structures such as spur dike on the flow field, movement of sediment particles on slopes, and research in combining the sediment with water quality and ecology. There is no doubt the numerical model, such as large eddy simulation of sediment movement and river evolution, have been widely applied.

4) “Estuarine and Coastal Hydraulics” Session

The session was held in Room 102 of the Wentian Building. The main themes centered around the following: numerical and physical modeling of coastal engineering; coastal sediment transport and morphology change; wave characteristics and wave-structure interaction; and coastal and estuarine environment. Prof. H. Tanaka from Japan, Prof. Jianhua Tao from Tianjin University of China, Prof. Wei Zhang from Hohai University of China and Prof. Pengzhi Lin from Sichuan University of China were all invited to give invited lectures. They shared their ideas and research on “Estuarine Hydrodynamics and Morphodynamics,” “The Numerical Platform of Water Wave Simulation,” “New Validation Concept on Numerical Modeling of Cohesive Sediment Transport,” and “Numerical Modeling of Three-dimensional Breaking Wave Interaction with Structures”.

About 50 participants from 10 countries (including Japan, Korea, India, Australia, Sri Lanka, Greece, UK, USA, Brazil, and China) presented /displayed their papers. Some new advanced concepts and methods were put forth in the research of wave, current, tide, shoreline change, coastal construction and layout optimization. Effective measures to alleviate the disasters of tsunami were also reported by the presenters. Different types of numerical models were widely used in the research of waves, scour around offshore pipelines, and coastal

environment and landscape ecology.

B. IAHR-ISHS Symposium

1) “Hydraulic Structures for Water Projects” Session

The topics were focused on new developments in design, construction, operation, monitoring and maintenance of hydraulic structures; numerical and physical modeling; risk and safety assessment; instrumentation and technology in laboratory experiments and field tests; and sustainable design of hydraulic structures. Three invited lectures were given by Prof. Stefano Pagliara and Prof. Corrado Gisonni from Italy and Prof. Y. Yasuda from Japan relating to block ramp, fishway and high-speed flows. About 30 presentations from delegates from Asia, Europe, Latin-America and Australia were given over the course of the four-day meeting. The topics of the lectures and presentations covered fish-way hydraulics, flow measurements, numerical modeling of water flows, and dam and other hydraulic facilities safety.

Generally speaking, the research interests in developed countries such as European countries and Japan were more focused on hydraulic problems associated with aqua-ecology and water project safety while the interests of those in developing countries, especially China, were on hydraulics associated with water conservancy and hydropower development.

2) “Hydropower Hydraulics” Session

Ideas including intakes and outlets, spillways, fish ways, energy-dissipators, two-phase flow, pipe flow, cavitation, vibration and aeration, hydraulic machinery and the environmental and ecological impact of hydraulic structures were exchanged and discussed.

Prof. Fulin Cai of Hohai University gave an invited lecture about flow characteristics of pumped storage intakes. There were a total of 27 authors who introduced their research results, half of whom coming from Portugal, Italy, Switzerland, Brazil and Japan. They presented on the application of quasi-2D water hammer model to complex pipe system, the dynamic pipe fracture in water pipeline, the length of 3-D hydraulic jump in joint energy dissipater, air transport caused by chute aerators and hydraulic characteristics of changing top-altitude tail tunnel. Some new ideas, such as a probe which can measure the flow velocity in an air water jet, were introduced.

C. Forum of Resettlement and Social Aspects

This forum was chaired by Professors Guoqing Shi and Shaojun Chen from Hohai University. Prof. Shi gave a key lecture on the definition of immigrant. He prospected about the development potential. Twelve authors presented their study results, some of whom were experts and professors in this research field while the majority of which were young students. About 80 audience members took part in the session.

The topics discussed included the following: regression analysis of the factors causing poverty; intervention analysis on the supportive policy in the late stage; capacity construction of the public participation; mechanism construction of public participation; economy integration of immigrant and the supportive policy in the late stage. These results covered macroscopic policy analysis, the mechanism creation of operation management and the microscopic direction policies. Also presented on were topics covering the appraisal of the resource value submerged by hydroelectric project, ecological immigrant taking Luntai County in Xinjiang, the appraisal of water consumption level in Zishui Valley, the construction of the water market for the East Route of the Water Transfer Project from South to North and the comprehensive appraisal of the exploitation in Salween River.

It can be seen from the papers issued in the seminar that the researchers have paid close attention to reservoir immigrant caused by the hydraulic construction. It is clear that social problems (economic, technical, and environmental) cannot be neglected when we are talking about engineering construction.

Special Seminar of the Impact of the Wenchuan Earthquake

The seminar was held in Room 202 of the Wentian Building on the morning of October 22, 2008. The seminar was chaired Prof. Tongchung Li and Prof. Lianxiang Wang.

Prof. Tongchung Li gave a lecture entitled “Impact of Wenchuan earthquake on dam engineering” and Mr. Yubing Shi, a first-hand witness to the earthquake from the Chengdu Institute of Survey, Design and Research, gave a lecture entitled “The analysis on the mechanism of forming dam Tangjiashan barrier.” Other 3 scholars from the Institute of Mountain Hazards, Chinese Academy of Science, and Sichuan University also give lectures on landslide, debris flow, barrier lakes and other geological disasters. The seminar drew a large crowd and generated strong interests in the participants and young students.

IAHR- APD Best Paper Award 2008

An award committee was formed before the congress. It was comprised of one Chairman and seven members from different countries and regions:

Chairman	Joseph H W Lee	Hong Kong, China
Members	P. Burgi	USA
	Stephenson David	Botswana
	Lin Luo	China
	H. Tanaka	Japan
	Bruce W. Melville	New Zealand
	K. Murali	India
	Lingling Wang	LOC

Following tradition, after screening by the LOC, 33 papers were initially selected for best paper award. In consideration of possibility of authors’ presenting their papers, 15 papers were short-listed for

the Award Committee, 7 from the host country (China Mainland, Hong Kong China and Taiwan China) and 8 from outside of the host country. Each paper was assigned by the Chairman to three members to review before the congress. The papers were also sent to other experts for additional comments. The committee members attended the oral presentations of the short-listed papers and gave marks in four areas: Scientific/engineering meaning, innovation of methods, English writing, and presentation. On the final day, committee members had a 2-hour meeting to decide two winners (one from the host country, one from outside the host country) and the selection was approved by APD-IAHR Executive Committee meeting.

The two winners of APD-IAHR Best Paper Awards in 16th APD-IAHR Congress are:

From host country, “A Three Dimensional Baroclinic Flow Numerical Model in Estuarine and Coastal Regions Using Double Sigma Coordinates System”, by J. F. Tao and C. K. Zhang

From outside the host country, “Influence of Near-bed Coherent Structures on the Entrainment of Bed Gravels”, by J. M. Ma and J. J. R. Williams,

The proceedings of the Congress / Symposium

By end of March 2008, 430 papers were submitted to the 16th IAHR-APD and 3rd IAHR-ISHS conference. Upon evaluation by 45 experts from the local technical review committee and outside of China, 392 papers were accepted into the proceedings, 264 from the APD side and 128 from the Hydraulic Structures side.

The set of proceedings consisted of six volumes. The papers of the IAHR-APD were compiled into volumes 1 to 4, while the papers of the IAHR-ISHS were compiled into volumes 5 and 6. Each volume subsequently contains four to five sub-themes. The forum of “Resettlement and Social Aspects” was added into volume 4. All of the papers were burned onto CD-ROMs as part of the proceedings.

Volumes of the Proceedings for the 16th IAHR-APD Congress and 3rd IAHR-ISHS

Vol. 1: Water Resources and Hydrology

Vol. 2: Environmental and Ecological Hydraulics

Vol. 3: Fluvial Processes and River Engineering

Vol. 4: Estuarine and Coastal Hydraulics, Resettlement and Social Aspects

Vol. 5: Hydraulic Structures for Water Projects

Vol. 6: Hydropower Hydraulics

Papers Distribution of 16th IAHR-APD & 3rd IAHR-ISHS (printed in the proceedings)

1	Country	Quantity of Paper	Region
2	Argentina	2	South America
3	Australia	5	Oceania
4	Belgium	2	Europe
5	Botswana	1	Africa
6	Brazil	8	South America
7	Chile	1	South America
8	China	223	Asia
9	Taiwan,China	1	Asia
10	Hong Kong, China	9	Asia
11	Germany	2	Europe
12	Greece	5	Europe
13	India	9	Asia
14	Iran	9	Asia
15	Iraq	1	Asia
16	Italy	4	Europe
17	Japan	58	Asia
18	Korea	24	Asia
19	Netherlands	4	Europe
20	New Zealand	3	Oceania
21	Portugal	5	Europe
22	Singapore	4	Asia
23	Spain	1	Europe
24	Sri Lanka	1	Asia
25	Switzerland	2	Europe
26	UK	6	Europe
27	USA	1	North America
28	Vietnam	1	Asia
	Total	392	