

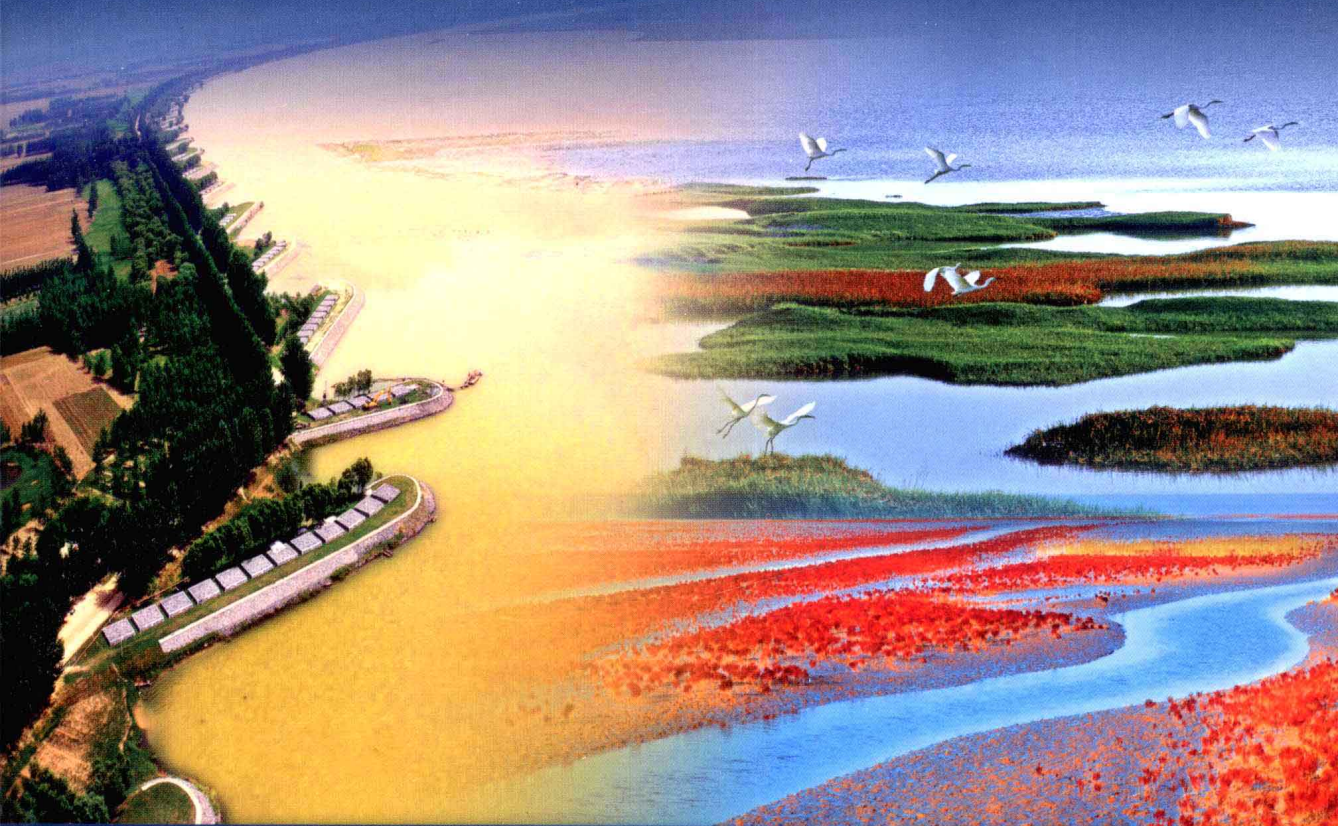
Proceedings

of the 4th International Yellow River Forum on Ecological Civilization and River Ethics

Volume IV



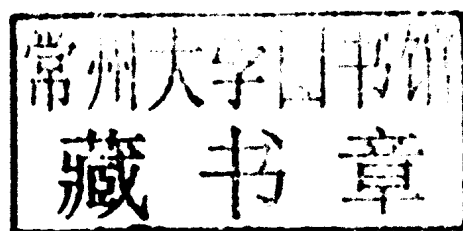
黄河国际论坛
2009 IYRF



Yellow River Conservancy Press

Proceedings
of the 4th International Yellow River Forum
on Ecological Civilization and River Ethics

Volume IV



Yellow River Conservancy Press

图书在版编目(CIP)数据

第四届黄河国际论坛论文集/尚宏琦,骆向新主编.
郑州:黄河水利出版社,2010.2
ISBN 978-7-80734-797-2

I. 第… II. ①尚…②骆… III. 黄河-河道
整治-国际学术会议-文集 IV. TV882.1-53

中国版本图书馆 CIP 数据核字(2010)第 027740 号

出版社:黄河水利出版社

地址:河南省郑州市顺河路黄河水利委员会综合楼 14 层

邮政编码:450003

发行单位:黄河水利出版社

发行部电话:0371-66026940,66020550,66028024,66022620(传真)

E-mail:hhslebs@126.com

承印单位:河南省瑞光印务股份有限公司

开本:787 mm × 1 092 mm 1/16

印张:139.00

印数:1—1 000

版次:2010 年 2 月第 1 版

印次:2010 年 2 月第 1 次印刷

定价(全五册):980.00 元(US\$180.00)

Sponsored & Hosted by

Yellow River Conservancy Commission (YRCC), Ministry of Water Resources, P.
R. China

Co – sponsored by

EU – China River Basin Management Program

WWF (World Wide Fund for Nature)

Australian Agency for International Development (AusAID)

International Network of Basin Organizations (INBO)

Global Water Partnership (GWP)

International Water Resources Association

Dongying Municipal Government of Shandong Province, P. R. China

Zhengzhou Municipal Government of Henan Province, P. R. China

International Economic Technical Cooperation and Exchange Centre, MWR (IET-
CEC, MWR)

Yellow River Research Association

Global Water Partnership, China Committee

Henan Multi – culture Media Co. Ltd.

North China University of Water Conservancy and Electric Power

China Institute of Water Resources and Hydropower Research (IWHR)

Nanjing Hydraulic Research Institute (NHRI)

Center for Hydro – informatics in River Basin (CHIRB)

Organizing

Honorary Chairman

Chen Lei, Minister of Ministry of Water Resources, P. R. China

Advisory Committee

Honorary Chairmen

Qian Zhengying, Former Vice Chairwoman of Consultant Committee of People's Republic of China; Academician of Chinese Academy of Engineering

Yang Zhenhuai, Former Minister of Ministry of Water Resources of China; President of Chinese Society of Water and Soil Conservation

Wang Shucheng, Former Minister of Ministry of Water Resources of China; Chairman of GWP China; Director General of Chinese National Committee on Large Dams

Chairman

Hu Siyi, Vice Minister of Ministry of Water Resources, P. R. China

Vice Chairmen

Zhu Erming, Former Chief Engineer of Ministry of Water Resources of China

Gao Anze, President of Chinese Hydraulic Engineering Society (CHES)

Xu Qianqing, Academician of Chinese Academy of Engineering

Dong Zheren, Vice Chairman of GWP China

Huang Ziqiang, Vice Chairman of Technical Committee of Yellow River Conservancy Commission (YRCC), MWR, China

Serge Abou, Ambassador of the Delegation of EU to China

Loic Fauchon, President of World Water Council, France

Laszlo Kothay, State Secretary of Water, Ministry of Environment and Water, Hungary

Bert Keijts, Director General, Directorate General for Public Works and Water Management of Ministry of Transport, Public Works and Water Management, the Netherlands

Georg Schwede, Director, WWF International (World Wide Fund for Nature)

Jia Jinsheng, President of International Commission on Large Dams

Members

Chen Houqun, Academician of Chinese Academy of Engineering

Chen Ying, President of China National Association for Ethical Studies

Christopher George, Executive Director of International Association of Hydraulic Engineering and Research (IAHER), Spain

Des Walling, Professor of the University of Exeter, UK

Don Blackmore, Academician of Australian Academy of Science; Former Chief Executive of Murray – Darling Basin Authority (MDBA), Australia

Feng Guobin, Director of Henan Hydropower Engineering Society, Professor, China

Gaetan Paternostre, General Manager of National Company of Rhône River, France

Gong Shiyang, Former Commissioner of Yellow River Conservancy Commission, MWR, Professor, China

Jacky Cottet, Former President of Rhône River Agency, France; President of the European International Network for Basin Organizations (Euro – INBO)

Kang Guoxi, Director General of Gansu Provincial Water Resources Bureau

Khalid Mohtadullah, Senior Advisor of Global Water Partnership (GWP), Pakistan

Kuang Shangfu, Director General of Institute of Water Resources and Hydropower Research (IWHR), China

Liu Zhiguang, Deputy Director General of Department of International Cooperation, Science and Technology, MWR, China

Pan Junfeng, Director General of Shanxi Provincial Water Resources Bureau

Pao – Long Chang, President of Feng Chia University, Taipei, China

Pierre Roussel, Head of the French General Inspection for Environment; Presidency of the French Scientific and Technical Association of Environmental Engineering

Tan Cewu, Director General of Shaanxi Provincial Water Resources Bureau

Wang Cheng, President of Hohai University, China

Wu Hongxiang, Director General of Ningxia Autonomous Regional Water Resources Bureau

Wu Yiqun, Deputy Director General of Shandong Provincial Water Resources Bureau

Yan Dakao, Director General and Professor of North China University of Water Conservancy and Electric Power, China

Yu Congle, Director General of Qinghai Provincial Water Resources Bureau

Zhang Jianyun, Director General of Nanjing Hydraulic Research Institute, China

Zhu Chunquan, Head of Conservation Operations WWF Beijing Office

Organizing Committee

Honorary Chairman

E Jingping, Vice Minister of Ministry of Water Resources, China

Chairman

Li Guoying, Commissioner of Yellow River Conservancy Commission, MWR, China

Vice Chairmen

Gao Bo, Director General of Department of International Cooperation, Science and Technology, MWR, China

Wang Wenke, Director General of Bureau of Comprehensive Development, MWR, China

Xu Cheng, Vice Commissioner of Yellow River Conservancy Commission, MWR, China

Zhang Jianhua, Mayor of Dongying Municipal Government of Shandong Province, P. R. China

Yin Baohe, Director General of Xiaolangdi Multi – purpose Project Administrative Bureau, MWR, China

Ania Grobicki, Executive Secretary of GWP Secretariat, Sweden

Andras Szollosi – Nagy, Deputy Assistant Director General of UNESCO
Dermot O' Gorman, WWF China Representative
Kunhamboo Kannan, Director of Agriculture, Environment & Natural Resources Division, East and Central Asia Department, ADB

Members

Albert de Haas, First Secretary of the Royal Netherlands Embassy in China
An Xindai, Director General of Department of Water Resources Management and Regulation, YRCC
Bjorn Guterstam, Network Officer of GWP Secretariat, Sweden
Carol Chan, First Secretary of Australian Agency for International Development (AusAID)
Chen Yiyong, Deputy Director General of Xiaolangdi Multi – purpose Project Administrative Bureau, MWR, China
Chen Yinlu, Deputy Secretary General of Dongying Municipal Government of Shandong Province, China
Chen Yongzhi, General Manager of Yellow River Wanjiazhai Water Multi – Purpose Dam Project Ltd.
Guo Guoshun, Chairman of Labor Union, YRCC
G. H (Gordon) Huang, Professor of Canada Regina University, Canada
Hou Quanliang, Deputy Director General of Administration Office, YRCC
Joop L. G. de Schutter, Dean of Department of Water Engineering, UNESCO – IHE, the Netherlands
Li Jingzong, Director General of Office of Chief Engineer, YRCC
Li Ming, Professor of National Natural Science Foundation of China
Liu Xiaoyan, Deputy Chief Engineer, YRCC
Luo Xiangxin, Director General of Press & Publication Center, YRCC
Lv Xueping, Deputy Mayor of Dongying Municipal Government of Shandong Province, P. R. China
Ma Chaode, Director of Freshwater Programme, WWF China
Ren Songchang, Deputy Director General of Department of International Cooperation Science and Technology, YRCC
Sun Mingquan, Professor of North China University of Water Conservancy and Electric Power, China
Theo Henckens, TAT TL EU – China RBMP
Tan Guangming, Dean and Professor of College of Water Resources and Hydropower, Wuhan University, China
Wang Guangqian, Professor of Tsinghua University, China
Wang Jianzhong, Director General of Department of Water Policy, YRCC
Wang Zhenyu, Director General of Office of Flood Control, YRCC
Wang Xiaogang, Deputy Director General of Institute of Water Resources and Hydropower Research (IWHR), China
Wang Pujun, Secretary – General of New Zealand Young Chinese Entrepreneurs Association
Wang Xijun, Director General of Department of Water and Soil Conservation, YRCC
Wang Zhongjing, Professor of Tsinghua University, China

Wouter T. Lincklaen Arriens, Lead Water Resources Specialist of Asian Development Bank (ADB)

Wu Baosheng, Professor of Tsinghua University, China

Xia Minghai, Director General of Department of Financial Affairs, YRCC

Xu Zongxue, Leading Professor and Deputy Dean, College of Water Sciences, Beijing Normal University, China

Yao Zijiang, Director General of Administration Office, YRCC

Yu Xingjun, Director General of International Economic Technical Cooperation and Exchange Centre, MWR, China

Zhang Baishan, Director General of Department of Construction and Management, YRCC

Zhang Junfeng, Director General of Department of Plan and Programming, YRCC

Zhang Yongqian, Professor of Academy of Chinese Economics Limited, China

Zhao Guoxun, Director General of Department of Personnel, Labour and Education, YRCC

Zheng Rugang, Secretary General of Global Water Partnership, China Committee

Secretary General

Shang Hongqi, Director General of Department of International Cooperation Science and Technology, YRCC

Technical Committee

Chairman

Xue Songgui, Chief Engineer of YRCC

Members

Anders Berntell, Executive Director of Stockholm International Water Institute (SIWI), Secretary General of Stockholm World Water Week, Sweden

Arthur E. Mynett, Director of Strategic Research & Development Department of Deltares, the Netherlands

Bart Schultz, Director of Planning Institute, Directorate General for Public Works and Water Management, Utrecht, Professor of IHE, the Netherlands

Cai Shouqiu, Professor of Law School, Wuhan University, China

Chen Jiyu, Academician of Chinese Academy of Sciences (CAS), Professor of Institute of Estuary and Seacoast Research, East China Normal University

Chen Xiaoguo, Chairman of Technical Committee, YRCC, MWR

Chen Xiaoqiu, Deputy Director of College of Urban and Environmental Sciences, Peking University, China

Chen Zhikai, Academician of Chinese Academy of Engineering, Professor of IWHR

Cheng Xiaotao, Director and Professor of IWHR, China

Chih Ted Yang, Director of Hydrosience and Training Center, Colorado State University, USA

Chin – Lien Yen, Professor of Taiwan University, Taipei, China

David Molden, Deputy Director of International Water Management Institute, Sri Lanka

- Ding Aizhong*, Director and Professor of College of Water Sciences, Beijing Normal University, China
- Ding Dewen*, Academician of Chinese Academy of Sciences (CAS), the First Institute of Oceanography, State Oceanic Administration, China
- Dong - Ryul Lee*, Senior Research Fellow of Korea Institute of Construction Technology
- Dou Xiping*, Chief Engineer of Nanjing Hydraulic Research Institute, China
- Edwin Ongley*, Former Director of National Water Research Institute, Environment Canada, International Consultant
- Eelco Van Beek*, Professor of Deltares, the Netherlands
- Gao Jun*, Academician of Chinese Academy of Sciences (CAS)
- Gao Zhanyi*, Director and Professor of Institute of Water Resources and Hydropower Research (IWHR), China
- Ge Jianxiong*, Professor of Fudan University, China
- Hongyuan Lee*, Professor of Taiwan University, Taipei, China
- Hu Angang*, Senior Advisor of State Council, Professor of Tsinghua University, China
- Hu Chunhong*, Deputy Director General of Institute of Water Resources and Hydropower Research (IWHR), China
- Hu Dunxin*, Academician of Chinese Academy of Sciences (CAS), Professor of Institute of Marine Research, Chinese Academy of Sciences (CAS)
- Hua Zulin*, Deputy Director and Professor of College of Environmental Science and Engineering, Hohai University, China
- Huib J. de Vriend*, President of Deltares, the Netherlands
- James Nickum*, Chair of Publication Committee of IWRA, Professor of Tokyo Jogakkan College
- Jean - Francois Donzier*, Secretary General of International Network of Basin Organizations
- John Langford*, Professor of the University of Melbourne, Australia
- Ji Changming*, Director of Graduate - student Institute of North China Electric Power University
- Ji Chunlou*, Deputy Director General of Chongqing Municipal Water Resources Bureau
- Jia Shaofeng*, Deputy Director of Center for Water Resources Research, Chinese Academy of Sciences
- Jinn - Chuang Yang*, Professor of Chiao Tung University, Taipei, China
- Joseph H. W. Lee*, Professor of the Hong Kong University
- Kuniyoshi Takeuchi*, Professor of Yamanashi University, Japan; Director of International Center for Water Hazard and Risk Management (IC-HARM) under the auspices of UNESCO
- Lars Bengtsson*, Director of Department of Building and Environmental Technology, Lund University, Sweden
- Laszlo Iritz*, Executive Director of LaCo Konsult HB, Sweden
- Lee Yee Cheong*, Academician Dato' Ir; President Elect WFEO, Malaysia
- Lei Tingwu*, Professor of Northwest China Institute of Soil and Water Conservation Research, CAS
- Linus T. Zhang*, Professor of Department Water Resources Engineering, Lund University, Sweden
- Li Jiayang*, Deputy Director General & Academician of China Academy of Science

(CAS)

- Li Lifeng*, Director of Freshwater, WWF International
Li Wanhong, Professor of National Natural Science Foundation of China
Li Wenxue, President of Yellow River Engineering Consulting Co., Ltd
Li Yitian, Professor of College of Water Resources and Hydropower, Wuhan University, China
Li Zhuofen, Vice President of the University of Hong Kong; Academician of China Academy of Engineering; Academician of Canada Academy of Engineering; Director of Hong Kong Academy of Engineering and Science
Lin Binwen, Professor of the Yellow River Conservancy Commission
Liu Bin, Deputy Director General of Gansu Provincial Water Resources Bureau
Liu Changming, Academician of Chinese Academy of Sciences (CAS); Dean of College of Water Sciences, Beijing Normal University, China
Liu Guobin, Deputy Director of Institute of Soil and Water Conservation (ISWC), Chinese Academy of Sciences and Ministry of Water Resources
Liu Ling, Professor of Hohai University, China
Lu Jinyou, Deputy Director General and Professor of Yangtze River Scientific Research Institute, China
Lu Hongqi, Professor of Wuhan University, China
Lu Yongjun, Deputy Director of River and Harbor Department, Nanjing Hydraulic Research Institute, China
Lu Youmei, Academician of Chinese Academy of Engineering (CAE)
Lv Aizhong, Professor of North China Electric Power University
Ma Jiming, Professor of Tsinghua University, China
Mao Zhi, Academician of Chinese Academy of Engineering (CAE), Wuhan University, China
Mathias J. M. Romkens, Director of National Sedimentation Laboratory, Department of Agriculture, USA
Mohamed Nor bin Mohamed Desa, Director of Malaysia UNESCO Regional Humid Tropic Hydrology Center (HTC), Malaysia
Ni Guangheng, Professor of Tsinghua University, China
Ni Jinren, Professor of Peking University, China
Paul van Meel, Senior advisor of DHV, the Netherlands
Peng Jing, Professor of Institute of Water Resources and Hydropower Research, China
Peter A. Michel, Head of Water Protection and Fisheries Division, Switzerland
Peter Rogers, Professor of Harvard University, USA
Pieter Janssen, Department Head Flood Defence, Head Delegation, Ministry of Transport, Public Works and Water Management, the Netherlands
Ren Liliang, Dean of Water Resources and Hydropower Engineering College, Hohai University
Ruan Benqing, Director and Professor of Institute of Water Resources and Hydropower Research (IWHR), China
Shao Dongguo, Professor of College of Water Resources and Hydropower, Wuhan University, China
Shi Changxing, Professor of Institute of Geographic Sciences and Natural Resources

Research, Chinese Academy of Sciences

Sun Honglie, Academician of Chinese Academy of Sciences (CAS)

Sun Ping'an, Chief Engineer of Shaanxi Provincial Water Resources Bureau

Tian Zhen, Director General of Inner Mongolia Water Resources and Hydropower Engineering Reconnaissance and Design Institute

Volkhard Wetzel, Director of Federal Institute of Hydrology (BFG), Germany

Wang Bingchen, Senior Advisor of State Council, Professor of Tsinghua University, China

Wang Hao, Academician of Chinese Academy of Engineering, Director of Water Resources Research Department of IWHR

Wang Jiayao, Academician of Chinese Academy of Engineering, Professor of Science and Information Engineering University, China

Wang Jiyang, Academician of Chinese Academy of Sciences (CAS)

Wang Xianzhang, Chief Engineer of Henan Provincial Water Resources Bureau

Wang Zhaoyin, Professor of Tsinghua University, China

Wu Bingfang, Professor of Institute of Remote Sensing Applications, Chinese Academy of Sciences

Wu Zening, Deputy Director of College of Water Resources and Environmental, Zhengzhou University, China

Xia Jun, Professor of Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences; Vice Chairman of IAHS and IWRA

Xie Yongsheng, Professor of Institute of Soil and Water Conservation (ISWC), Chinese Academy of Sciences and Ministry of Water Resources

Xu Jianxin, Deputy Director General and Professor of North China University of Water Conservancy and Electric Power, China

Xue Saiguang, Chief Engineer of Ningxia Autonomous Regional Water Resources Bureau

Y. Cheng, Senior Adviser of Sinotech Foundation for Research & Development of Engineering Sciences & Technologies, Taipei, China

Yang Dawen, Professor of Tsinghua University, China

Yang Xiaoliu, Professor of Peking University, China

Yin - Sung Hsu, Assistant Professor of Feng Chia University, Taipei, China

Yu Jingjie, Professor of Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences

Zeng Guangming, Director of College of Environmental Science & Engineering, Hunan University, China

Zhang Hongwu, Professor of Tsinghua University, China; Deputy Chief Engineer of YRCC

Zhang Ren, Professor of Tsinghua University, China

Zhang Renduo, Professor of School of Environmental Science and Engineering, Sun Yat - Sen University, China

Zhou Huaidong, Director and Professor of Institute of Water Resources and Hydropower Research (IWHR), China

Zhou Jianjun, Professor of Tsinghua University, China

Zhu Qingping, General Manager of China Water International Engineering Consulting Co. Ltd., MWR, China

Editing Committee of Technical Paper Abstracts of the 4th International Yellow River Forum on Ecological Civilization and River Ethics

Director: Li Guoying

Vice directors: Xu Cheng, Guo Guoshun, Xue Songgui

Members: Liu Xiaoyan, Zhang Junfeng, Xia Minghai, Hou Quanlian,
Shang Hongqi, Luo Xiangxin, Chen Lvping

General Editor: Shang Hongqi, Luo Xiangxin

Deputy Editors: Ren Songchang, Ma Xiao, Sun Feng

Members of Editors
(Translators): Yu Guoqing, Yu Songlin, Yu Haihong, Ma Hui, Ma
Guangzhou, Ma Lina, Ma Zhengwei, Wang Ping, Wang
Feng, Wang Qi, Wang Changmei, Wang Bingxuan,
Wang Zhongmei, Wang Chunhua, Wang Xingong, Wang
Jinzhou, Tong Yifeng, Tian Kai, Liu Wei, Liu Yun, Liu
Tian, Liu Heyong, Liu Jifeng, Liu Zhigang, Liu Bin, Lv
Xiuhuan, Sun Yangbo, Sun Yuankuo, Jiang Zhen, Xing
Hua, Wu Hongxia, He Xiaoyong, Song Shixia, Song
Ruipeng, Zhang Jing, Zhang Lihe, Zhang Zhaoming,
Zhang Junxian, Zhang Huaxing, Zhang Dianmao, Zhang
Jianzhong, Zhang Houyu, Zhang Meili, Zhang Xiaohua,
Zhang Cuiping, Li Shuxia, Li Yongqiang, Li Liyang, Li
Hongwei, Li Fangdong, Li Xingjin, Li Gaolun, Li
Shengyang, Li Shuzhen, Li Yuehui, Yang Yisong, Yang
Libin, Yang Zhichao, Yang Jianshun, Yang Xue, Xiao
Peiqing, Qiu Shuhui, Shang Yuanhe, Pang Hui, Lin
Binwen, Fan Jie, Zheng Falu, Jin Shuangyan, Hou Qixiu,
Zhu Jie, Hu Yurong, He Xiuzheng, Zhao Yang,
Zhao Shougang, Zhao Baoyin, Zhao Yusen, Zhao Yinlian,
Ji Handa, Yuan Zhongqun, Guo Dan, Guo Yutao,
Guo Guangming, Tao Xin, Chang Xiaohui, Cao Yongtao,
Liang Biao, Huang Bo, Huang Yufang, Huang Jinhui,
Gong Zhen, Peng Shaoming, Jiao Ruifeng, Cheng
Peng, Tong Guoqing, Ge Zhonghong, Ge Gaoling, Dong
Wu, Jiang Xiaohui, Lu Qi, Cai Ninfeng, Fan Rong

Executive Editors: Yue Dejun, Tong Yifeng, Pei Hui, Zhang Huaxing, Ban
Peili, Xi Hongbing, Jing Zelong, Lan Yunxia, Chang
Hongxin, Wen Hongjian, Shi Hongwu, Gu Gang, Zhang
Baoxin

Executive Proofreaders: Yang Xiuying, Lan Wenxia, Liu Hongmei, Zhang Caixia

Cover Designer: Xie Ping

Executive Printing: Chang Hongxin, Wen Hongjian

Welcome

(preface)

On behalf of the Organizing Committee of the 4th International Yellow River Forum (IYRF) and the conference host, Yellow River Conservancy Commission (YRCC), I warmly welcome you from all over the world to Zhengzhou to attend the 4th IYRF.

Since 2003, we have hosted three IYRFs successfully in Zhengzhou and Dongying respectively, which have got high attentions and great supports from water field around the world. Through the communication platform provided by IYRFs, delegates have sufficiently carried on wide exchanges and discussions on their latest research achievements and shared experiences on river harnessing and basin management from different aspects. Therefore, the IYRFs have promoted the river basin management and scientific researches for keeping healthy lives of the rivers actively. All the scientific and technological literatures (proceedings of IYRF, etc.) published by IYRF, have been totally accepted for inclusion in the Conference Proceedings Citation Index (CPCI – S, formerly called ISTP) and can be used for reference to managers and researchers engaged in river basin management and scientific research on water conservancy all over the world.

The central theme of the 4th IYRF is ecological civilization and river ethics. Nine sub – themes have been convened as: (1) social and environmental impact of climate change; (2) climate change and sustainable water resources management; (3) cases of watershed rehabilitation; (4) scientific meanings of ecological civilization, pathway and key methodologies of river restoration; (5) ecological civilization, modern river basin management and restoration; (6) river ethics and healthy life of rivers; (7) application of experiences and new technologies of water resources management; (8) sediment management of high silt – laden rivers and reservoirs; and (9) water right transfer, water safety, water environment, water market and water saving. The Forum also arranges 10 special sessions hosted jointly by YRCC, governments of some countries and famous international organizations including WWF Session; Master Plan toward Integrated River Basin Management; International High – level Forum of River Basin Management; High – level Dialogue on Sino – EU River Basin Management; Sino – Australian Cooperation Project Session; Sino – Hungarian Water Resources Session; INBO Special Session; The 24th Sino – Japanese Water Resources Communication Meeting; UNESCO Special Session; GWP Yellow River Session; Water Allocation and Water Diversion Project in the Yellow River Basin, etc.

The Organizing Committee of the 4th IYRF has received more than 650 papers. Reviewed by the Technical Committee, the abstracts of 448 papers were finally collected into the Technical Paper Abstracts of the 4th IYRF, and 289 full papers were further selected into the Proceedings and published after the Forum, and will be applied for CPCI – S. Generally speaking, the content of the 4th IYRF is more

abundant with more multiform sessions. The Forum will omni – directionally show the latest achievements of domestic and oversea water science and river basin management, and represent the mainstream of current researches. Meanwhile, the Forum will also explore hot topics, cruxes, new viewpoints and achievements on river basin management and research, for instance, the presentation and discussion on river ethics, the scientific concept and origination of ecological civilization, the idea of harmonious relationship between mankind and nature, etc. All these experiences and suggestions will be considered as good strategy for research on ecological civilization and river ethics, and will actively influence the management of Yellow River and other river basins around the world in the future.

We appreciate the generous supports from the co – sponsors, including the People ' s Government of Henan Province, Dongying Municipal Government of Shandong Province, WWF (World Wildlife Fund), Australian Agency for International Development (AusAID), International Network of Basin Organizations (INBO), Global Water Partnership (GWP), Asian Development Bank (ADB), International Economic Technical Cooperation and Exchange Centre, MWR (IETCEC, MWR), Yellow River Research Association (YRRA), Global Water Partnership (GWP) China, Tsinghua University (TU), North China University of Water Conservancy and Electric Power (NCWU), China Institute of Water Resources and Hydropower Research (IWHR), Nanjing Hydraulic Research Institute (NHRI), Center for Hydro – informatics in River Basin (CHIRB), as well as other domestic and oversea governmental administrations and non – governmental organizations, etc.

We also would like to thank the members of the Advisory Committee, the Organizing Committee and the Technical Committee for their great supports and hard works, as well as all the experts and authors for their outstanding contributions to the 4th IYRF.

Finally, I would like to present my best wishes to the success of the 4th IYRF, and hope every participant will be in good health and have a pleasant stay in Zhengzhou!

Li Guoying

Chairman of the Organizing Committee, IYRF

Commissioner of Yellow River Conservancy Commission (YRCC), MWR, China
Zhengzhou, October 2009

Contents

G. Application of Experiences and New Technologies of Water Resources Management(II)

Research on the Monthly Precipitation and Runoff Forecasting for the Heihe River Basin	
Wang Chunqing, Zhang Yong and Yang Jinfang	(3)
On the Information and Functional Requirements of the Comprehensive Flood Control Meeting and Decision Support Software System	
Shengyang Li and Arthur E. Mynett	(11)
Integrated Modeling of Flood Forecasting and Multi – reservoir – based Operation in the Yellow River Basin, China	
Yiyuan Tang, Shengyang Li and Yunqing Xuan etc.	(18)
The Experience and Revelation of Australian Water Resources Management	
Wang Zhongmei, Wang Limei and Ma Tao	(26)
Modeling the Effects on the River Morphology of Lowering Groins in the Netherlands	
M. M. Busnelli, C. J. Sloff and A. Sieben	(33)
Application of Shielding and Converging Electric Field for Dikes Detection	
Li Wanyu, Li Changzheng and Qiao Huizhong	(41)
Development of a Cluster – analysis – based Distributed Hydrologic Modeling System	
Xiaosheng Qin, Guohe Huang and Li He	(46)
Hydrological Modeling Development and the Integration of GIS	
Pang Hui and Li Yuehui	(55)
Estimate Study on the Indirect Values of Wetland Ecosystem of Lake Hulun	
Hao Weigang, Bao Xiaoqing and Wei Yongfu etc.	(60)
Introduction to the Water Resources Management of the State of Kansas of the USA and its Inspirations to Water Resources Management of the Yellow River of China	
Xue Yunpeng, John C. Peck and Burke W. Griggs	(66)
Flood Forecast Project of Double Mutual Inflow Reservoir	
Yu Song, Xu Zongxue and Li Jinjing etc.	(76)
To Build Information Platform for the Yellow River IWRM	
Zhao Yang, Zhao Wei and Wang Hengbin	(84)
Application of Fuzzy Analytic Hierarchy Process (FAHP) in Environmental Evaluation of the Yellow River Water Conservancy Irrigation Project	
Yang Kaiyun, Bian Huixia and Kang Yingbin etc.	(90)
Initiative Security System in Digital Yellow River Project	
Dong Wu, Wu Dan and Huang Liang	(96)
Research on Approach of Uncertainty Analysis for Risk Assessment of Dam Overtopping	
Liu Yanli, Zhou Huicheng and Wang Guoqing	(101)
Study and Application on Real Time Dispatch and Management of City Water Resources	

Chai Fuxin and Xie Xinmin	(107)
Applied Research on Fuzzy Constraint Linear Programming for Carrying Capacity of Regional Water Resources Assessment System	
Cui Zhencai, Bai Yuhui and Hu Jinling etc.	(117)
Application of GMS Modeling for Evaluation on Shallow Groundwater Resources in the Plain Areas of Haihe River Basin	
Zhu Xinjun, Li Wei and Xue Lijuan etc.	(123)
Coupling System of Flood Forecasting / Regulation and Management to Flood Control Decision – making in the Lower Yellow River Basin	
Zhu Jie, Fan Jie and Cheng Yingchun	(130)
Effect of Lateral Inflow of Branch on the Characteristics of Flow and Pollutant of the Mainstream in Tidal River	
Liu Meibing, Chen Xingwei and Dong Zhiyong	(134)
Physical Modeling of Propagation Features of the 1998 Floods in the Jingjiang Reach of the Yangtze River	
Zhu Yonghui, Lu Jinyou and Yao Shiming etc.	(142)
Generalized Weng Cycle Model of Mid – long Term Prediction of Run – off in Stream	
Bai Tao, Huang Qiang and Wei Jing etc.	(151)
Comparison Research on SWAT Model and Xin' anjiang Model Applied in the Yiluo River Basin	
Zhen Tingting, Xu Zongxue and Cheng Lei etc.	(156)
A Framework Construction Study on Modern River Basin Water Resources Management System in China	
Zhang Dawei and Xu Hui	(166)
Delayed Response Model of Bankfull Discharge in Inner Mongolia Reach of the Yellow River	
Li Lingyun, Wu Baosheng and Hou Suzhen	(175)
Simulation of Groundwater Thermal Transport of GWHP System Sustainable Running	
Zhou Yanzhang	(182)
Storm Runoff Simulation in Xixi Watershed of the Jinjiang Basin Based on HEC – HMS Model	
Lin Feng and Chen Xingwei	(193)
Land Cover Classification from Remotely Sensed Imagery Using Computational Intelligence with Application to the Heihe River Basin	
Wang Chunqing, Zhang Yong and Yang Jinfang	(199)
Application of Multi – objective Grey Association Degree Decision Model in the Yellow River Basin Water Conservancy Project Investment	
Yang Kaiyun, Bian Huixia and Kang Yingbin etc.	(208)
Main – stream Feature Extraction of the Yellow River Based on Regional Spectral Un – mixing	
Zhang Yanning, Zhao Na and Liu Xuegong etc.	(212)
Impacts of TM6 Data on Soil Moisture Monitoring by Remote Sensing	
Zhang Zhitao, Kang Yinhong and Li Yuannong etc.	(220)

PGESH Model Research on Sustainable Carrying Capacity of Regional Water Resources	
Liu Huiqing and Liu Handong	(226)
Study on 2D Flow and Sediment Numerical Model under the Influence of Building Bridges in Fluid Mud Area	
Ou Jian, Ma Jinrong and Zhang Xingnan	(233)
The Global Optimization Package 1st Opt and its Application in Engineering Hydrology	
Cheng Xianyun, Long Wenfei and Liu Honglu etc.	(243)
Preliminary Discussion on the Content of Water Resources Meticulous Management of the Yellow River in Henan Reach	
Liu Tian, Song Jinglin and Gu Kuilin	(251)
Development and Application of the 2 - D Mathematic Model Visualized System Used in the Lower Yellow River Based on GIS	
Liang Guoting, Jiang Naiqian and Yu Xing etc.	(256)
Evaluation Model on Regional Water Shortage Risk Based on Support Vector Machine	
Han Yuping, Wang Fuqiang and Wang Ningjuan etc.	(261)
Research on the Security System in the YRCC E - government System	
Wang Jinzhou, Duan Yong and Yang Bin etc.	(267)
Study on Application of Quantile Cumulative Probability to Water Resources Diluting Regulation in the Yellow River	
Li Yuhong, Gao Hong and Li liyang etc.	(274)
The Embankment Safety Monitoring System Based on Resistivity Imaging Technology	
Wang Rui	(280)
Numerical Modeling of Waves and Current in the Bo Sea during the Typhoon of Matsa	
Wang Wanzhan, Dong Lijin and Ru Yuying etc.	(284)
The Conceptual Model of Predicting the Usage of the Current Yellow River Estuary Route and its Application	
Wang Kairong, Zhang Huaxing and Ru Yuying etc.	(291)
Upgrade Groundwater Management Level in the Yellow River Basin through Reinforcing Dynamic Monitoring	
Pan Qimin, Li Lantao and Li Zhongyou	(298)
Research on Parameter Identification for River Net Numerical Model Using Genetic Algorithm	
Xia Zaisen, Fu Zongfu and Xin Xiaokang	(303)
Elementary Study on Channel Morphology in Sanmenxia Reservoir	
Zhang Cuiping, Hu Tian and Yi Xiaoyan etc.	(310)
Impact of Water Diversion of Ningxia - Inner Mongolia Irrigation Area on the Mainstream Streamflow of the Yellow River	
Gao Wenrong, Luo Yuli and Zhang Huimin etc.	(315)
Study on the Water and Sediment Regulation of Moderate Flood in the Lower Yellow River	
Zhu Jie, Wei Xiangyang and Shi Yupin	(322)
Study on Management Mode of Flood Control Projects in Lower Yellow River—the Subject Study of ADB Loan Project for Yellow River Flood Control	
Zhang Jing and Li Yuehui	(330)