

**Format for Reports by UNESCO's Water-related Centres (category 1 and 2) on activities related to the IHP in the period July 2006 – May 2008**

**1. Basic information on the centre**

Name of the Centre		International Research and Training Center on Erosion and Sedimentation (IRTCES)
Name of Director		Kuang Shangfu
Name and title of contact person (for cooperation)		Hu Chunhong, Secretary General and Vice Director
E-mail		huch@iwhr.com
Address		20 Chegongzhuang West Road, Beijing 100044
Website		www.irtces.org
Location of centre		city/town Beijing____country _China_____
Geographic orientation *		<input checked="" type="checkbox"/> global <input type="checkbox"/> regional
Year of establishment		1984
Themes	Focal Areas	<input type="checkbox"/> groundwater <input type="checkbox"/> urban water <input type="checkbox"/> arid / semi-arid zones <input type="checkbox"/> humid tropics <input type="checkbox"/> droughts and floods <input checked="" type="checkbox"/> sediment transport and management <input checked="" type="checkbox"/> water and environment <input type="checkbox"/> ecohydrology <input type="checkbox"/> water law and policy <input type="checkbox"/> transboundary river basins/ aquifers <input type="checkbox"/> IWRM <input type="checkbox"/> global and climate change <input checked="" type="checkbox"/> mathematical modelling <input type="checkbox"/> social and cultural dimensions of water <input checked="" type="checkbox"/> water education <input type="checkbox"/> other: (please specify) _____
	Scope of Activities ♦	<input checked="" type="checkbox"/> vocational training <input type="checkbox"/> postgraduate education <input checked="" type="checkbox"/> continuing education <input checked="" type="checkbox"/> research <input type="checkbox"/> institutional capacity-building <input checked="" type="checkbox"/> advising/ consulting <input type="checkbox"/> software development <input type="checkbox"/> other: (please specify) _____
Support bodies <sup>1</sup>		Ministry of Water Resources, China
Hosting organization <sup>2</sup>		
Sources of financial support <sup>3</sup>		Ministry of Water Resources, UNESCO, IRTCES service rendered

\* check on appropriate box

<sup>1</sup> please specify bodies that cover the operational costs of the centre, and other essential costs such as salaries and utility bills, and that provide institutional support to ensure centre's sustainability

<sup>2</sup> if different from support bodies

<sup>3</sup> please specify sources of main budgetary and extrabudgetary funds to implement projects

Existing networks and cooperation <sup>4</sup>	<ul style="list-style-type: none"> <li>● World Association for Sedimentation and Erosion Research ( WASER )</li> <li>● Network of Regional Water Knowledge Hub in Asia-Pacific Region</li> <li>● Network of Asian River Basin Organization</li> <li>● International Association of Hydraulic Engineering and Research (IAHR)</li> <li>● IAHS</li> <li>● Universiti Teknologi Mara (UiTM), Malaysia</li> <li>● National Centre for Computational Hydroscience and Engineering of the University of Mississippi (NCCHE). USA</li> <li>● National Hydroelectric Power Corporation LTD. (NHPC), India</li> <li>● ICHARM, Japan</li> <li>● Elsevier</li> </ul>
Governance	<p>√ <input type="checkbox"/> director and governing board</p> <p>√ <input type="checkbox"/> other: (please specify) International Advisory Council</p> <p>Link to election of board members to the IHP IGC and hosting country IHP National Committee</p> <p>_____yes</p> <p>Frequency of meetings: once every _2_year(s)</p> <p>√ <input type="checkbox"/> Existence of UNESCO presence at meetings</p>
Institutional affiliation of director	Ministry of Water Resources, China
Number of staff and types of staff	total number of staff (full-time, or equivalent) : 15 number of staff who are water experts: 11 number of visiting scientists and postgraduate students: 3 ( 访问学者和学生 )
Annual turnover budget in USD	0.3 million USD

**2. Activities undertaken in the framework of IHP in the period July 2006 – May 2008 I**

- 2.1 Educational activities (i.e., those with accreditation) that directly contributed to the IHP-VI and WWAP  
*Please include here those activities which led to accreditation of degrees, or those held in formal school settings.*  
N/A
- 2.2 Research activities that directly contributed to the IHP-VI and activities by WWAP  
*Please include research/applied projects outputs such as publications that directly contributed to the IHP-VI and WWAP objectives*

<sup>4</sup> please write international networks, consortiums or projects that the centre is part of, or any other close links that the centre has with international organizations or programmes, which are not already mentioned above

Under the framework of UNESCO-IHP International Sediment Initiative, IRTCES carried out four case studies in the period of 2006-2008. The purpose of the studies is to contribute the integrated river basin management under Eco-hydrology by increasing awareness of eco-hydrology approach and sedimentation and erosion issues, as well as to promote sustainable integrated water resources management and advice on policy development and implementation.

- Integrated Physical and Ecological Management of Rivers – with Particular Reference to the East River—Phase I & II (Case study) 2006-2007
- Case study of the Yellow River Sedimentation (2005-2006)
- Sediment Management and Wetland Conservation at Yellow River Mouth (case study) 2006
- Report of Changing in water and sediment loads of Rivers in China and Wrapping dams in China ( contribution to WWDR – 3 ) 2007
- Research project on Variation in Runoff and Sediment Load in the Pearl River Basin and Its Cause (case study) 2008

2.3 Training activities that directly contributed to the IHP-VI and WWAP objectives

- Flood Forecasting and preparedness at DPRK
- International Advanced Training Workshop on Reservoir Sedimentation
- National Advanced Training Workshop on Hydroproject Construction

### **3. Collaboration and linkages**

3.1 Participation in major international networks, programmes, partnerships with other UN or other International Agencies, media and professional bodies

- World Association for Sedimentation and Erosion Research ( WASER )
- UNESCO-IHP International Sediment Initiative ( ISI )
- Network of Regional Water Knowledge Hub in Asia-Pacific Region
- Network of Asian River Basin Organization ( NARBO )
- International Association of Hydraulic Engineering and Research (IAHR)
- IAHS
- Universiti Teknologi Mara (UiTM), Malaysia
- National Centre for Computational Hydroscience and Engineering of the University of Mississippi (NCCHE). USA
- National Hydroelectric Power Corporation LTD. (NHPC), India
- ICHARM, Japan
- Elsevier

- 3.2 Participation in meetings related to the IHP and UNESCO (e.g., the UNESCO General Conference, the UNESCO Executive Board, the IHP Intergovernmental Council and/or other meetings organized by IHP)
- Director Meeting of Asia-Pacific Category II Water-Related Centers UNESCO Bangkok Office on September 26-27, 2007
  - Meeting of the Directors of UNESCO's Water-related Centers Delft, 11-12 June 2007
  - The 17th session of the Intergovernmental Council of the International Hydrological Programme (IHP) , UNESCO Headquarters in Paris from 3 to 7 July 2006
  - 5th ISI Steering Committee Meeting, UNESCO-IHP-ISI, in Sudan, November 11, 2006
  - International Sediment Initiative Conference, UNESCO-IHP-ISI, Sudan on November 12-15, 2006
- 3.3 Collaboration and networking with other UNESCO category 1 or 2 institutes/ centres
- Regional Humid Tropics Hydrology and Water Resources Centre (HTC, Malaysia)
  - Regional Centre on Urban Water Management (RCUWM, Iran)
  - International Center on Qanats and Historic Hydraulic Structures (ICQHHS, Iran)
  - International Centre for Water Hazard and Risk Management (ICHARM, Japan)
- 3.3.1 cross-appointment of directors of the category 1 or 2 institutes or centres on the governing board  
Not yet
- 3.3.2 exchange of information on activities such as training/educational materials, and funding opportunities
- Exchange visit of directors between IRTCES and International Center for Hazard and Risk Management ( ICHARM ) (???)
  - Exchange of information on activities with International Center for Hazard and Risk Management ( ICHARM )
  - Training materials have been uploaded in IRTCES's websites for information exchanging.
- 3.3.3 exchange of staff, most notably professionals and students  
Not yet
- 3.3.4 implementation of joint activities, such as workshops, conferences, training programmes, joint projects, field visits, software and data sharing, knowledge exchange and publications
- 3.4 Relationships with the UNESCO field office whose jurisdiction covers the country of location
- IRTCES keeps closed cooperative relationship with UNESCO Office Beijing. Every year IRTCES has 2-3 or more projects contracted with UNESCO since its establishment. Beijing UNESCO office played a very important role in guiding and assisting IRTCES in the preparation of project proposal, activities implementation and evaluation. Especially, Beijing Office tried its best to promote collaboration between UNESCO field offices for training programs (training activities in 2005 and 2007). A good and regular communication has been built to exchange ideas and information and discuss some important events and special cases between both sides.
- 3.5 Relationship with the UNESCO National Commission and the IHP National Committee in the country of location

Chinese National Commission for UNESCO and Chinese National Committee for IHP provided lots of guidance to IRTCES in capacity building and development of IRTCES and also gave full supports to IRTCES activities.

- 3.6 Relationship with other UNESCO-related networks, such as UNESCO Clubs, ASPnet, and UNESCO chairs  
N/A

#### 4. Communication

- 4.1 Communication and knowledge dissemination activities undertaken in the framework of IHP

- UNESCO-IHP-ISI Workshop on Sediment Management in South and Southeast Asia in Asian Institute of Technology (AIT) from April 24 through 25, 2006
- MOU between IRTCES and NHPC ( National Hydroelectric Power Corporation LTD. India ) signed in Guangzhou, on November 28, 2006
- The Second International Conference on Estuaries & Coasts (ICEC-2006) in Guangzhou, China on November 28-30, 2006
- Second Sino-American Workshop on Advanced Computational Modeling in Hydrosience and Engineering, Nov.25-26,2006 Beijing
- Expert Meeting on Erosion and Sedimentation in Arid and Semi-Arid Regions, Kalar Abad Natural Resources Education Center in Chalous, Iran on April 15-19, 2007
- 10<sup>th</sup> International Symposium on River Sedimentation (10<sup>th</sup> ISRS) was successfully held in the M.V. Lomonosov Moscow State University, Moscow, Russia on August 1 to 4, 2007. with 237 participants from 30 countries and regions
- On invitation by Dr. Andras Szollosi-Nagy, Director of the Division of Water Sciences, UNESCO, IRTCES' representative attended the Regional Consultation Meeting of Candidate Water Knowledge Hubs held on 29-31 Oct. 2007 in Singapore
- Prof. Zhang Yanjing of IRTCES attended 3rd general meeting of the Network of Asian River Basin Organizations (NARBO) Indonesia, on February 22~24, 2008. She made a presentation on river basin sedimentation management in China and future strategies for river basin conservation
- IRTCES representative took part in the 2nd regional meeting for candidate water knowledge hubs on 2-4 April 2008 at the Singapore WaterHub
- MOU between IRTCES and Universiti Teknologi Mara (UiTM), Malaysia signed in Beijing, March 24, 2008 for promotion of scientific study, information communication and technical cooperation
- Third Sino-American Workshop on Advanced Computational Modeling in Hydrosience and Engineering, May 12-16,Hawaii, USA
- International Workshop on Erosion, Transport and Sedimentation, 28-30 May 2008, Switzerland, Prof. Hu Chunhong and Dr. Liu Cheng made a keynote presentation: Changes in water and sediment loads of rivers in China
- 5th ISI Steering Committee Meeting, UNESCO-IHP-ISI, in Sudan, November 11, 2006
- International Sediment Initiative Conference, UNESCO-IHP-ISI, Sudan on November 12-15, 2006. Presentations made by Prof. Zhaoyin Wang and Dr. Cheng LIU

- 4.2 Policy documents and advice

## 5. Update on Centre Operations

### 5.1 Membership of the Board of Governors during designated period

#### Board of Governors:

IRTCES is administrated by a Board of Directors, which is appointed by the Ministry of Water Resources, P. R. of China. The Secretary General presides over the routine work of IRTCES. The Board consist one director and two vice directors.

#### IRTCES' Advisory Council:

During designated period (2006-2010) 13 members including one representative of the Chinese Government, one representative of the Director General of UNESCO, six members elected by the IHP Intergovernmental Council and five members selected by the Government in consultation with the Director-General of UNESCO.

### 5.2 Key decisions made (attach minutes of meetings)

First Advisory Council meeting will be held in November 2008.

## 6. Assessment of the Centre's Impacts

### 6.1 Science Impacts (Major contributions to the science, technology, education, and regional and/or international cooperation in the field of water)

- Contribution to sediment science development

All activities conducted by IRTCES not only focused on study of traditional sediment theories, such as sediment transport, fluvial processes and related topics, but also put great efforts into combination of traditional theories with engineering problems and solution of natural problems in erosion and sedimentation management of river basin. In recent years, IRTCES organized some research projects and important conferences and themed workshops for studying and discussing some key issues and advanced concepts on ecological environment, river system management, river channels training and environmental sedimentation, etc. These activities made a great impact on erosion and sedimentation research in the future. Since 1984, IRTCES is also in charge of the editing office for publication of International Journal of Sediment Research, which is quarterly journal covering all aspects of erosion and sedimentation problems. It got a good reputation in the world for promotion of sediment science development. The fact that the technical secretariat of ISI established in IRTCES provides an important opportunity for IRTCES to play the leading role in broadening networking with more scientists and institutions in the world to reach global sustainable management of erosion and sedimentation.

- Promotion of scientific exchange in erosion and sedimentation in the world

The International Symposium on River Sedimentation (ISRS) is one of the most important events for scientific exchange organized by IRTCES. ISRS is a triennial conference series initiated in 1980 by the Chinese Hydraulic Engineering Society and supported by UNESCO. Since that 10 symposia have been organized consecutively in Asia, America, Europe and Africa respectively with over 3000 scientists and experts participating in above symposia. Its general objective is to provide a regular opportunity for scientists, engineers, researchers, and decision-makers to exchange latest research results and advance concepts and techniques, as well as to share their information and experience in the related fields. To date, a large and stable group of scientists and engineers worldwide for sedimentation research are involved in this strongly supportive activity.

- Promotion of scientific research results exchange

Through the technical staff exchange visit and study tour, scientific research results in erosion and sedimentation research are introduced between China and other countries. Chinese scientists gained rich theoretical and practical experiences for long period in erosion and sedimentation research and management. Therefore, a number of Chinese experts were invited to give consultations, advices and lectures to some countries suffering from severe erosion and sedimentation problems. In the same time, some advanced achievements obtained by scientists in the world were passed to Chinese scholars. In addition, bilateral cooperation exchange mechanism developed between IRTCES and some institutions. For example, a regular exchange of advanced computational modeling in hydrosience and engineering was held between IRTCES and National Center for Computational Hydrosience and Engineering of USA in order to promote the verification, validation, and standardization of computational models, especially using the prototype data in calibration and validation to assure the quality and reliability of computational models.

- Promotion of regional and international cooperation

The projects and activities carried out by IRTCES have contributed to cooperation among countries in the world. More than hundred Chinese experts were invited as consultants for river and reservoir sedimentation problems in Asia, Africa and South America. Technical exchange visits and special training activities were arranged between IRTCES and related institutions in Japan, Pakistan, Thailand, Nepal, India, Iran and Malaysia. Eight co-operation agreements have been signed with former Yugoslavia, Pakistan, Sudan, Iran, USA, India, Malaysia and the International Coordinating Committee on Reservoir Sedimentation. In 2004 World Association for Erosion and Sedimentation Research (WASER) was established in China for promotion international co-operation on the study and development of the science of erosion and sedimentation interpreted in its widest sense and foster the application and dissemination of knowledge through international contacts among scientists, engineers, organizations, institutions and governments. Since 2007, IRTCES as a candidate of water knowledge hub was invited in Network of Regional Water Knowledge Hub in Asia-Pacific Region with other 15 institution/center of excellence.

## 6.2 Knowledge Transfer Impacts (Major achievements in the dissemination of knowledge and technology transfer)

Knowledge and technology transfer is one of main functions and missions of IRTCES. Actually, IRTCES has been acting as water related knowledge hub for providing knowledge generation and sharing, best practice and valuable technical information on erosion and sedimentation. Over past twenty years, IRTCES reached major achievements contributed to knowledge and technology transfer as follows:

- Three regional training programs : “Regional Training Program on Erosion and Sedimentation for Asia” “Farmer Centered Agricultural Resources Management” and “Participatory Watershed Management Training in Asia”
- About 50 training courses at national, regional and international levels concerning river and reservoir sedimentation, soil and water conservation, watershed management, ecological and environmental protection, water resources management, flood control and disaster mitigation.
- More than thousand engineers, experts, scholars and managers participated in various training activities where they discussed their common issues and exchanged their knowledge and experience.

- Many volumes of lecture notes and proceedings have been published containing a wealth of knowledge, practical experience and theoretical information.

### 6.3 Policy Impacts (advice sought by government and other bodies and evidence of inputs into policy arena)

- Technical support to the Sedimentation Panel of the Three Gorges Project under State Council of China

The sediment problem is one of the key technical issues of the Three Gorges Project (TGP), which is a key backbone project for the flood control, navigation and water resources development of the Yangtze River. It directly affects the lifespan of the reservoir, the operation condition of power plants and shiplocks, as well as the extent of channel degradation and flood control situation downstream of the dam. IRTCES is responsible for Sedimentation Panel of the Three Gorges Project. Before and during construction of TGP a large number of research projects including physical and mathematical models on TGP sedimentation problems were organized. The research results and analysis reports were directly submitted to the State Council for decision making on Project operation and utilization.

- Gazette of River Sediment in China for Ministry of Water Resources  
Since 2002 IRTCES has been in charge of editing Gazette of River Sediment in China for collection and analysis of erosion and sedimentation data in main river systems in the country. It provided valuable observation data for governmental decision makers in considering river regulation, water resources management and investment.

## 7. Future activities that will contribute directly to IHP and/or to WWAP

### 7.1 Operational Plan (2008-2009) (attach operational plan for 2008-09 if available)

- ( 1 ) Fulfill responsibilities for serving several secretariats:
  - For ISI technical secretariat, IRTCES will continue to provide technical services to ISI activities including assisting in organization and arrangement of ISI Steering Committee meeting in November 2008 in Beijing, update of webpage and Sediment Information system, editing Newsletter and other necessary jobs;
  - For permanent secretariat of International Symposium on River Sedimentation (ISRS), IRTCES will sponsor the 11<sup>th</sup> ISRS in cooperation with Stellenbosch University (SA);
  - For WASER secretariat, IRTCES will assist WASER Council to keep good operation and develop network and related projects.
- ( 2 ) Networking:  
Preparation for initiating International Network on Erosion and Sedimentation (INES), such as formulation of vision, mission, operation principles, development of activities, capacity building, etc.
- ( 3 ) Meeting: Organizing first International Advisory Council meeting in November 2008 for advice and review of IRTCES activities.

- ( 4 ) Research: Develop and collaborate research projects including National Key Projects and case studies in cooperation with UNESCO, such as:

Case Study of Research project on Variation in Runoff and Sediment Load in the Pearl River Basin and Its Cause, 2008

- ( 5 ) Publications: Publish International Journal of Sediment Research and Gazette of River sediment in China

- ( 6 ) Training workshops

- National training workshop on river channel training and flood control, at Three Gorges Dam Site in 2008
- International advanced training workshop on integrated river basin management, Beijing , 2009

- ( 7 ) Preparation of Conference:

Sponsor the Third International Conference on Estuaries & Coasts in 2009 in Japan organized by the Tohoku University Japan

7.2 Strategic Plan linked with IHP-VII (attach strategic plan for 2008-11 if available)

(1) Research

ISI Case studies

Research projects

National Key projects

(2) Training

Organize a national training workshop on river channel training and flood control, at Three Gorges Dam Site in 2008

Organize an International advanced training workshop on integrated river basin management, Beijing 2009

(3) Conference

Third International Conference on Estuaries & Coasts in 2009 in Japan

11<sup>th</sup> International Symposium on River Sedimentation; 2010 in South Africa

Fourth Sino-American Workshop on Advanced Computational Modeling in Hydroscience and Engineering, 2010

( 4 ) Publication

International Journal of sediment research,  
Technical reports and

Gazette of River Sedimentation in China

Conference proceedings and lecture notes

Journal and conference papers

(4) Networking

Initiate International Networks on Erosion and Sedimentation

Promote WASER activities and capacity building in networking

Develop Sediment Information System and Database for erosion and sedimentation in rivers

Collaboration and networking with other UNESCO's water related centers (Category I and II), such as exchange visit and staff and students exchange

Collaboration with all hubs in Network of Regional Water Knowledge Hub in Asia-Pacific Region, such as exchange visit and mutual supportive of activities

## 8. Annexes

8.1 List of publications released by the centre (there can be overlap with those listed in 2.2 above)

1. Case Study Report of Integrated Physical and Ecological Management of Rivers – with Particular Reference to the East River 2006-2007
2. Case Study Report of Sediment Management and Wetland Conservation at Yellow River Mouth 2006
3. Case Study Report on Variation in Runoff and Sediment Load in the Pearl River Basin and Its Cause 2008
4. International Journal of Sediment Research
5. Proceedings of The Second International Conference on Estuaries & Coasts (ICEC-2006) November 28-30, 2006
6. Proceedings of Second Sino-American Workshop on Advanced Computational Modeling in Hydroscience and Engineering, Nov. 2006
7. Proceedings of 10<sup>th</sup> International Symposium on River Sedimentation (10<sup>th</sup> ISRS) , 2007
8. Proceedings of Third Sino-American Workshop on Advanced Computational Modeling in Hydroscience and Engineering, May 2008
9. Lecture notes of International Advanced Training Workshop on Reservoir Sedimentation, October, 2007
10. Lecture Notes of National Advanced Training Workshop on Hydroproject Construction, in Chinese November 2, 2007
11. Gazette of River Sediment in China 2005, in Chinese
12. Gazette of River Sediment in China 2006, in Chinese
13. A great number of research papers edited by IRTCES experts to be published in related Journals and proceedings

8.2 List of training courses conducted (there can be overlap with those listed in 2.3 above)

1. Training course of Flood Forecasting and preparedness at DPRK, June 12-16, 2006
2. International Advanced Training Workshop on Reservoir Sedimentation, Beijing, October 10-16, 2007
3. National Advanced Training Workshop on Hydroproject Construction, Hangzhou, October 21- November 2, 2007