

International Workshop of Innovative Monitoring and Prediction of Non-point Sources Pollution and Water Quality in TGR

13 -17 August 2013

Beibei, Chongqing China

Conference manual



Organized by
College of Resources & Environment, Southwest
University, China

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OCRIF and CCTW Workshop II

Beibei, Chongqing China

August 13 -17, 2013

TENTATIVE AGENDA

Tuesday, Aug. 13

9:00 The China-Canada TGR Water Science Centre Opening Ceremony

- Address by a leader of Southwest University, China
- Address by a leader of University of Windsor, Canada
- Address by a leader of Chongqing S&T Commission, China
- Address by Wei Zhou, deputy director of The State Council Three Gorges Project Construction Committee, P.R. China
- Unveiling ceremony of China-Canada TGR Water Science Center
- Group Picture

10:30 Coffee

10:50 OCRIF Update and Foreseeing CCTW (Drs. Xie and Haffner)

11:30 Goals of the Workshop (L. Zhang)

12:00 Lunch

13:30-15:45 Session 1 Three Gorges Main Channel and Tributaries Studies (Dr. Bill Taylor)

13:30 1. Three Gorges ecological environment Presentation Section- Dr. Wei Zhou, The deputy director of The State Council Three Gorges Project Construction Committee, P.R. China

14:40 2. Water Quality Monitoring in the Main Channel and Tributaries of TGR –Senior engineer Shuisong Gao, Director of cellular biology lab in Yangtze Valley Water Environment Monitoring Centre, China

15:20 3. Modeling nutrients and water quality in large dam reservoirs, with emphasis on the Three Gorges Reservoir - Dr. Philippe Van Cappellen, Canada Excellence Research Chair, University of Waterloo

15:45 Coffee

16:15-18:00 Session 2 Tributaries and Non-point Pollution of TGR Presentation Section(Dr. Qiuwen Chen)

16:15 4. Modeling Eutrophication in the TGR -Dr. Yuchun Wang, from IWHR (Department of Water Environment Research, China Institute of Water Resources and Hydropower Research) in Beijing

- 16:45 5. Long term monitoring on the Pengxi River- Mr. Huang, Deputy Leader of Environment Protection Bureau of Yunyang County
- 17:15 6. Crop production of large agricultural integrated hydrological dynamics model of water pollution- Dr. Kefeng Zhang, College of Ningbo, Zhejiang University, University of Warwick,UK
- 17:45 7.Final Discussions about First Day and Adjournment (Dr. Doug Haffner)

Wednesday Aug. 14

9:00-12:00 The development of China-Canada international science and technology cooperation project “Innovative Monitoring and Prediction of Non-point Sources Pollution and Water Quality in the Three Gorges Reservoir Catchment”.

Session 3 The development of Non-point Pollution Presentation Section (Dr. Kefeng Zhang)

- 9:00 8.Study Designs for OCRIF -Dr. L. Zhang, College of Resources & Environment, Southwest University
- 9:15 9. Three Gorges Non-point pollution research progress- Dr. Deti Xie (or Jiupai Ni), College of Resources & Environment, Southwest University
- 9:45 10. Terrestrial study update in Fuling watershed -Dr. Chin Sheng Tan/ Tiequan Zhang, Agriculture and Agri-Food Canada
- 10:15 11. The application of 4 dagro farmland nutrient migration model in the Three Gorges Reservoir Catchment- Robin Johnston, Bryan McConchie, Ritchie Feed & Seed.Ltd, Canada
- 10:40 Coffee

Session 4 Three Gorges Water Quality Monitoring Presentation Section (Dr. Jim McGeer)

- 11:05 12. Based on the inspection data from Yangtze river three gorges water conservancy committee, Studing on Algal Composition and Abundance in the TGR-Mr. Zhiqiang Xia in Lei Zhang's lab
- 11:30 13. Nutrition and algal bloom outbreak mechanism studies in Pengxi river Gaoyangpin lake- SWU carried out by Lei Zhang's lab, Yu and Fu
- 12:00 Lunch

13:30 Session 5 Discussion about the second year's (2013.9 -2014.9) studying plan and schedule for China-Canada international cooperation project

- 13:30 14. Dr.Qianming Lv,The director and chief engineer in hongkong and Taiwan regions,DHI China
- 14:10 Group discussion
- Group one Three Gorges Non-point pollution monitoring and emission reduction studies (Dr.Tiequan Zhang and Jiupai Ni)
- Group two Three Gorges integration of land - water studies (Dr. Ken Drouillard and Yuchun Wang)
- Group three Monitoring and Prediction of Non-point Sources Pollution and

Water Quality in the Three Gorges Reservoir Catchment studies. (Dr. Philippe Van Cappellen and Kefeng Zhang)

15:45 Coffee

16:10 Session 6 Plan and design of CCTW (with the same group)

Group one Three Gorges Non-point pollution monitoring and emission reduction studies (Dr. Chin Sheng Tan and Jiupai Ni)

Group two Three Gorges integration of land - water studies (Dr. Ken Drouillard and Xiaoling Lei)

Group three Monitoring and Prediction of Non-point Sources Pollution and Water Quality in the Three Gorges Reservoir Catchment studies. (Dr. Philippe Van Cappellen and Kefeng Zhang)

17:10 Session 7 Researching programs in 2013.9- 2014.9 and the vision of CCTW group summary (Dr. Douglas Haffner)

17:50 Adjournment

Thursday Aug. 15

- Tour of terrestrial members to the NPS Research Sites in Fuling then have a lunch
- Tour of the Department of Water Environment Research, China Institute of Water Resources and Hydropower Research in fengjie
- Hotel in Tiangkengdifeng at night

Friday Aug. 16

Tour of Tiangkengdifeng in the morning

Have a lunch in Fengjie, then go back to Beibei Chongqing, Hotel in Haiyu

Saturday Aug. 17

9:00-10:30 Summary of the investigation and supplement the following year's plans and schedules (Dr. Deti Xie)

10:30 Adjournment

Introduction to relevant units

University of Windsor & Great Lakes Institute for Environmental Research (GLIER) , Canada

The University of Windsor developed from Assumption College and became an accredited comprehensive university in the early 1960s. Originally run by the Basillian Fathers, the University quickly diversified into a broad range of programs, and established a strong reputation in business management, international law and dramatic arts. More recently, the University of Windsor developed three pinnacles of research, automotive, social justice and environment. Currently the university is home to 14000 undergraduate students and 3000 graduate students.

In 1980, Professor's Sanderson, Hebert and Haffner developed the Great Lakes Institute (GLI) with the aim of providing a focus on large lake issues and concerns, integrating research strengths across the University of Windsor. This model was modified in 1992 in order to establish central research expertise and facilities, resulting in the development of the Great Lakes Institute for Environmental Research (GLIER). Today, GLIER is housed in a 6000m² facility which supports high end environmental analytical laboratories, an environmental genomics facility and the Canadian Aquatic Invasive Species Network. The GLIER graduate program stresses interdisciplinary studies on physical/chemical processes in large lakes and the biological responses. This research is developed on a multiple stressor framework and in part implanted through the calibration and implementation of environmental tracer technologies.

University of Waterloo, Canada

In just half a century, the University of Waterloo, located at the heart of Canada's Technology Triangle, has become one of Canada's leading comprehensive universities with more than 30000 full-and part-time students in undergraduate and graduate programs.

For 19 years in a row, Waterloo has been named Canada's most innovative university in the Maclean's annual university rankings. This year Waterloo also topped the reputational categories of Most Innovative, most likely to produce the

Leaders of Tomorrow, and best Overall.

In the next decades, the university is committed to building a better future for Canada and the world by championing innovation and collaboration to create solutions relevant to the needs of today and tomorrow.

Waterloo, as home to the World's largest post-secondary co-operative education program, embraces its connections to the world and encourages enterprising partnerships in learning, research, and discovery.

Wilfrid Laurier University

Wilfrid Laurier University is a university located in Waterloo, Ontario, Canada. It also has campuses in Brantford, Ontario, Kitchener, Ontario and Toronto, Ontario and a future proposed campus in Milton, Ontario. It is named in honour of Sir Wilfrid Laurier, the seventh Prime Minister of Canada. Laurier offers a full range of undergraduate and graduate programs in a variety of fields. Laurier is one of the fastest-growing universities in Canada (enrollment more than doubled from 1997 to 2006). The main campus is located in Waterloo. The City of Waterloo is home to both Wilfrid Laurier University and the University of Waterloo.

Laurier offers a variety of different programs through its 6 faculties: Arts, Science, Education, Music, Social Work, and Laurier School of Business & Economics.

The University is home to 14,116 full-time and part-time undergraduate students, 781 full-time and part-time graduate students and over 500 in faculty and staff,[10] although comparatively small, the university has consistently ranked among Canada's top schools in its category, an honour which is regularly confirmed by Maclean's magazine's annual rankings. The 2008 Macleans rankings placed Laurier fifth overall (first in Ontario) of the 21 Canadian universities in the category of "Primarily Undergraduate" universities.

Harrow Research Station, Agriculture Agri-Food Canada

The Department of Agriculture and Agri-Food Canada was created in 1868 – one year after Canada became a country – due to the importance of farming to the nation's economic, social and cultural development.

They work with farmers and food producers to support the growth and development of the agriculture and agri-food sector. Our policies, programs, research

and technology help them succeed in Canadian and global markets. The activities of the Department range from the farmer to the consumer, from the farm to global markets, through all phases of producing, processing and marketing of farm, food and bio-based products. Agriculture is also a shared jurisdiction in Canada, and the Department works closely with provincial and territorial governments in the development and delivery of policies and programs.

The Department is also responsible for ensuring collaboration with its Portfolio Partners which are also involved in regulating and supporting Canadian agriculture.

A Brief Introduction to Southwest University

Southwest University (SWU) is a key comprehensive university, under the direct administration of the Ministry of Education. It was newly established in July 2005 through the incorporation of former Southwest China Normal University and Southwest Agricultural University upon the approval of the Ministry of Education. SWU is situated nearby the beautiful Jialing River, and is located at the foot of Jinyun Mountain, a state level scenic spot, in Beibei District, Chongqing Municipality.

Before being united, Southwest China Normal University and Southwest Agricultural University were neighbors with only a wall separating the two institutions. Both universities had a long historic relationship, which could be traced back to their common origin, i.e. East Sichuan Teachers College in 1906.

Southwest China Normal University and Southwest Agricultural University have already cultivated a variety of graduates, more than 200000 since their establishment. On the basis of long-term building and development, both universities formed their special characteristics in teachers' education and agricultural education respectively. The universities excel in a number of disciplines including pedagogy, psychology and agronomy. Among them, the silkworm genome research takes the lead in the world, and fundamental psychology and pedagogy have taken a national lead. Other great achievements include natural fallowing, silkworm gene bank, southwest ethnic education and psychology research, and human time cognition and so on. Hundreds of new technologies and achievements have brought with them outstanding social and economic benefits.

Southwest University has a variety of students numbering over 50000. Its scale and levels are ranked ahead of other higher education institutions in the western China. Till now, Southwest University has had close communication and cooperation in research and academic studies with international universities and/or institutes from more than 30 countries and/or regions, including the US, UK, France, Germany, Japan, Australia, Russia and Canada etc., and enjoys long term partnership with over 20 of these universities.

College of Resources and Environment

College of resources and environments in Southwest China University was established on the base of College of Resources and Environments combined with specialty of land management in School of Economics and Management, specialty of Water Resources Engineering in School of fish Production in Southwest Agricultural University and specialty of land management in School of geographical sciences in Southwest Normal University. College of Resources and Environments in Southwest Agricultural University came from the Department of Soil -Agrochemistry, which was founded in 1952,in College of Southwest Agricultural College. Soil science in the Department was firstly authorized to award doctorate culture unit in 1981 and renamed as college of Resources and Environments by the Agricultural Ministry of China in 1994.

There was only a 4-year specialty, Soil –Agrochemistry, in the Department of Soil -Agrochemistry at beginning. But 53 year later, there are now seven specialties for undergraduates to pursue for bachelor degrees,9 for master degrees and 5 for doctoral degrees in the college. Agricultural resources unitization that covers soil science and plant nutrition is doctoral specialty for graduate students to pursue. Soil science and plant nutrition are key specialties of Chongqing. We have also established a comprehensive research base and 4 research labs under the management of Agricultural Ministry of China.

The faculties in the college undertake more than 500 research projects such as "863"advanced sciences, National Science Fund of China and those financially supported by state, ministry, Province and local governments in recent years. The annual outlay for scientific research ranked first in Southwest China University in the past five years. Since 1990,more than 40 research achievements were awarded by state, ministry, province and municipality. There are about 30 monographs, including translations and national text books, and 1250 scientific papers written in Chinese or English published.11% of the papers were published in international publications or present in the international conferences. The faculties in the college also provide companies and governments with various technical service and advisories in recent years.

Our college has established academy and student exchanges with Britain, America, Japan, Germany, France, Canada, Sweden, Thailand and so forth. More than 100 scientists participated in co-operative research activities in recent years.

Key Laboratory of Eco-environments in Three Gorges reservoir Region (Ministry of Education)

The introduction of Key Laboratory of Eco-environments in Three Gorges reservoir Region. The Key Laboratory of Eco-environments in Three Gorges reservoir Region (Ministry of Education) was inaugurated under the collaboration of Southwest University and Chongqing University, supported by the Ministry of Education in 2003. This laboratory is dedicated to carry out systematic, sustaining and embedded studies on investigating the eco-environment evolvement and development since the construction of Three Gorges Reservoir, exploring the theory of comprehensive adjustment and key technique of eco-environment in Three Gorges Reservoir and some prospective problems in ecological environment to supply important scientific theories and techniques for the environmental protection and ecological construction practice aiming to ensure the long-term project can run safely and steadily.

Concentrating on the aquatic environment, natural ecosystem and urban ecosystem, the research mainly includes:(1) Security Safeguarding theory and technique of aquatic environment in Three Gorges Reservoir; (2) terrestrial ecosystem and biodiversity protection in Three Gorges Reservoir; (3) hydrobiology and aquatic ecosystem in Three Gorges Reservoir; (4) the urban ecosystem and architectural environment.

This laboratory occupying peculiar geographical advantage in Three Gorges Reservoir not only trains excellent researchs and undertakes national and local projects but also establishes open projects to attract alien researchers for reinforcing international and national cooperation. Additionally, honestly it invites outstanding researchers undertaking the significant projects of national science to participate in visiting research.

Chongqing Academy of Science and Technology

Chongqing Academy of Science and Technology (CAST) was established in 2008. It was called the Chongqing Academy of Applied Technology and is a public

institution approved by the People's Government of Chongqing Municipality. CAST is an industrial & technical all-around institution to integrate researches & developments, technical transformations & transfers, personnel training and international exchanges. It is the largest service institution in the western China that is committed to scientific researches and technical innovations constituted by Chongqing Municipality.

CAST is committed to the services of economical & social developments of Chongqing Municipality, aiming at the frontier of the world's science & technology and key technical problems of the economical & social developments of Chongqing Municipality as well as the technical bottleneck problems in the industrial developments, while insisting on the concurrent developments of research & industrialization, and of innovations and services in order to emphasize the leading position of technology developments and outcome-transformations, mainly develop innovations of science & technology, research on the common technology of industries and the basic research of relevant applied technologies.

Chongqing University

Chongqing University (CQU) is a key national university in China, directly under the State Ministry of Education, it is also one of the "211 Project and 985 Project" universities with full support in the construction and development from the central and local Government of China. CQU is located in Shapingba District, a cultural and educational center in the city of Chongqing, a major municipality of industry and commerce in the Southwest of China, an economic center on the upper reaches of Yangtze River.

Founded in 1929, Chongqing University had become a national comprehensive university consisting of six colleges in liberal arts, science, engineering, law science and medical science early in 1940s, thus earned a prestige both domestic and abroad then for its outstanding performance in education. A large number of famous scholars such as Li Siguang, Ma Yinchu, He Lu, etc., dedicated to the establishment of a solid academic foundation.

Looking on the future, catching the historical opportunity of the West Development and of the joint financial support from the state Ministry of Education and Chongqing Municipal government, Chongqing University is fully committed to implementing the strategy of "prospering the country and Chongqing city with science-and-technology and education", sticking to its education philosophy of "taking root in Chongqing, finding a foothold in the Southwest, facing the West, Serving the whole nation, stepping towards the world", carrying forward its excellent schooling tradition, striving for the realization of its goal of developing Chongqing University into a first-class comprehensive research university in China, with unique characteristics and international fame.

Brief Information of NIGLAS

Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences (NIGLAS), formerly Geography Institute of China, was founded in Beibei, Chongqing in August 1940. It is the only institute specializing in the research of lake-basin system in China and was ever directed by Huang Bingwei, Ren Meie, and Zhou Lisan who are Chinese Academy of Sciences (CAS) Academician at different time in its history.

Research fields in NIGLAS include: lake environment protection and resources utilization, lake-basin system evolution and manipulation, and regional sustainable development with focus on lake sediment and environment evolution, lake hydrology and water resources, lake biology and ecology, lake environment and engineering, lake-basin process and manipulation, resources and environment of basin and regional development, as well as lake-basin monitoring and digital basin. Currently, there are four research departments in NIGLAS: State Key Laboratory of Lake Science and Environment, Research Center of Lake Ecology and Environmental Engineering, Research Center of Regional Development and Planning, and Lake Field Observation and Data Center (including: Taihu Lake Ecosystem Research Station, Poyang Lake Wetland Integrated Research Station, Fuxian Lake Plateau-Deep-Lake Research Station and Lake-basin Data Integration and Simulation Center).

Now, there are 220 staff members in total, including one academician of CAS, 39 professors, 78 associate professors and senior engineers. NIGLAS has established an education system consisting of a postdoctoral research station of geography, four Ph.D programs (Physical Geography, Human Geography, Cartography and Geographic Information System, Environmental Science) and five Master's programs (Physical Geography, Human Geography, Cartography and Geographic Information System, Environmental Science, Environmental Engineering). Currently, there are more than 20 post-doctors and 150 Master's and Ph.D. students studying at NIGLAS.

About Research Center for Eco-Environmental Sciences (RCEES)

Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, formerly the Institute of Environmental Chemistry of Chinese Academy of Sciences founded in 1975, is the first comprehensive research institution engaged in research on eco-environmental science and technology in China.

RCEES has successively carried out the frontier researches on environmental chemistry, environmental science, and systems ecology since 1975, and has done some pioneer, foundation-laid and creative work on the environmental background survey, acid rain investigation, environment safety assessment, water pollution control, environmental behavior and ecotoxicological effects of persistent organic pollutants, theory of complex ecosystems, national nature reserve construction and many other environmental issues in China. It made historical contribution to the development in the eco-environmental sciences and technology in China. After being a part of the Pilot Project of Knowledge Innovation Program of CAS, oriented to the demand of the nation for eco-environmental protection and construction and international frontiers, RCEES has further made discipline rearrangement, optimized the construction of innovation teams, strengthened innovation capacities, and enhanced the international cooperation scale, and gained an unprecedented rapid and healthy development. There is a great increase on the quantity and quality of research publications and invention patent applications. It conducts much more large research projects. The national and international cooperation becomes much wider and more

active. The education capacity for graduate students is also developed, and the competitive capacity is enhanced significantly.

About the Guizhou Normal University (GZNU)

Founded in 1941, the University was originally named National Guiyang Teachers' College, and renamed Guiyang Teachers' College in 1950. In 1985, it was formally entitled Guizhou Normal University (GZNU) and honored as one of the key universities in the Province in 1996. The year 2004 marked a new stage in the university's development when the Provincial Vocational College of Technology was absorbed into it.

GZNU is in the name list of the Program of Partner Assistance with Western Universities of Ministry of Education, and has been set up the "partner assistance" relationship with Xiamen University in 2006. GUN was entitled "Outstanding University" in the Undergraduate Teaching Assessment issued by Ministry of Education in 2008. In February 2010, she was approved to grant Ph.D. by the State Council Academic Degrees Committee.

GZNU is enthusiastically seeking to expand its educational resources through co-operation with schools around the world, including exchange of visiting scholars, the enrollment of international undergraduate and graduate students, academic exchanges and joint efforts in scientific research. We welcome anyone interested in discussing possible exchange programs with GZNU.

List of participants

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Participants' resume

Lei Zhang

Associate Professor in Soil Science and Environmental Microbiology, Southwest University, China and, Director of China-Canada Three Gorges Reservoir Water Science Center, University of Windsor, Canada. Dr. Zhang is specialized in monitoring the changing water quality during inter-watershed water diversion and developing the strategies to improve water quality of the source water. She has been a key co-PI for the OCRIF project awarded 2012 on innovatively monitoring and predicting eutrophication of the Three Gorges Reservoir Area (TGRA). This includes its tributaries and the main channel of Yangtze, which is located just at the upstream of the source water to be transferred by South to North Water Diversion Project. Parts of the results from this project have been accepted for oral presentations at the 7th Internati

onal Conference of Marine Pollution and Ecotoxicology, 32nd International Society of Limnology and 16th International Conference on Diffuse Pollution and Eutrophication, respectively.

In addition, she has published 46 papers in different conference proceedings and scientific journals.

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Zhang L., Gu J., Wei S., Zhou Z., Zhang C. , Yu Y. 2011. Mechanism of acid tolerance in a Rhizobium strain isolated from Pueraria lobata (Willd.) Ohwi. *Can. J. Microbiology*.

Han G., Zhang L. , Qiu Q., Shi J., HU Z. 2011. Effects of PGPR and alfalfa on soil building of newly-reclaimed Land . *Acta Pedologica Sinica*. 48(2):194-200.

J. Yang, L. Zhang, Z. Hu, J. Wang, S. Zhai. 2010. Algal community distribution and evaluation in backwater area of Pengxi River under the designed water storage level of Three Gorges Reservoir. *Journal of Southwest University (Natural Science)*. 32: 87-91.

Xie Deti

Professor in Soil and Environmental Science, in Southwest University, China. 149 papers and books have been published by his team. His team ranks the top three in terms of external funding in Southwest University.

Recent publications include:

Xie D. 2010. Mechanism and Restoration of Ecosystem Degradation in the Karst Mountain Land: A Case Study of Chongqing. Beijing: Science Press.

Xie D. 2010. Evolution and Regulation of Ecosystem in the Water-Level-Fluctuating-Zone in the Three Gorges Reservoir Catchment. Beijing: Science Press.

Shao J., Li Y., Wei C., Xie D. 2009. Effects of land management practices on labile organic carbon fractions in rice cultivation. *Chin. Geogr. Sci*. 19(3) 241–248.

Ni J., Yuan D., Xie D., Wei C. 2009. Estimation of soil organic carbon storage and the characteristic of carbon spatial distributions in karst area, Chongqing, China. *Acta Ecologica Sinica* , 29 : 6292-6301 (In Chinese).

Shao J., Tang X., Wei C., Xie D. 2007. Effects of conservation tillage on soil organic matter in paddy rice cultivation. *Acta Ecologica Sinica*. 27: 4434–4442.

Doug Haffner

Great Lakes Institute for Environmental Research (GLIER)

University of Windsor

His team is studying exposure and effects of chemicals in aquatic ecosystems, both in the Great Lakes and elsewhere. They are developing benthic and pelagic system models that

will eventually be integrated to form a comprehensive ecosystem model of energy/carbon and contaminant dynamics. We are also involved in the conservation of ancient lakes in Indonesia.

Almost \$4 million in external research funding and almost \$400,000 in equipment funding from government and industry.

William Taylor

Professor

Interim Chair, Biology Dept.

Associate Dean, Research

Canada Research Chair in Limnology

William Taylor's research interests are within several areas of aquatic ecology, including the ecology of protozoa, the fate of aquatic bacteria, nutrient cycles, bioaccumulation of contaminants, and human effects on water quality. Research venues include: small lakes of the Canadian Shield, now mostly through the Dorset Environmental Science Centre; the Laurentian Great Lakes, mostly in collaboration with scientists at the Canada Centre for Inland Waters; the Grand River, including partnership with the Grand River Conservation Authority; and East African Lakes, with collaborators in several countries. The focus of his research at the current time is human impact on lakes and rivers through changes in the freshwater phosphorus cycle and in the fate of bacteria, including pathogens.

The China-Canada Three Gorges Water Science Centre (CCTW)

The Three Gorges Reservoir (TGR) is one of the largest man-made freshwater bodies on earth: the impoundment completed at the end of 2009 submerged over 630 km² of land. The massive impacts of the Three Gorges Project (TGP) on the hydrology and ecology of the TGR and Yangtze River, the nutrient and contaminant fluxes to the coastal zone and regional climate are receiving increasing attention, both in China and worldwide. For instance, this past May China's central government announced it would spend 26.45 billion USD over the next 10 years on mitigation efforts in the TGR. Given the scale and complexity of the environmental changes caused by the TGP, integrated, ecosystem-level studies are essential to assess and counteract the multiple threats to the ecology, water quality and ecosystem services of the TGR basin and the downstream reaches of the Yangtze River and the adjacent coastal zone.

While several laboratories in Chongqing and China carry out TGR-related research, none cover the entire range of stressors and impacts affecting the TGR watershed. In addition, there is a lack of time-series data on reservoir-wide non-point nutrient and contaminant sources, as well as indicators of ecosystem health of the TGR and its tributaries. The proposed China-Canada Water Science Centre will provide the expertise and infrastructure needed to implement a comprehensive water quality and ecological monitoring plan for the TGR, and conduct multidisciplinary research in support of the sustainable management of the land and water resources in the TGR basin and the downstream Yangtze River and adjacent coastal zone.

Canadian universities and research institutes are world leaders in environmental and ecological research applied to large fresh water bodies, with a particular emphasis on mitigating the impacts of excessive land-derived nutrient and contaminant loadings. The proposed China-Canada Water Science Centre will therefore bring to bear the expertise and technology of the Canadian partners in key areas that are essential to meet the water needs and demands of China, today and into the future. The two-way cooperation will also yield new knowledge that will be relevant to deal with emerging water issues in Canada and worldwide.

Many of the fundamental and applied research questions that lie at the core of the proposed China-Canada Water Science Centre were discussed during a bilateral China-Canada workshop and field tour dedicated to the TGR held in January 2011 in Chongqing. A key outcome of the workshop was the joint submission in early 2011 to China's Ministry of Science and Technology (MOST) and Ontario's Ministry of Research of Innovation (OCRIF program) of a research proposal entitled "Innovative Monitoring and Prediction of Non-Point Source Pollution and Water Quality in the Three Gorges Reservoir Catchment"(decision pending). These various initiatives involve several distinguished professors in China, a Canada Excellence Research Chair and four Canada Research Chairs. They also enjoy the active support of the Canadian Consul in Chongqing.

The China-Canada Three Gorges Water Science Centre (CCTW) is a multiple research collaboration among universities, industries and government agencies in China and Canada that are dedicated to conserving freshwater resources and protecting water uses. South West University (China) and the University of Windsor (Canada) are the lead institutions, and combined with other universities form the focus of an integrative water research and education program aimed at addressing

water issues with the best knowledge and innovative technologies available.

CCTW will provide research, education and technology to protect and conserve global freshwater resources by providing expertise and facilities to develop integrative watershed management plans and provide innovative solutions to water use conflicts.

The executive management of CCTW will be the Vice-Presidents Research of South West University and the University of Windsor. The executive management will be supported by an Advisory Board from the partnership of universities, industries and agencies, and will provide direction to CCTW with respect to research needs and opportunities, implementation of programs to develop High Quality Personnel and financial accountability of CCTW activities.

Facilities/offices for implementing CCTW will be made available at the College of Environment and Resources at South West University and the Great Lakes Institute for Environmental Research (GLIER) at the University of Windsor. The development of these facilities has been made possible from a research award to the College of Environment and Resources from the Chongqing Science and Technology Commission, and a donation from RBC to GLIER, and will allow these institutions to further develop collaborative research on the Three Gorges Reservoir and the Great Lakes.

Prof/Dean Dete Xie will represent the College of Environment and Resources SWU, and Dr. G. Douglas Haffner, Tier 1 Canada Research Chair, will represent GLIER, UW, and they will be the Co-Directors of CCTW responsible for day to day management of the research and education programs of CCTW. Co – Directors will report to the Executive and the Advisory Board on an annual basis the programs and operations of CCTW.

Day to day operations will be managed and co-ordinated by the Chief Scientist (Dr. Zhang Lei) who will be responsible for the development and implementation of research proposals as well as the educational programs of CCTW.

General Assembly notes

1. Representatives are expected to carefully read the Conference Guide, and attend the meeting on time.
2. Meeting time: Morning: 8:00-12: 00; Afternoon: 14:00-18: 00

3. Dining Time: Breakfast 7:00-7:40; Lunch 12:00; Dinner 18:00;
representatives may enjoy the lunch in Hai-yu Hotel with vouchers
4. Pay attention to your health since the weather changes.
5. Be careful and keep your portable items safely.
6. If the representatives have any other requests, please contact with the
business group. Office: 023-68250437
reception Group: Dr. Gao Ming, 13500336505
Secretary Group: Dr. Ci En, 15086880181

Wish you a happy mood during the Conference and a happy life in
the beautiful Chongqing!