Huili Gong is the Vice President of the Capital Normal University China, Academician of the Russian Engineering Academy, member of the international steering committee of the eco-hydrology programme in the 7th Phase of the International Hydrological Program of UNESCO (UNESCO, IHP Ⅶ). He received his Ph.D. in hydrogeology from Jilin University in 1996. During 1996-1998, he worked as a postdoctoral at the institute of Remote Sensing in Peking University. As the principal investigator in a number of projects, Prof. Gong is responsible for the integrated system design, coupled model set-up and integration design of multi-technology of remote sensing. As an advanced visiting scholar, he went to Western Washington University, United States in 2001. He was a key member of groundwater survey and numerical simulation work in Changchun, Beijing, Zhengzhou and other places in China. In recent years, Prof. Gong has carried out a number of water ecology and wetland studies in the Beijing area, with support of a variety of remote sensing and geo-information technology. He is a key Chinese researcher with academic and scientific experience in the area of numerical groundwater model, eco-hydrology system interaction and model establishment in response to quantitative analysis. Prof. Gong has undertaken and completed a number of major research projects, such as the National Natural Science Foundation of China (NSFC), National Basic Research Program of China (973 Program), National High Technology Research and Development Program of China (863 Program) supported by the National Science Fund Committee, Ministry of Science and Technology, Chinese Academy of Sciences respectively. With good academic reputation, he has published over 120 research papers (including 21 SCI/EI indexed papers) in high academic level journals overseas. Professor Gong has won many scientific and technological prizes at the national, provincial and ministerial levels.

Hydroinformatics and Eco-Hydrology tools for Ecologically Sustainable Development of the North China

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Abstract

Due to natural and human disturbances (e.g. urban expansion), ecosystems have been changed dramatically on timescales ranging from years to decades. Especially in recent years, eco-hydrological system in North China (including Inner Mongolia and around Beijing area) have been facing several environmental issues such as shrinking of wetland , water table decline, water quality getting worse, grassland degradation, dune expansion and urban heat island effect. These merging issues make it necessary to consider the social context of interactive processes linking hydrology and ecology hence the need for the Ecohydrology Approach. This trans-disciplinary challenge requires an integration of various types of information, knowledge and techniques referred as hydroinformatics for ecologically sustainable development . In this study, the current conditions and problems of eco-hydrology in North China are reviewed. A transdisciplinary Ecohydrology framework is proposed for future research, which is incorporating remote sensing, geographic information systems and geographic positioning systems to extract hydro-ecological information for coupling eco-hydrological models of different scale and resolution to simulate the regional environmental change over years under climate, land use and environment management scenarios. The remote sensing monitoring of resources and eco-environment around Beijing area is also introduced. The large-scale remote sensing data processing system-CASMImageInfo can be used to fast process hydro-ecological elements monitored by RS for the system. The proposed research plan is to study long term regional hydrological change in the metropolitan and surrounding areas, and to determine the functionality and water cycle changes under controlled environment in response to vegetation growth. The framework provides opportunity for linking hydrology and ecology, as well as integration with modern information technology, leading to Ecologically Sustainable Development of the region.