Thematic issue: groundwater resources management

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Groundwater plays a significant role in the overall circulation of water through the hydrologic cycle. Worldwide, groundwater sources constitute about 25% of total fresh-water available, and in many areas, groundwater is the sole source of potable water. Groundwater has usually been considered as a readily available and safe source of water for domestic, agricultural and industrial uses.

Groundwater supplies are not unlimited. Its use should be properly planned based on an understanding of the local hydrogeologic setting to ensure sustainable resources. In many areas, extraction of excessive quantities of groundwater has resulted in progressive depletion of resources and the decline of the local water table. Usage in excess of sustainable limits can lead to other adverse consequences: land subsidence, deterioration of groundwater quality, sea water intrusion, degradation of associated surface water streams, ecological damage, and negative impacts on human and animal health.

With growing industrialization and other changes in land use, coupled with increased effluent from domestic, agricultural, and industrial growth, a gradual decline in groundwater quality is the common result. Expert, well-organized water resources planning is the key to preserving water quality. Regional and local policies and strategies for groundwater development and management must be realistic and flexible to be effective for ensuring long-term use of this valuable resource.

In this thematic issue, invited research from attendees of the international symposium on “Efficient Groundwater

Resources Management”, held in Bangkok, Thailand, February 16–18, 2009 are presented, as well as some other manuscripts on the subject. The theme of this important meeting, which was organized by the Department of Groundwater Resources under the Ministry of Natural Resources and Environment, Thailand was “Groundwater – The Challenge of Quantity and Quality for a Sustainable Future.” Co-Organizers were the Thai Hydrogeology Association and the Geological Society of Thailand. Co-Sponsors were the International Association of Hydrogeologists; UNESCO-International Hydrological Program; Coordinating Committee for Geosciences Programs in East and Southeast Asia; World Bank GW-MATE; and HydroGeoLogic Inc., USA.

Manuscripts presented in this thematic issue focus on areas including effective assessment of groundwater opportunities and hazards; efficient groundwater management for urban and rural areas; emerging threats to groundwater quantity and quality; protecting groundwater resources; and groundwater regulation and governance, among other topics. Special thanks are extended to Ashim das Gupta, Oranuj Lorphrensri, and Sucharit Koonanakulvong for their service in helping coordinate this thematic issue.

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