Advances in Meteorology

Hindawi

Special Issue on

Water-Energy-Food Nexus under Changing Environments: Perspectives Using Interdisciplinary Approaches

CALL FOR PAPERS

Human activities play a vital role in reshaping the regional and global water cycle by redistributing water through steadily increasing water consumption, lake and groundwater depletion, water transfers between basins, and reservoir regulation. Future water management is challenged by both the increasing water demand (primarily due to population growth) and the changing atmospheric conditions (both long term and short term). Impacts from the latter are twofold. First, more frequent meteorological extreme events (e.g., droughts and floods) are expected under future climate scenarios. Second, land use and land cover change (e.g., urbanization and deforestation) can alter hydrological and land surface-atmosphere processes drastically. These signify the importance of understanding the relationships between water supply and water demand and, more importantly, of providing reliable scientific results to assist decision making. Furthermore, the anthropogenic interventions in the water cycle can have considerable impacts on both local weather conditions and regional climatological patterns. There is thus an important feedback loop between water management practices and the atmospheric conditions (from subdaily, to seasonal, and decadal) at various scales (from field to regional). This feedback loop needs to be fully understood and quantified.

The scientific results can be acquired through multiple approaches, which are oftentimes used jointly. Many models, from hydrologic models to Earth system models, have been developed to simulate human-water and land-atmosphere interactions and many incorporate water management schemes. Recent efforts in studying the water-energy-food nexus have further stressed the need for using integrated modeling approaches (beyond water alone), such as the newly developed reservoir operations-irrigation-crop model schemes. Remote sensing is used to monitor the human footprint on atmospheric and hydrologic systems (heat island, reservoir storage, groundwater, irrigation demand, and evapotranspiration) and to calibrate/validate integrated models. Global socioeconomic models simulate more complex (and more realistic) water demand scenarios and the associated regional transfers under changing climate and extreme weather conditions. Coupled land-atmosphere models represent the complex interactions among the water and energy budget components. Studies across multiple spatial-temporal scales from a suite of interconnected disciplines are essential for developing policies to sustain the environment.

In this special issue, we invite high quality contributions related to water-energy-food management studies at regional to global scales on the following topics.

Potential topics include, but are not limited to:

- Modeling human-water interactions under historical, current, and future climate conditions
- Effects of water management feedbacks on weather and climate (e.g., land-atmosphere interactions) at various scales
- Evaluation of Earth system models including water management schemes
- Integration of socioeconomic modeling under changing climate conditions
- Adaptation of water, energy, and/or agriculture resources management based on hydrometeorology and hydroclimatology constraints (US Clean Power Plan, e.g.)
- Remote sensing of water (and/or water budget) terms and atmospheric conditions related to water, energy, and/or food activities
- Environmental change effects (from various sources, such as extreme climate events and land use and land cover change) on water resources, micrometeorology, and ecosystems
- Integrated modeling focused on uncovering unintended consequences of decisions related to sustainable water management
- The water-energy-food nexus: identifying win-win solutions
- Involvement of stakeholders in the modeling process

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/amete/mwef/.

Lead Guest Editor
Huilin Gao, Texas A&M University, College Station, USA
hgao@civil.tamu.edu

Guest Editors
Jennifer Adam, Washington State University, Pullman, USA
jcadam@wsu.edu

Min-Hui Lo, National Taiwan University, Taipei, Taiwan
minhuilo@ntu.edu.tw

Nathalie Voisin, Pacific Northwest National Laboratory, Richland, USA
nathalie.voisin@pnnl.gov

Zhenghui Xie, Chinese Academy of Sciences, Beijing, China
zxie@lasg.iap.ac.cn

Manuscript Due
Friday, 19 August 2016

First Round of Reviews
Friday, 11 November 2016

Publication Date
Friday, 6 January 2017