Advances in Meteorology

Hindawi

Special Issue on

Hydrometeorological Hazards: Monitoring, Forecasting, Risk Assessment, and Socioeconomic Responses

CALL FOR PAPERS

Hydrometeorological hazards are caused by extreme meteorological and climate events, such as floods, droughts, hurricanes, tornadoes, landslides, or mudslides. They account for a dominant fraction of natural hazards and occur in all portions of the world, although the frequency, intensity, and vulnerability of certain hazards in some regions differ from those in others. Severe storms, strong winds, floods, and droughts develop at different spatial-temporal scales, but all can become disasters to cause fatalities and infrastructure damage and claim thousands of lives annually worldwide. Multiple hazards often concur in one extreme weather event. In addition to causing injuries, deaths, and material damage, a tropical storm can also result in flooding and mudslides, which disrupt water purification and sewage disposal systems, cause overflow of toxic wastes, and increase propagation of mosquito-borne diseases. The increase in the frequency of extreme events due to acceleration of the global water cycle induces more risks to human settlements, especially those on floodplains and areas susceptible to landslides, in an era of rapid population growth.

Monitoring and forecasting of the occurrence, intensity, and evolution of hydrometeorological extreme events have been critical for many humanitarian and government agencies in their efforts to prepare, mitigate, and manage responses to disaster to save lives and limit damage. Remote sensing and modeling are two powerful technologies for providing timely information of hazardous events. Both research areas advance rapidly to provide better understanding of causation and geophysical process of these natural hazards, while each has its own strengths and weaknesses. In addition to monitoring and short-range forecasting for rapid responses, long-range projections of future changes in extremes and hazards allow for assessing risks and therefore provide a venue to plan for adaptation and mitigation strategies. Ideally physical and social scientists would work together to find means to integrate modeling and remote sensing approaches that are complementary to each other for providing accurate forecasts, issuing timely warnings, monitoring on-going hazards, reducing vulnerabilities, and building resilience for future.

We solicit high quality, original research contributions from physical, socioeconomic sciences, hazard response, and preparedness fields that study hydrometeorological hazards across spatial scales.

Potential topics include, but are not limited to:

- Remote sensing and physical or statistical modeling of hydrometeorological hazards in urban and rural environments
- Coupled and hyperresolution hydrometeorological modeling
- Data assimilation of remote sensing and in situ observations for improved modeling and land surface datasets
- Ensembles and probabilistic hydrometeorological forecasting
- New method of integration of remote sensing and modeling hazard information with case studies
- Characterization and communication of uncertainty of retrospective and operational modeled and remotely sensed results
- Interdisciplinary and integrated model and application results from areas of hydrology, meteorology, ecology, and socioeconomics
- Hydrometeorological hazard emergency management and quantitative damage evaluation
- Vulnerability, resilience, and risk assessment and management
- Assessment of socioeconomic impacts of/on hydrometeorological hazards

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

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