



water



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Flood Modelling: Regional Flood Estimation and GIS Based Techniques

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Message from the Guest Editors

Dear Colleagues,

This Special Issue deals with flood estimation for ungauged catchments using regional flood frequency analysis and GIS-based methods.

Floods are severe and frequent forms of natural hazards that cost human lives and results in significant economic losses. They occur at different intervals with varying durations and severity. Although it is not possible to prevent flooding completely, it can be predicted and managed through proper analysis, estimation and forecasting. It is a challenging task to accurately estimate floods and to delineate flood prone areas. Combination of hydrological, hydrodynamic and Geographical Information Systems (GIS) provides state-of-the-art investigation in flood modelling.

Regional flood frequency analysis (RFFA) is widely used to estimate floods at locations with no, inadequate and poor quality flood data. Most commonly adopted RFFA methods include index flood method, regression based methods and artificial intelligence based methods. More recently, GIS integrated methods are being used in RFFA. Space borne satellite data such as Quickbird, Worldview 3, SPOT 5, Google

platform for flood mentoring and assessment. Advanced artificial intelligence (AI) techniques based on data mining, machine learning, deep-learning and ensemble models can be used to identify and monitor these floods and forecast them.

Special Issue



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The topics of interest include, but not limited to:

- Index flood method for RFFA
- Quantile regression technique for RFFA
- Parameter regression technique for RFFA
- Bayesian methods in RFFA
- Artificial intelligence based techniques for RFFA
- At-site/RFFA
- GIS based RFFA methods
- Flood detection and monitoring
- Flood modelling using GIS
- Multi-temporal high resolution satellite images in flood modelling
- LiDAR data in flood assessment
- Ensemble modelling for flood estimation
- Deep-learning in flood modelling
- New machine learning techniques in flood detection

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