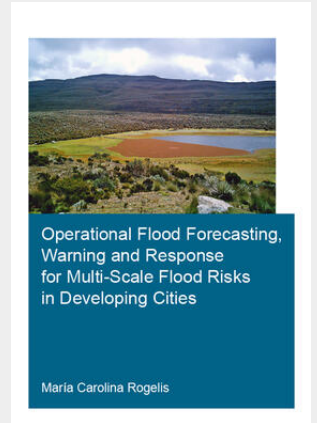


Rogelis

## Operational Flood Forecasting, Warning and Response for Multi-Scale Flood Risks in Developing Cities

The aim of this book is to contribute to understanding risk knowledge and to forecasting components of early flood warning, particularly in the environment of tropical high mountains in developing cities. This research covers a challenge, taking into account the persistent lack of data, limited resources and often complex climatic, hydrologic and hydraulic conditions. In this research, a regional method is proposed for assessing flash flood susceptibility and for identifying debris flow predisposition at the watershed scale. An indication of hazard is obtained from the flash flood susceptibility analysis and continually, the vulnerability and an indication of flood risk at watershed scale was obtained. Based on risk analyses, the research follows the modelling steps for flood forecasting development. Input precipitation is addressed in the environment of complex topography commonly found in mountainous tropical areas. A distributed model, a semi-distributed model and a lumped model were all used to simulate the discharges of a tropical high mountain basin with a páramo upper basin. Performance analysis and diagnostics were carried out in order to identify the most appropriate model for the study area for flood early warning. Finally, the Weather Research and Forecasting (WRF) model was used to explore the added value of numerical weather models for flood early warning in a páramo area.



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