

图书基本信息

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前言

This dissertation is an outcome spanning the joint of the centuries from 1999 to 2002. It is an attempt to study the new features of flood disasters during the speeded up period of urbanization in the coastal areas of China, and to find out the intrinsic relationship that flood risk varies with the socio-economic development, and the ideas and modes of flood risk management that may meet the demands of flood prevention. The new means of numerical simulation techniques for flood risk prediction and analysis in urbanized areas are also discussed with case studies of three coastal cities, Shenzhen, Guangzhou and Tianjin. In the past century, development and utilization of the large scale structural engineering measures and information techniques have greatly enhanced the flood control capacities of human being, which satisfied the fundamental requirements of development in floodplains during the process of population explosion, increased pressure in food supplies, and rapid urbanization.

内容概要

本书以中国沿海地区为对象，系统介绍了沿海地区的各类洪水的时空分布特性与防洪体系的发展，分析了城市化对防洪形势演变的影响，综合比较了国内外在快速城市化阶段治水方略调整的措施，探讨了洪水风险管理的新理念，以及现代防洪体系逐步完善的内在规律与发展趋向。详细论述了城市化地区洪水风险分析的各种方法与洪水数值模拟的新技术，以深圳、广州、天津三个沿海地区的城市为实例，介绍了城市洪涝仿真系统的发展进程与应用成果。全书用英文撰写，可供防洪减灾科技与管理人员、大专院校相关专业师生参考，也有利于国际间的交流

书籍目录

Preface	Ac knowl edgments	Chapter 1 Introduction	1.1 Background	1.2 Objectives of Study	1.3 Scope and Methods of Study	References
Chapter 2 Urbanization Process and Changes of Flood Control Situations in the Coastal Regions of China	2.1 Survey of the Coastal Regions in China	2.2 Flood-related Geographical Features of the Coastal Regions	2.3 Flood Risk Changes along with the Urbanization	2.4 Development of Urban Flood Control Systems and the Present Issues in the Coastal Regions of China	2.5 Conclusions	References
Chapter 3 Flood Risk Management: Theory and Practice	3.1 Introduction	3.2 Flood, Flood Hazard and Flood Risks	3.3 Trends of Strategy Adjustments: From Flood Control to Flood Management	3.4 Flood Prevention and Security System: Fundamental Conception	3.5 Conclusions	References
Chapter 4 Development of Urban Flood Simulation Techniques	4.1 Introduction	4.2 Methodologies of Flood Risk Analysis	4.3 The Urban Flood Risk Analysis System	4.4 Conclusions	References	Chapter 5 Flood Risk Research for the City of Shenzhen
Case Study I	5.1 Introduction	5.2 Improvements and Examination of the Shenzhen UFSM	5.3 Application of UFSM to the Assessment of Flood Control Planning for Shenzhen	5.4 Preliminary Design of UFSM Using in Flood Control Decision Support System (FCDSS)	5.5 Conclusions	References
Chapter 6 Evaluation of Flood Risk for the City of Guangzhou-Case Study	6.1 Introduction	6.2 Research on the UFSM Developingfor Guangzhou	6.3 Establishment and Verification of the GuangzhouUFSM	6.4 Flood Risk Assessment for Guangzhou City	6.5 Application of the Model to the Flood Risk Management System	6.6 Conclusions
References	Chapter 7 The Real-time UFSM for the City of Tianjiir--Case Study III	7.1 Introduction	7.2 Improvement of the Urban Flood Simulation Model	7.3 On the Real-time Forecasting Mode of UFSM	7.4 Verification of the Tianjin UFSM	7.5 Conclusions
References	Chapter 8 Conclusions	8.1 Progress in this Dissertation	8.2 Prospect of the Future	APPENDIX: Equivalent of Special Names		

章节摘录

Numerical model for the simulation of flooding in urban areas will be an effective method. It will be used to predict the flood behaviors under the varied conditions of urbanization as well as the flood control systems, offering a scientific basis to realize the urban flood issues for the future and to make flood risk management systems reasonably. In recent years, the author has undertaken flood risk research projects for some coastal cities, such as Shenzhen, Guangzhou, Shanghai and Tianjin. An Urban flood simulation system has been developed and perfected during this process. The model combined with the advantages of both Finite Volume Method and Finite Difference Method has been transformed from regular grid to non-structural irregular grid. In order to use the model in the urban regions, a simulation method for drainage systems has been improved. A set of pre- and post-treatment software serving for the model has been developed. With the function of imaging display and operator-computer communication, the results of flooding are visible on screen, which makes the model to be capable to inquire the information during the calculation and to deal with the sudden accidents such as levee break. It has now played an important role in the fields of flood prediction and forecast, flood risk analysis, flood damage assessment, flood control planning and flood fighting decision support systems.

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