1. Record Nr. UNINA9910550016003321

Autore	Gupta Anil
Titolo	Integrated environmental modelling framework for cumulative effects assessment / / Anil Gupta [and four others]
Pubbl/distr/stampa	Calgary : , : University of Calgary Press, , [2021] ©2021
ISBN	1-77385-200-0 1-77385-201-9
Descrizione fisica	1 online resource (216 pages)
Disciplina	333.714
Soggetti	Environmental impact analysis Cumulative effects assessment (Environmental assessment) Hydrology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Front Cover -- Half Title Page -- Full Title Page -- Copyright Page -- CONTENTS -- List of Figures -- List of Tables -- Acronyms and Abbreviations -- 1.0 INTRODUCTION -- 2.0 INTERACTIONS BETWEEN ENVIRONMENTAL COMPONENTS FOR CUMULATIVE EFFECTS ASSESSMENT -- 2.1 Climate and hydrology -- 2.2 Land, ecology, and climate -- 2.3 Land use/land cover (LULC) and hydrology -- 2.4 Air quality, climate, water, and ecology -- 3.0 MODELLING APPROACHES FOR EACH COMPONENT -- 3.1 Hydrological models -- 3.2 Water quality models -- 3.3 Groundwater models -- 3.4 Land use/land cover models -- 3.5 Climate models -- 3.6 Ecological models -- 3.7 Air quality models -- 4.0 INTEGRATED ENVIRONMENTAL MODELLING -- 4.1 Integrated surface water-groundwater quantity modelling -- 4.2 Integrated watershed and receiving water quality modelling -- 4.3 Integrated watershed and groundwater quality modelling -- 4.4 Integrated groundwater and receiving water quality modelling -- 4.5 Integrated atmospheric deposition and waterquality modelling -- 4.6 Integrated load allocation and water quality modelling -- 4.7 Integrated water allocation and water quality modelling -- 5.0 MODELLING IN THE ATHABASCA RIVER BASIN CASE STUDY -- 5.1 Hydrodynamic and

water quality modelling inthe Athabasca River -- 5.2 Atmospheric deposition and acidification modelling in the Athabasca Region -- 5.3 Watershed modelling in the Athabasca Region -- 5.4 Groundwater modelling in the Athabasca Region -- 5.5 Surface water and groundwater interactions in the Athabasca Region -- 5.6 Land use/land cover modelling in the Athabasca Region -- 5.7 Climate change in the Athabasca Region -- 5.8 Limitation of modelling for cumulative effects assessment in the Athabasca Region -- 6.0 INTEGRATED MODELLING FRAMEWORK FOR CEA -- 6.1 Coupling strategy -- 6.2 Selection of models.
6.3 Novelty of the proposed integrated environmental modelling framework -- 6.4 The challenges -- 7.0 REFERENCES -- Back Cover.

Sommario/riassunto

Global warming and population growth have resulted in an increase in the intensity of natural and anthropogenic stressors. Investigating the complex nature of environmental problems requires the integration of different environmental processes across major components of the environment, including water, climate, ecology, air, and land. Cumulative effects assessment (CEA) not only includes analyzing and modeling environmental changes, but also supports planning alternatives that promote environmental monitoring and management. Disjointed and narrowly focused environmental management approaches have proved dissatisfactory. The adoption of integrated modelling approaches has sparked interests in the development of frameworks which may be used to investigate the processes of individual environmental component and the ways they interact with each other. Integrated modelling systems and frameworks are often the only way to take into account the important environmental processes and interactions, relevant spatial and temporal scales, and feedback mechanisms of complex systems for CEA.This book examines the ways in which interactions and relationships between environmental components are understood, paying special attention to climate, land, water quantity and quality, and both anthropogenic and natural stressors. It reviews modelling approaches for each component and reviews existing integrated modelling systems for CEA. Finally, it proposes an integrated modelling framework and provides perspectives on future research avenues for cumulative effects assessment.