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                      Guwahati urban watershed -- Flood vulnerability assessment in Jamuna
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Convolutional neural network for landslide susceptibility modelling in Kalimpong hill -- Artificial Neural Networks for combined forecasting of Tropical Cyclone track and intensity in the Bay of Bengal -- Geospatial approach to assess possible impact of groundwater abstraction in Bharatpur metropolitan city, Nepal -- Application of aerial photographs to monitor the dynamicsof fluvial tidal island and coastal erosion hazard in the Sundarbans delta plain of Bangladesh -- RS and GIS modelling for disaster management: Opportunities and challenges-A case study from Kerala, India -- Coastal Area Vulnerability to Cyclone Hazard-A Geoinformation and IPCC approach based study -- Spatial and Temporal Distribution of Drought in Bangladesh Using Novel China Z Index -- Livelihood vulnerability modelling with deep learning in erosion and flooding induced river islands in Ganga River corridor -- Assessment of soil erosion and landslide hazards in Rohingya refugee areas of Bangladesh: An integrated remote sensing and field observation approach -- Geospatial Analysis of River Bank Erosion-Accretion and Land Use Change of Teesta River, Bangladesh using Fuzzy ARTMAP Neural Network -- Landslides Vulnerability Assessment using Fuzzy logic based Spatial Multi-criteria Evaluation (Fuzzy-SMCE)-A Case Study from Hill Tract Districts, Bangladesh -- Impact of wetland transformation on fishing community in floodplain of Tangan River -- Multi-hazard risk assessment using Geo-statistical and Machine Learning Algorithm -- GNSS remote sensing in disaster management -- Land subsidence estimation using SAR time series data.

| Sommario/riassunto | In recent decades, natural hazards have increasingly threatened lives, livelihoods, and economies, with annual losses totalling billions of dollars globally. According to the Insurance Information Institute (III) and the Zebra, USA, natural disaster losses reached $74.4 billion in 2020, and an average of 6,800 natural disasters occur each year, claiming around 1.35 million lives. Hydrological and geological hazards, in particular, have significant societal and environmental impacts, making them critical areas of research. Understanding and mitigating these hazards is vital for developing legal mechanisms related to environmental restoration, societal improvements, and sustainable development. Modern technologies and earth observation data play a crucial role in disaster monitoring, prediction, modelling, and management. Recent advancements in geoinformation science have introduced multi-source data for natural hazards research. In addition, cutting-edge methods such as machine learning, deep learning, and big data science offer powerful tools for in-depth studies of natural hazards through remote sensing and geoinformatics. This book, Advanced GIScience in Hydro-Geological Hazards, presents up-to-date contributions on applying advanced GIScience to research various hydro-geological hazards, including floods, landslides, tropical cyclones, soil erosion, coastal erosion, riverbank erosion, coastal area vulnerability, drought, wetlands shrinking etc. It also explores multi-hazard studies using SAR, GNSS, and other innovative methods. The chapters focus on integrating artificial intelligence, machine learning techniques, and remote sensing to enhance preparedness, response, and resilience against these hazards. Targeting a broad audience of academics, scientists, students, environmentalists, government agencies, disaster planners, and GIS experts, this book aims to showcase the latest advancements in GIScience for assessing and managing hydro-geological hazards. It offers strategies for disaster risk reduction and capacity building, providing readers with the knowledge needed to address pressing environmental challenges. |