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Emerging Voices in Natural Hazards Research Fao
This synthesis summarizes the findings of the Global Natural Disaster Risk Hotspots project. The Hotspots project generated a global disaster risk assessment and a set of more localized or hazard-specific case studies. The synthesis draws primarily from the results of the global assessment. Full details on the data, methods and results of the global analysis can be found in volume one of Natural Disaster Hotspots: A Global Risk Analysis. The case studies are contained in volume two (forthcoming).

Quantitative Risk Assessment (QRA) for Natural Hazards University of Pennsylvania Press
This textbook provides a thorough introduction to natural disaster risk management. Many aspects of disaster risk management, such as those involved in earthquakes, volcanic eruptions, floods, avalanches and mudslides call for similar prevention and preparedness instruments, management concepts, and countermeasures. This textbook assumes the viewpoint of a regional disaster risk manager who is responsible for a certain area, and for making the lives of the people who live there safer, regardless of the type of natural disaster that may occur. The same holds true for boosting preparedness and awareness in the population at risk. The book includes numerous examples of hazard mitigation concepts and techniques, as well as ways of intensively involving the local population in prevention schemes at an early stage. Furthermore, it provides an in-depth examination of the function of risk communication, both as an instrument for disseminating official information and as a function of public media. In closing, a chapter on risk splitting offers insights into insurance-based models for risk financing. This comprehensive book is a must-read for all students, researchers and practitioners dealing with natural disaster risk management.

Natural Disaster Risk Management Cambridge University Press
In recent years, several major natural and man-made hazards have challenged scientists, government officials and the public in general: earthquakes, major volcanic and other seismic eruptions in Mount St. Helens, EI Chichon, Mexico city, Nevado del Ruiz, Japan, Italy, Greece, Cameroon and many other places on our globe; Tsunami in the Pacific Ocean and deadly storm surges along the coasts of India, Bangladesh and Japan; Cyclones, floods, thunderstorms, snow storms, tornadoes, drought, desertification and other climatic catastrophes; Amoco-Cadiz oil spill accident (France), Three-Mile Island (U. S. A.) and Chernobyl (U. S. S. R.) nuclear accidents, Bhopal chemical accident (India), acid rain (Canada, U. S. A.) and other technological disasters. Such hazards have snuffed out millions of lives, infli

At Risk Springer
This book contains the best contributions presented during the 6th National Conference on Earthquake Engineering and the 2nd National Conference on Earthquake Engineering and Seismology - 6CNIS & 2CNISS, that took place on June 14-17, 2017 in Bucharest - Romania, at the Romanian Academy and Technical University of Civil Engineering of Bucharest. The book offers an updated overview of seismic hazard and risk assessment activities, with an emphasis on recent developments in Romania, a very challenging case study because of its peculiar intermediate-depth seismicity and evolutive code-compliant building stock. Moreover, the book collects input of renowned scientists and professionals from Germany, Greece, Italy, Japan, Netherlands, Portugal, Romania, Spain, Turkey and United Kingdom.The content of the book focuses on seismicity of Romania, geotechnical earthquake engineering, structural analysis and seismic design regulations, innovative solutions for seismic protection of building structures, seismic risk evaluation, resilience-based assessment of structures and management of emergency situations. The sub-chapters consist of the best papers of 6CNIS & 2CNISS selected by the International Advisory and Scientific Committees. The book is targeted at researchers and experts in seismic hazard and risk, evaluation and rehabilitation of buildings and structures, insurers and re-insurers, and decision makers in the field of emergency situations and recovery activities.

Natural Hazards GIS-Based Spatial Modeling Using Data Mining Techniques Springer
This is the first English-language atlas to systematically introduce the environment, hazard, vulnerability and risk mapping for 11 natural disasters, i.e. earthquake, volcano, landslide, flood, storm surge, sand-dust storm, tropical cyclone, heat wave, cold wave, drought and wildfire, and risk mapping for multi-hazard disaster in the world. The above 11 hazards are assessed and mapped at grid unit, comparable-geographic unit and national unit, and the multi-hazard is assessed and mapped at grid unit and national unit. The expected annual mortality and/or affected population risks and expected annual economic loss and/or affected property risk of 11 hazards and multi-hazard of the world at national level are unprecedentedly derived and ranked. The atlas can be a good reference for researchers and students in the field of natural disaster risk management and risk governance, and enterpriser and risk manager as well to understand the global natural disaster risk. Prof. Peijun Shi works at Beijing Normal University, China; Prof. Roger Kasperson works at Clark University, USA.

Disasters by Design Springer
This work combines research and empirical evidence on the economic costs of disasters with theoretical approaches. It provides new insights on how to assess and manage the costs and impacts of disaster prevention, mitigation, recovery and adaption, and much more.

Natural Disaster Hotspots Routledge
This book summarizes the research being pursued as part of the Erasmus+ CBHE KA2 project entitled "Development of master curricula for natural disasters risk management in Western Balkan countries" (NatRisk), which aims to educate experts on the prevention and management of natural disasters in the Western Balkan region in line with national and EU policies. The project has successfully developed and implemented master curricula and educational training in the field of natural disasters risk management, and a methodology for the identification and prevention of natural disasters. Consisting of 11 chapters, the book analyzes and discusses topics such as risk assessment tools and quality methods, the different approaches for civil-military collaboration, natural disasters risk management in Bosnia and Herzegovina, leadership models for managing crises resulting from natural disasters, natural disasters in industrial areas, natural risk management in geotechnics, flood risk modeling, adaptive neuro-fuzzy inference models for flood prediction, collapse prediction of masonry arches, an algorithm for fire truck dispatch in emergency situations, and processing drought data in a GIS environment.

On Risk and Disaster Springer Science & Business Media
This book explores economic concepts related to disaster losses, describes mechanisms that determine the economic consequences of a disaster, and reviews methodologies for making decisions regarding risk management and adaptation. The author addresses the need for better understanding of the consequences of disasters and reviews and analyzes three scientific debates on linkage between disaster risk management and adaptation to climate change. The first involves the existence and magnitude of long-term economic impact of natural disasters on development. The second is the disagreement over whether any development is the proper solution to high vulnerability to disaster risk. The third debate involves the difficulty of drawing connections between natural disasters and climate change and the challenge in managing them through an integrated strategy. The introduction describes economic views of disaster, including direct and indirect costs, output and welfare losses, and use of econometric tools to measure losses. The next section defines disaster risk, delineates between “good” and “bad” risk-taking, and discusses a pathway to balanced growth. A section entitled “Trends in Hazards and the Role of Climate Change” sets scenarios for climate change analysis, discusses statistical and physical models for downscaling global climate scenarios to extreme event scenarios, and considers how to consider extremes of hot and cold, storms, wind, drought and flood. Another section analyzes case studies on hurricanes and the US coastline; sea-level rises and storm surge in Copenhagen; and heavy precipitation in Mumbai. A section on Methodologies for disaster risk management includes a study on cost-benefit analysis of coastal protections in New Orleans, and one on early-warning systems in developing countries. The next section outlines decision-making in disaster risk management, including robust decision-making, No-regret and No-risk strategies; and strategies that reduce time horizons for decision-making. Among the conclusions is the assertion that risk management policies must recognize the benefits of risk-taking and avoid suppressing it entirely. The main message is that a combination of disaster-risk-reduction, resilience-building and adaptation policies can yield large potential gains and synergies.

World Atlas of Natural Disaster Risk Springer Science & Business Media
Revised edition of: Natural hazards: explanation and integration / Graham A. Tobin and Burrell E. Montz. c1997.

Heavy-Tailed Distributions in Disaster Analysis Cambridge University Press
The study of disaster statistics and disaster occurrence is a complicated interdisciplinary field involving the interplay of new theoretical findings from several scientific fields like mathematics, physics, and computer science. Statistical studies on the mode of occurrence of natural disasters largely rely on fundamental findings in the statistics of rare events, which were derived in the 20th century. With regard to natural disasters, it is not so much the fact that the importance of this problem for mankind was recognized during the last third of the 20th century - the myths one encounters in ancient civilizations show that the problem of disasters has always been recognized - rather, it is the fact that mankind now possesses the necessary theoretical and practical tools to effectively study natural disasters, which in turn supports effective, major practical measures to minimize their impact. All the above factors have resulted in considerable progress in natural disaster research. Substantial accrued material on natural disasters and the use of advanced recording techniques have opened new doors for empirical analysis. However, despite the considerable progress made, the situation is still far from ideal. Sufficiently complete catalogs of events are still not available for many types of disasters, and the methodological and even terminological bases of research need to be further developed and standardized. The present monograph summarizes recent advances in the field of disaster statistics, primarily focusing on the occurrence of disasters that can be described by distributions with heavy tails. These disasters typically occur on a very broad range of scales, the rare greatest events being capable of causing losses comparable to the total losses of all smaller disasters of the same type. Audience: This SpringerBrief will be a valuable resource for those working in the fields of natural disaster research, risk assessment and loss mitigation at regional and federal governing bodies and in the insurance business, as well as for a broad range of readers interested in problems concerning natural disasters and their effects on human life.

Natural Hazards, Second Edition Springer
This book highlights the use of historical data in natural hazard assessments. Different types of data, such as historical data from written documents, are linked to technically measured data such as stream gauge height and consequently river discharge in order to archive new possibilities of probability determination of respective hazardous processes. In addition, this book strengthens this interdisciplinary approach through the application to different processes of earthquakes, floods, and landslides. Based on worldwide examples, the book introduces how various disciplines address the use of historical data in their respective analysis. These studies might give suggestions of new approaches in their own field derived from applications shown by other disciplines. Audience: This volume is of particular interest to professionals interested and involved in natural hazard assessments, working at research institutions and organisations, large and small scale enterprises, governmental agencies as well as private personnel. However, also advanced students might find the book helpful in addressing specific issues raised in natural hazard courses.

Mitigation of Natural Hazards and Disasters The Energy and Resources Institute (TERI)
CDRM 5 explains the the practical aspects of using quantitative risk assessment (QRA) to develop optimal engineering designs that mitigate the effects of natural hazards, especially on civil infrastructure.

Seismic Hazard and Risk Assessment Springer Nature
The beginning of the new millennium has been particularly devastating in terms of natural disasters associated with tectonic plate boundaries, such as earthquakes in Sumatra, Chile, Japan, Tahiti, and Nepal; the Indian Ocean and the Pacific Ocean tsunamis; and volcanoes in Indonesia, Chile, Iceland that have produced large quantities of ash causing major disruption to aviation. In total, half a million people were killed by such natural disasters. These recurring events have increased our awareness of the destructive power of natural hazards and the major risks associated with them. While we have come a long way in the search for understanding such natural phenomena, and although our knowledge of Earth dynamics and plate tectonics has improved enormously, there are still fundamental uncertainties in our understanding of natural hazards. Increased understanding is crucial to improve our capacity for hazard prediction and mitigation. Volume highlights include: Main concepts associated with tectonic plate boundaries Novel studies on boundary-related natural hazards Fundamental concepts that improve hazard prediction and mitigation Plate Boundaries and Natural Hazards will be a valuable resource for scientists and students in the fields of geophysics, geochemistry, plate tectonics, natural hazards, and climate science. Read an interview with the editors to find out more: https://eos.org/editors-vox/plate-boundaries-and-natural-hazards
Natural Hazard Uncertainty Assessment Joseph Henry Press
This book is about how extreme and systemic risk can be analyzed in an integrated way. Risk analysis is understood to include measurement, assessment as well as management aspects. Integration is understood as being able to perform risk analysis for extreme and systemic events simultaneously. The presented approach is based on Sklar's theorem, which states that a multivariate distribution can be separated into two parts – one describing the marginal distributions and the other describing the dependency between the distributions using a so-called copula. It is suggested to reinterpret Sklar's theorem from a system or network perspective, treating copulas as a network property and individual, including extreme, risk as elements within the network. In that way, extreme and systemic risk can be analyzed independently as well as jointly across several scales. The book is intended for a large audience, and all techniques presented are guided with examples and applications with a special focus on natural disaster events. Furthermore, an extensive literature and discussion of it are given in each chapter for the interested reader.
A Safer Future Springer Science & Business Media
Uncertainties are pervasive in natural hazards, and it is crucial to develop robust and meaningful approaches to characterize and communicate uncertainties to inform modeling efforts. In this monograph we provide a broad, cross-disciplinary overview of issues relating to uncertainties faced in natural hazard and risk assessment. We introduce some basic tenets of uncertainty analysis, discuss issues related to communication and decision support, and offer numerous examples of analyses and modeling approaches that vary by context and scope. Contributors include scientists from across the full breath of the natural hazard scientific community, from those in real-time analysis of natural hazards to those in the research community from academia and government. Key themes and highlights include: Substantial breadth and depth of analysis in terms of the types of natural hazards addressed, the disciplinary perspectives represented, and the number of studies included Targeted, application-centered analyses with a focus on development and use of modeling techniques to address various sources of uncertainty Emphasis on the impacts of climate change on natural hazard processes and outcomes Recommendations for cross-disciplinary and science transfer across natural hazard sciences This volume will be an excellent resource for those interested in the current work on uncertainty classification/quantification and will document common and emergent research themes to allow all to learn from each other and build a more connected but still diverse and ever growing community of scientists. Read an interview with the editors to find out more: https://eos.org/editors-vox/reducing-uncertainty-in-hazard-prediction
Encyclopedia of Natural Hazards Cambridge University Press
This edited volume assesses capabilities of data mining algorithms for spatial modeling of natural hazards in different countries based on a collection of essays written by experts in the field. The book is organized on different hazards including landslides, flood, forest fire, land subsidence, earthquake, and gully erosion. Chapters were peer-reviewed by recognized scholars in the field of natural hazards research. Each chapter provides an overview on the topic, methods applied, and discusses examples used. The concepts and methods are explained at a level that allows undergraduates to understand and other readers learn through examples. This edited volume is shaped and structured to provide the reader with a comprehensive overview of all covered topics. It serves as a reference for researchers from different fields including land surveying, remote sensing, cartography, GIS, geophysics, geology, natural resources, and geography. It also serves as a guide for researchers, students, organizations, and decision makers active in land use planning and hazard management.
Extreme and Systemic Risk Analysis Oxford University Press
An earthquake shatters Haiti and a hurricane slices through Texas. We hear that nature runs rampant, seeking to destroy us through these 'natural disasters'. Science recounts a different story, however: disasters are not the consequence of natural causes; they are the consequence of human choices and decisions. we put ourselves in harm's way; we fail to take measures which we know would prevent disasters, no matter what the environment does. This can be both hard to accept, and hard to unravel. A complex of factors shape disasters. They arise from the political processes dictating where and what we build, and from social circumstances which create and perpetuate poverty and discrimination. They develop from the social preference to blame nature for the damage wrought, when in fact events such as earthquakes and storms are entirely commonplace environmental processes We feel the need to fight natural forces, to reclaim what we assume is ours, and to protect ourselves from what we perceive to be wrath from outside our communities. This attitude distracts us from the real causes of disasters: humanity's decisions, as societies and as individuals. It stops us accepting the real solutions to disasters: making better decisions. This book explores stories of some of our worst disasters to show how we can and should act to stop people dying when nature unleashes its energies. The disaster is not the tornado, the volcanic eruption, or climate change, but the deaths and injuries, the loss of irreplaceable property, and the lack and even denial of support to affected people, so that a short-term interruption becomes a long-term recovery nightmare. But we can combat this, as Kelman shows, describing inspiring examples of effective human action that limits damage, such as managing flooding in Toronto and villages in Bangladesh, or wildfire in Colorado. Throughout, his message is clear: there is no such thing as a natural disaster. The disaster lies in our inability to deal with the environment and with ourselves.
Natural Hazards Analysis World Bank Publications
A comprehensive overview of the concepts of vulnerability and resilience for natural hazards research for both physical and social scientists.
Extreme Value Theory with Applications to Natural Hazards Springer
Dendrogeomorphology Beginnings and Futures: A Personal Reminiscence My early forays into dendrogeomorphology occurred long before I even knew what that word meant. I was working as a young geoscientist in the 1960s and early 1970s on a problem with slope movements and deformed vegetation. At the same time, unknown to me, Jouko Alestalo in Finland was doing something similar. Both of us had seen that trees which produced annual growth rings were reacting to g- morphic processes resulting in changes in their internal and external growth p- terns. Dendroclimatology was an already well established field, but the reactions of trees to other environmental processes were far less well understood in the 1960s. It was Alestalo (1971) who first used the term, dendrogeomorphology. In the early 1970s, I could see that active slope-movement processes were affecting the growth of trees in diverse ways at certain localities. I wanted to learn more about those processes and try to extract a long-term chronology of movement from the highly diverse ring patterns.
Disaster by Choice Springer
Disaster Risk Management (DRM) combines, through a management perspective, the concept of prevention, mitigation and preparedness with response to the rising frequency and severity of natural hazards and disasters. This guide provides a set of tools that have been developed and tested in field projects, with particular reference to disaster-prone areas and vulnerable sectors and population groups.--Publisher's description.