Debris Flow Hazards And Related Phenomena

Selforganised Criticality and Predictability in Atmospheric FlowsRiver Dynamics and Integrated River ManagementDating Torrential Processes on Fans and ConesSea Level Rise and Coastal InfrastructureDebris-flow Hazards MitigationGravel-Bed RiversProgress in Landslide ScienceLandslide Hazards, Risks, and DisastersHydrology of DisastersGeographical Information Systems in Assessing Natural HazardsLandslide Risk ManagementSlope InstabilityManaging the Risks of Extreme Events and Disasters to Advance Climate Change AdaptationMobile Barrages and Intakes on Sediment Transporting RiversOF1992-02: Flood and related debris flow hazards in the Genoa quadrangle, west-central Nevada (a supplement to Map 1Cl)Debris-flow Hazards and Related PhenomenaMudflow Rheology and DynamicsFlood and Related Debris-flow Hazards Along Principal Drainages, Carson City Quadrangle, NevadaNatural Hazard Uncertainty AssessmentLandslides - Disaster Risk ReductionTree Rings and Natural HazardsThe Control of NatureDebris-flow Hazards and Related PhenomenaSnow and Ice-Related Hazards, Risks, and DisastersDebris FlowEnvironmental Forest ScienceGuidelines for the Geologic Evaluation of Debris-flow Hazards on Alluvial Fans in UtahLandslide Hazard and RiskDebris FlowVolcanic HazardsParticulate Two-phase FlowLandslides and Engineered Slopes. Experience, Theory and PracticeFifth International Conference on Debris-flow Hazards. Mitigation, Mechanics, Prediction and AssessmentDebris-flow Hazards and Related PhenomenaCoupled DEM-CFD Analyses of Landslide-Induced Debris FlowsLaser Scanning Applications in Landslide AssessmentOF1986-06: Flood and related debris flow hazards along principal drainages, Carson City quadrangle, NevadaHydrology and HydroclimatologyDebris-flow Hazards and Related PhenomenaAlluvial Fan Flooding

Selforganised Criticality and Predictability in Atmospheric Flows

With climate change and deforestation, debris flows and debris avalanches have become the most significant landslide hazards in many countries. In recent years there have been numerous debris flow avalanches in Southern Europe, South America and the Indian Subcontinent, resulting in major catastrophes and large loss of life. This is therefore a major high-profile problem for the world's governments and for the engineers and scientists concerned. Matthias Jakob and Oldrich Hungr are ideally suited to edit this book. Matthias Jakob has worked on debris flow for over a decade and has had numerous papers published on the topic, as well as working as a consultant on debris flow for municipal and provincial governments. Oldrich Hungr has worked on site investigations on debris flow, avalanches and rockfall, with emphasis on slope stability analysis and evaluation of risks to roads in built-up areas. He has also developed mathematical models for landslide dynamic analysis. They have invited world-renowned experts to joint them in this book.

River Dynamics and Integrated River Management

"River Dynamics and Integrated River Management" provides comprehensive information on rivers for integrated management, including natural processes, stresses resulting from human activities, and restoration of various parts of the river basin, including the watershed, mountain streams, alluvial rivers, estuaries, and natural and man-made lakes. Essential concepts, traditional and modern, such as river patterns, step-pool systems, vegetation-erosion charts, habitat diversity, and flushing times of bays, are clearly defined physically and explained with figures and pictures. Detailed mathematics and rigorous analyses are avoided so as to facilitate a holistic view of the subject of integrated river management. Researchers can easily familiarize themselves with the science of river management in its widest sense with the impressive pictures and examples in this book. Dr. Zhaoyin Wang is a professor at the Department of Hydraulic Engineering, Tsinghua University, China. Dr. Joseph H.W. Lee is a Chair Professor at the Department of Civil and Environmental Engineering, The Hong Kong University of Science & Technology, China. Dr. Charles S. Melching is a Professor at the College of Engineering, Marquette University, Milwaukee, WI, USA.

Dating Torrential Processes on Fans and Cones

Sea Level Rise and Coastal Infrastructure

Landslide Risk Management comprises the proceedings of the International Conference on Landslide Risk Management, held in Vancouver, Canada, from May 31 to June 3, 2005. The first part of the book contains state-of-the-art and invited lectures, prepared by teams of authors selected for their experience in specific topics assigned to them by the JTC-1 Committee. The second part is a selection of papers submitted to the conference, most of which serve as case-history illustrations of projects on landslide risk management. This reference work presents the current status of landslide risk management as viewed by experts from around the world.

Debris-flow Hazards Mitigation

This book presents a systematic approach to understanding and applying the principles of hydrology and hydroclimatology, examining the interactions among different components of the water cycle. It takes a fresh look at the fundamentals and challenges in hydrologic and hydroclimatic systems as well as climate change. The author describes the application of nontraditional data sets and new investigation techniques to water-related problems. He also examines long lead forecasting and simulation, time series analysis, and risk and uncertainty in hydrologic design.

Gravel-Bed Rivers

Presenting current knowledge in the field of mudflows, this book includes both rheological mudflow aspects, and information on mudflow characteristics in open channels. It includes sections on: · physical properties of suspensions · shear rheometry with suspensions · rheology of clay-water mixtures · rheology of mud suspensions · gradually and rapidly varied free surface flows Part of the IAHR Monograph Series, this informative book also includes fundamental equations for viscoplastic flows and provides the reader with helpful introductions to all the aspects it covers.

Progress in Landslide Science

A collection of 28 contributions from researchers on basic phenomena and advanced methods of investigation of particulate two-phase flow, this book contains review sections and original research results on new measurement methods, and experimental results on particulate two-phase flow.

Landslide Hazards, Risks, and Disasters

While John McPhee was working on his previous book, Rising from the Plains, he happened to walk by the engineering building at the University of Wyoming, where words etched in limestone said: "Strive on--the control of Nature is won, not given." In the morning sunlight, that central phrase--"the control of nature"--seemed to sparkle with unintended ambiguity. Bilateral, symmetrical, it could with equal speed travel in opposite directions. For some years, he had been planning a book about places in the world where people have been engaged in all-out battles with nature, about (in the words of the book itself) "any struggle against natural forces--heroic or venal, rash or well advised--when human beings conscript themselves to fight against the earth, to take what is not given, to rout the destroying enemy, to surround the base of Mt. Olympus demanding and expecting the surrender of the gods." His interest had first been sparked when he went into the Atchafalaya--the largest river swamp in North America--and had learned that virtually all of its waters were metered and rationed by a U.S. Army Corps of Engineers' project called Old River Control. In the natural cycles of the Mississippi's deltaic plain, the time had come for the Mississippi to change course, to shift its mouth more than a hundred miles and go down the Atchafalaya, one of its distributary branches. The United States could not afford that--for New Orleans, Baton Rouge, and all the industries that lie between would be cut off from river commerce with the rest of the nation. At a place called Old River, the Corps therefore had built a great fortress--part dam, part valve--to restrain the flow of the Atchafalaya and compel the Mississippi to stay where it is. In Iceland, in 1973, an island split open without warning and huge volumes of lava began moving in the direction of a harbor scarcely half a mile away. It was not only Iceland's premier fishing port (accounting for a large percentage of Iceland's export economy) but it was also the only harbor along the nation's southern coast. As the lava threatened to fill the harbor and wipe it out, a physicist named Thorbjorn Sigurgeirsson suggested a way to fight against the flowing red rock--initiating an all-out endeavor unique in human history. On the big island of Hawaii, one

of the world's two must eruptive hot spots, people are not unmindful of the Icelandic example. McPhee went to Hawaii to talk with them and to walk beside the edges of a molten lake and incandescent rivers. Some of the more expensive real estate in Los Angeles is up against mountains that are rising and disintegrating as rapidly as any in the world. After a complex coincidence of natural events, boulders will flow out of these mountains like fish eggs, mixed with mud, sand, and smaller rocks in a cascading mass known as debris flow. Plucking up trees and cars, bursting through doors and windows, filling up houses to their eaves, debris flows threaten the lives of people living in and near Los Angeles' famous canyons. At extraordinary expense the city has built a hundred and fifty stadium-like basins in a daring effort to catch the debris. Taking us deep into these contested territories, McPhee details the strategies and tactics through which people attempt to control nature. Most striking in his vivid depiction of the main contestants: nature in complex and awesome guises, and those who would attempt to wrest control from her--stubborn, often ingenious, and always arresting characters.

Hydrology of Disasters

Landslides and Engineered Slopes. Experience, Theory and Practice contains the invited lectures and all papers presented at the 12th International Symposium on Landslides, (Naples, Italy, 12-19 June 2016). The book aims to emphasize the relationship between landslides and other natural hazards. Hence, three of the main sessions focus on Volcanic-induced landslides, Earthquake-induced landslides and Weather-induced landslides respectively, while the fourth main session deals with Human-induced landslides. Some papers presented in a special session devoted to "Subareal and submarine landslide processes and hazard" and in a "Young Session" complete the books. Landslides and Engineered Slopes. Experience, Theory and Practice underlines the importance of the classic approach of modern science, which moves from experience to theory, as the basic instrument to study landslides. Experience is the key to understand the natural phenomena focusing on all the factors that play a major role. Theory is the instrument to manage the data provided by experience following a mathematical approach; this allows not only to clarify the nature and the deep causes of phenomena but mostly, to predict future and, if required, manage similar events. Practical benefits from the results of theory to protect people and man-made works. Landslides and Engineered Slopes. Experience, Theory and Practice is useful to scientists and practitioners working in the areas of rock and soil mechanics, geotechnical engineering, engineering geology and geology.

Geographical Information Systems in Assessing Natural Hazards

The General Assembly of the United Nations passed a resolution on December 11, 1987, designating the 1990s as the International Decade for Natural Disaster Reduction. This resolution has served as a catalyst in promotion of international cooperation in the field of natural disaster reduction; in initiation of wide-ranging research activities on natural and man-made disasters; in development of tech nologies for assessment, prediction, prevention, and mitigation through technical

assistance, technology transfer, demonstration projects, and education and training; and in dissemination of information related to measures for assessment, prediction, prevention, and mitigation of natural disasters. Disasters are manifestations of environmental extremes. Depending upon the type of disasters, their occurrence may have short-term andlor long-term detri mental environmental consequences. Disasters cannot be prevented altogether, but their impact can be mitigated. This book is an attempt to provide a discussion of hydrological aspects of the various types of natural disasters. It is hoped that others will be stimulated to write more comprehensive texts on this subject of enormous importance.

Landslide Risk Management

Comprehensive account, treating both theoretical and applied aspects of debris flow. The text begins with a discussion of fundamental mechanical aspects, such as flow characteristics, type classification, mechanics, occurrence and development, fully-developed flow and deposition processes. The second part of the book sheds light on the application of theory in relation to computer-simulated reproductions of real disasters. Attention is paid to debris flow controlling structures, design effectiveness and performance, soft countermeasure problems, such as identification of debris flow prone ravines and the prediction of occurrence by the concept of precipitation threshold. The qualitative and fundamental character of this book makes it an excellent textbook for graduate courses in debris flow and it is recommended reading for professionals in engineering, geosciences and water resources who are concerned with mechanics and countermeasures of debris flow. Keywords: stony debris flow, viscous debris flo, landslide induced debris flow, hazard zone mapping, grid type sabo dam.

Slope Instability

Snow and Ice-Related Hazards, Risks, and Disasters provides you with the latest scientific developments in glacier surges and melting, ice shelf collapses, paleo-climate reconstruction, sea level rise, climate change implications, causality, impacts, preparedness, and mitigation. It takes a geo-scientific approach to the topic while also covering current thinking about directly related social scientific issues that can adversely affect ecosystems and global economies. Puts the contributions from expert oceanographers, geologists, geophysicists, environmental scientists, and climatologists selected by a world-renowned editorial board in your hands Presents the latest research on causality, glacial surges, ice-shelf collapses, sea level rise, climate change implications, and more Numerous tables, maps, diagrams, illustrations and photographs of hazardous processes will be included Features new insights into the implications of climate change on increased melting, collapsing, flooding, methane emissions, and sea level rise

Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

Landslides are the most costly geo-hazard in the world, and they’re often the cause or the result of other hazards and disasters such as tsunamis, earthquakes, wildfires, and volcanic eruptions. Landslide Hazards, Risks, and Disasters makes a close and detailed examination of major mass movements and provides measures for more thorough and accurate monitoring, prediction, preparedness, and prevention. It takes a geoscientific approach to the topic while also discussing the impacts human-induced causes such as deforestation, blasting, and building construction—underscoring the multi-disciplinary nature of the topic. Contains contributions from expert geologists, seismologists, geophysicists, and environmental scientists selected by a world-renowned editorial board Presents the latest research on causality, economic impacts, fatality rates, and landslide and problem soil preparedness and mitigation Numerous tables, maps, diagrams, illustrations, photographs, and video captures of hazardous processes Discusses steps for prevention and treatment of problem soils, the most expensive geo-hazard in the world

Mobile Barrages and Intakes on Sediment Transporting Rivers

The 16 contributions to Geographical Information Systems in Assessing Natural Hazards report on GIS investigations into landslides, floods, volcanic eruptions, earthquakes and groundwater pollution hazards. Current methods for predicting extreme events are critically discussed, the emphasis being on the intrinsic complexity of this type of operation, requiring many spatial data, long historical records and sound models of the physical processes involved. Within this context, the potentials and limitations of GIS are addressed in terms of data acquisition, spatial data structures and modelling for simulation of the causal phenomena. Geographic Information Systems in Assessing Natural Hazards will help investigators in both public and private institutions to evaluate the actual effectiveness of GIS in coping with natural disasters, and to develop new strategies for projects aimed at the assessment and mitigation of the effects of such catastrophic events.

OF1992-02: Flood and related debris flow hazards in the Genoa quadrangle, west-central Nevada (a supplement to Map 1Cl)

This book presents current progress in landslide science and consists of four parts: progress in landslide science, landslide dynamics, landslide monitoring, and landslide risk assessment. It provides useful information to those working on landslide risk-mitigation planning. It can be also used as an introductory textbook for college students who wish to learn fundamental scientific achievements in the field of landslide disaster reduction.

Debris-flow Hazards and Related Phenomena

With contributions from key researchers across the globe, and edited by internationally recognized leading academics,

Gravel-bed Rivers: Processes and Disasters presents the definitive review of current knowledge of gravel-bed rivers. Continuing an established and successful series of scholarly reports, this book consists of the papers presented at the 8th International Gravel-bed Rivers Workshop. Focusing on all the recent progress that has been made in the field, subjects covered include flow, physical modeling, sediment transport theory, techniques and instrumentation, morphodynamics and ecological topics, with special attention given to aspects of disasters relevant to sediment supply and integrated river management. This up-to-date compendium is essential reading for geomorphologists, river engineers and ecologists, river managers, fluvial sedimentologists and advanced students in these fields.

Mudflow Rheology and Dynamics

Alluvial fans are gently sloping, fan-shaped landforms common at the base of mountain ranges in arid and semiarid regions such as the American West. Floods on alluvial fans, although characterized by relatively shallow depths, strike with little if any warning, can travel at extremely high velocities, and can carry a tremendous amount of sediment and debris. Such flooding presents unique problems to federal and state planners in terms of quantifying flood hazards, predicting the magnitude at which those hazards can be expected at a particular location, and devising reliable mitigation strategies. Alluvial Fan Flooding attempts to improve our capability to determine whether areas are subject to alluvial fan flooding and provides a practical perspective on how to make such a determination. The book presents criteria for determining whether an area is subject to flooding and provides examples of applying the definition and criteria to real situations in Arizona, California, New Mexico, Utah, and elsewhere. The volume also contains recommendations for the Federal Emergency Management Agency, which is primarily responsible for floodplain mapping, and for state and local decisionmakers involved in flood hazard reduction.

Flood and Related Debris-flow Hazards Along Principal Drainages, Carson City Quadrangle, Nevada

These proceedings contain papers presented at the Fourth International Conference on Debris-Flow Hazards Mitigation: Mechanics, Prediction, and Assessment held in Chengdu, China, September 10-13, 2007. The papers cover a wide range of topics on debris-flow science and engineering, in-cluding the factors triggering debris flows, geomorphic effects, mechanics of debris flows (e.g., rheology, fluvial mechanisms, erosion and deposition processes), numerical modelling, various de-bris-flow experiments, landslide-induced debris flows, assessment of debris-flow hazards and risk, field observations and measurements, monitoring and alert systems, structural and non-structural countermeasures against debris-flow hazards, and case studies. The papers reflect the latest devel-opments and advances in debris-flow research. Several studies discuss the development and appli-cation of Geographic Information System (GIS) and Remote Sensing (RS) technologies in debris-

flow hazard/risk assessment. Timely topics presented in a few papers also include the development of new or innovative techniques for debris-flow monitoring and alert systems, especially an infra-sound acoustic sensor for detecting debris flows. Many case studies illustrate a wide variety of de-bris-flow hazards and related phenomena as well as their hazardous effects on human activities and settlements. The papers are printed in black and white, and are also found in full on the accompanying CD-ROM, including all full-colour illustrations.

Natural Hazard Uncertainty Assessment

This is the 2nd edition of one of the most comprehensive accounts of debris flow, describing both theoretical and applied aspects. In the first part, the fundamental mechanical characteristics are discussed, including flow characteristics, type classification, mechanics, occurrence and development, fully developed flow, and deposition processes. Th

Landslides - Disaster Risk Reduction

With climate change and deforestation, debris flows and debris avalanches have become the most significant landslide hazards in many countries. In recent years there have been numerous debris flow avalanches in Southern Europe, South America and the Indian Subcontinent, resulting in major catastrophes and large loss of life. This is therefore a major high-profile problem for the world's governments and for the engineers and scientists concerned. Matthias Jakob and Oldrich Hungr are ideally suited to edit this book. Matthias Jakob has worked on debris flow for over a decade and has had numerous papers published on the topic, as well as working as a consultant on debris flow for municipal and provincial governments. Oldrich Hungr has worked on site investigations on debris flow, avalanches and rockfall, with emphasis on slope stability analysis and evaluation of risks to roads in built-up areas. He has also developed mathematical models for landslide dynamic analysis. They have invited world-renowned experts to joint them in this book.

Tree Rings and Natural Hazards

With climate change and deforestation, debris flows and debris avalanches have become the most significant landslide hazards in many countries. In recent years there have been numerous debris flow avalanches in Southern Europe, South America and the Indian Subcontinent, resulting in major catastrophes and large loss of life. This is therefore a major high-profile problem for the world's governments and for the engineers and scientists concerned. Matthias Jakob and Oldrich Hungr are ideally suited to edit this book. Matthias Jakob has worked on debris flow for over a decade and has had numerous papers published on the topic, as well as working as a consultant on debris flow for municipal and provincial governments. Oldrich Hungr has worked on site investigations on debris flow, avalanches and rockfall, with emphasis on

slope stability analysis and evaluation of risks to roads in built-up areas. He has also developed mathematical models for landslide dynamic analysis. They have invited world-renowned experts to joint them in this book.

The Control of Nature

Debris-flow Hazards and Related Phenomena

Rapid growth in water requirements makes it necessary to increase the amount of water drawn from rivers. The dams necessary for capturing river water have to be built to resist damage when large floods occur, and an idea of the possible destructive power of floods is given by the front photograph. The need for protection results in thick sill structures fitted with gates, and ""upstream"" and ""downstream"" cut-off walls. Sediment transported by rivers settles forming deposits behind dams, where flow velocities decrease. On the other hand, where flow velocities are high through hydraulic machinery (pums and turbines) fed from the dam, it can be necessary to remove even fine sand from the water, and also to remove floating debris. Various hydro-mechanical installations (including gates and screens) are introduced into the flow circuits to deal with sediment and debris problems.Many emperical solutions to definition of very important details complement standard design procedures. Understanding of their use is facilitated by numerous illustrations.

Snow and Ice-Related Hazards, Risks, and Disasters

This Intergovernmental Panel on Climate Change Special Report (IPCC-SREX) explores the challenge of understanding and managing the risks of climate extremes to advance climate change adaptation. Extreme weather and climate events, interacting with exposed and vulnerable human and natural systems, can lead to disasters. Changes in the frequency and severity of the physical events affect disaster risk, but so do the spatially diverse and temporally dynamic patterns of exposure and vulnerability. Some types of extreme weather and climate events have increased in frequency or magnitude, but populations and assets at risk have also increased, with consequences for disaster risk. Opportunities for managing risks of weather- and climate-related disasters exist or can be developed at any scale, local to international. Prepared following strict IPCC procedures, SREX is an invaluable assessment for anyone interested in climate extremes, environmental disasters and adaptation to climate change, including policymakers, the private sector and academic researchers.

Debris Flow

This book presents a new concept of General Systems Theory and its application to atmospheric physics. It reveals that energy input into the atmospheric eddy continuum, whether natural or manmade, results in enhancement of fluctuations of all scales, manifested immediately in the intensification of high-frequency fluctuations such as the Quasi-Biennial Oscillation and the El-Nino–Southern Oscillation cycles. Atmospheric flows exhibit self-organised criticality, i.e. long-range correlations in space and time manifested as fractal geometry to the spatial pattern concomitant with an inverse power law form for fluctuations of meteorological parameters such as temperature, pressure etc. Traditional meteorological theory cannot satisfactorily explain the observed self-similar space time structure of atmospheric flows. A recently developed general systems theory for fractal space-time fluctuations shows that the larger-scale fluctuation can be visualised to emerge from the space-time averaging of enclosed small-scale fluctuations, thereby generating a hierarchy of self-similar fluctuations manifested as the observed eddy continuum in power spectral analyses of fractal fluctuations. The interconnected network of eddy circulations responds as a unified whole to local perturbations such as global-scale response to El-Nino events. The general systems theory model predicts an inverse power law form incorporating the golden mean τ for the distribution of space-time fluctuation patterns and for the power (variance) spectra of the fluctuations. Since the probability distributions of amplitude and variance are the same, atmospheric flows exhibit quantumlike chaos. Long-range correlations inherent to power law distributions of fluctuations are identified as nonlocal connection or entanglement exhibited by quantum systems such as electrons or photons. The predicted distribution is close to the Gaussian distribution for small-scale fluctuations, but exhibits a fat long tail for large-scale fluctuations. Universal inverse power law for fractal fluctuations rules out unambiguously linear secular trends in climate parameters.

Environmental Forest Science

Guidelines for the Geologic Evaluation of Debris-flow Hazards on Alluvial Fans in Utah

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.

Landslide Hazard and Risk

Sea level rise and coastal erosion had drawn an increasing awareness recently as the repercussion of increase of sea level and coastal erosion would reshape the earth's system and induce a tremendous loss in ecological or economics cost. Governments are dedicated to meliorate the occurrence of these phenomena, or else all creations on the earth will suffer from the catastrophe. Global warming is one of the crucial factors resulting in the increase of sea level and coastal erosion. Remote sensing and geographic information systems (GIS) technologies are thoroughly adopted and applied to monitor the dynamic change of the nature system, such as coastal land use and land cover, sea level rise, and coastal infrastructure.

Debris Flow

This book reflects the latest research results in computer modelling of landslide-induced debris flows. The book establishes an understanding of the initiation and propagation mechanisms of landslides by means of numerical simulations, so that mitigation strategies to reduce the long-term losses from landslide hazards can be devised. In this context, the book employs the Discrete Element Method (DEM) and Computational Fluid Dynamics (CFD) to investigate the mechanical and hydraulic behaviour of granular materials involved in landslides – an approach that yields meaningful insights into the flow mechanisms, concerning e.g. the mobilization of sediments, the generation and dissipation of excess pore water pressures, and the evolution of effective stresses. As such, the book provides valuable information, useful methods and robust numerical tools that can be successfully applied in the field of debris flow research.

Volcanic Hazards

This book is related to various applications of laser scanning in landslide assessment. Landslide detection approaches, susceptibility, hazard, vulnerability assessment and various modeling techniques are presented. Optimization of landslide conditioning parameters and use of heuristic, statistical, data mining approaches, their advantages and their relationship with landslide risk assessment are discussed in detail. The book contains scanning data in tropical forests; its indicators, assessment, modeling and implementation. Additionally, debris flow modeling and analysis including source of debris flow identification and rockfall hazard assessment are also presented.

Particulate Two-phase Flow

With climate change and deforestation, debris flows and debris avalanches have become the most significant landslide hazards in many countries. In recent years there have been numerous debris flow avalanches in Southern Europe, South

America and the Indian Subcontinent, resulting in major catastrophes and large loss of life. This is therefore a major high-profile problem for the world's governments and for the engineers and scientists concerned. Matthias Jakob and Oldrich Hungr are ideally suited to edit this book. Matthias Jakob has worked on debris flow for over a decade and has had numerous papers published on the topic, as well as working as a consultant on debris flow for municipal and provincial governments. Oldrich Hungr has worked on site investigations on debris flow, avalanches and rockfall, with emphasis on slope stability analysis and evaluation of risks to roads in built-up areas. He has also developed mathematical models for landslide dynamic analysis. They have invited world-renowned experts to joint them in this book.

Landslides and Engineered Slopes. Experience, Theory and Practice

The Utah Geological Survey (UGS) developed these guidelines to help geologists evaluate debris-flow hazards on alluvial fans to ensure safe development. Debris-flow hazard evaluations are particularly important because alluvial fans are the primary sites of debris-flow deposition and are also favored sites for development. The purpose of a debris-flow-hazard evaluation is to characterize the hazard and provide design parameters for risk reduction. The UGS recommends critical facilities and structures for human occupancy not be placed in active debris flow travel and deposition areas unless the risk is reduced to an acceptable level. These guidelines use the characteristics of alluvial fan deposits as well as drainage-basin and feeder-channel sediment-supply conditions to evaluate debris-flow hazards. The hazard evaluation relies on the geomorphology, sedimentology, and stratigraphy of existing alluvial fan deposits. Analysis of alluvial-fan deposits provides the geologic basis for estimating frequency and potential volume of debris flows and describing debris-flow behavior. Drainage-basin and feeder-channel characteristics determine potential debris-flow susceptibility and the volume of stored channel sediment available for sediment bulking in future flows.

Fifth International Conference on Debris-flow Hazards. Mitigation, Mechanics, Prediction and Assessment

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.

Debris-flow Hazards and Related Phenomena

With the increasing need to take an holistic view of landslide hazard and risk, this book overviews the concept of risk research and addresses the sociological and psychological issues resulting from landslides. Its integrated approach offers understanding and ability for concerned organisations, landowners, land managers, insurance companies and researchers to develop risk management solutions. Global case studies illustrate a variety of integrated approaches, and a concluding section provides specifications and contexts for the next generation of process models.

Coupled DEM-CFD Analyses of Landslide-Induced Debris Flows

Laser Scanning Applications in Landslide Assessment

OF1986-06: Flood and related debris flow hazards along principal drainages, Carson City quadrangle, Nevada

The book consists of sixty nine papers covering forests as environment from various aspects, forest ecosystems & biodiversity, forest hydrology, natural disasters (landslides and debris flows et al) in mountains and their reduction.

Hydrology and Hydroclimatology

This book provides a detailed overview on methods used for the dating of past torrential activity on fans and cones and fosters the discussion on the impact of past and potential future climate change on torrential processes. The book has a clear focus on the practical applications of these methods, complemented by case studies. The limits of each dating method in case of excessive natural and human interventions on fans and cones are shown.

Debris-flow Hazards and Related Phenomena

This book documents the First World Landslide Forum, which was jointly organized by the International Consortium on Landslides (ICL), eight UN organizations (UNESCO, WMO, FAO, UN/ISDR, UNU, UNEP, World Bank, UNDP) and four NGOs (International Council for Science, World Federation of Engineering Organizations, Kyoto Univ. and Japan Landslide Society) in Tokyo in 2008. The material consists of four parts: The Open Forum "Progress of IPL Activities; Four Thematic Lectures in the Plenary Symposium "Global Landslide Risk Reduction"; Six Keynote Lectures in the Plenary session; and the aims and overviews of eighteen parallel sessions (dealing with various aspects necessary for landslide disaster risk reduction such as: observations from space; climate change and slope instability; landslides threatening heritage sites; the economic and social impact of landslides; monitoring, prediction and early warning; and risk-management strategies in urban area, etc.) Thus it enables the reader to benefit from a wide range of research intended to reduce risk due to landslide disasters as presented in the first global multi-disciplinary meeting.

Alluvial Fan Flooding

Volcanic Hazards: A Sourcebook on the Effects of Eruptions provides a comprehensive discussion of volcanic eruptions and their effects. This volume provides background data on volcanic activity with attention directed specifically at those types of activity and those characteristics which are hazardous. It establishes the direct effects of volcanic eruptions on humans in terms of death and injuries, and social aspects such as perception of eruption hazards, evacuation, panic, looting, and religious beliefs. It discusses the indirect consequences of volcanic eruptions for humans by illustrating the effects on buildings, utilities, communication networks and machinery, agriculture, and commercial activity. This book should be of interest to planners, engineers, city administrators, agriculturalists, and emergency services personnel who must deal with the effects of volcanic hazards; to volcanologists and geologists who did not know eruptions affected so many things; to geographers, environmentalists, and natural hazard scientists who are interested in the interrelatedness of phenomena; and to citizens who have experienced, or might yet experience, some of these effects.