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There is a growing need for appropriate models which address the management of land and water resources and ecosystems at large space and time scales.

Theories of non-linear hydrological processes must be extrapolated to large-scale, three-dimensional natural systems such as drainage basins, flood plains and wetlands. This book reports on recent progress in research on scale issues in hydrological modelling. It brings together 27 papers from two special issues of the journal *Hydrological Processes*. The book makes a significant contribution towards developing research strategies for linking model parameterisations across a range of temporal and spatial scales. The papers selected for this book reflect the tremendous advances which have been made in research into scale issues in hydrological modelling during the last ten years.

The book presents the processes governing the dynamics of landscapes, soils and sediments, water and energy under different climatic regions using studies conducted in varied climatic zones including arid, semi-arid, humid and wet regions. The spatiotemporal availability of the processes and fluxes and their linkage to the environment, land, soil and water management are presented at various scales. Spatial scales including laboratory, field, watershed, river basin and regions are represented. The effect of tillage operations and land management on soil physical characteristics and soil moisture is discussed. The book has 35 chapters in seven sections: 1) Landscape and Land Cover

Dynamics, 2) Rainfall-Runoff Processes, 3) Floods and Hydrological Processes 4) Groundwater Flow and Aquifer Management, 5) Sediment Dynamics and Soil Management, 6) Climate change impact on vegetation, sediment and water dynamics, and 7) Water and Watershed Management.

Computational modeling is emerging as a powerful new approach to study and manipulate biological systems. Multiple methods have been developed to model, visualize, and rationally alter systems at various length scales, starting from molecular modeling and design at atomic resolution to cellular pathways modeling and analysis. Higher time and length scale processes, such as molecular evolution, have also greatly benefited from new breeds of computational approaches. This book provides an overview of the established computational methods used for modeling biologically and medically relevant systems.

Uncertainty in the predictions of science when applied to the environment is an issue of great current relevance in relation to the impacts of climate change, protecting against natural and man-made disasters, pollutant transport and sustainable resource management.

However, it is often ignored both by scientists and decision makers, or interpreted as a conflict or disagreement between scientists. This is not necessarily the case, the scientists might well agree, but their predictions would still be uncertain and knowledge of that uncertainty might be important in decision making.

Environmental Modelling: An Uncertain Future?

introduces students, scientists and decision makers to:

the different concepts and techniques of uncertainty estimation in environmental prediction the philosophical background to different concepts of uncertainty the constraint of uncertainties by the collection of observations and data assimilation in real-time forecasting techniques for decision making under uncertainty. This book will be relevant to environmental modellers, practitioners and decision makers in hydrology, hydraulics, ecology, meteorology and oceanography, geomorphology, geochemistry, soil science, pollutant transport and climate change. A companion website for the book can be found at www.uncertain-future.org.uk

These edited proceedings of the NATO Advanced Research Workshop detail the ongoing search for better ways of protecting human life, land, property and the environment by improved flood management. Such flood management is difficult enough in river basins controlled by a single authority, and becomes even more challenging when dealing with transboundary floods, which may originate in one country or jurisdiction and propagate downstream to another country, or jurisdiction. Rainfall-Runoff Modelling: The Primer Second Edition focuses on predicting hydrographs using models based on data and on representations of hydrological process. Dealing with the history of the development of rainfall-runoff models, uncertainty in model predictions, good and bad practice and ending with a look at how to predict future catchment hydrological responses this book provides an essential underpinning of rainfall-runoff modelling topics."--pub. desc.

Up to now, the global burden of illness and deaths caused by foodborne disease has never been quantified. In order to fill this data vacuum, the World Health Organization (WHO) together with its partners launched in 2006 the Initiative to Estimate the Global Burden of Foodborne Diseases. After an initial consultation, WHO in 2007 established a Foodborne Disease Burden Epidemiology Reference Group (FERG) to lead the initiative. Six taskforces were established under FERG, focusing on groups of hazards or aspects of the methodology. These taskforces commissioned systematic reviews and other studies to provide the data from which to calculate the burden estimates. This report is an outcome of a decade of work by WHO key partners and a number of dedicated individuals. Some additional findings--which cannot be integrated into this report--will be published and user-friendly online tools made available separately. This report and related tools should enable governments and other stakeholders to draw public attention to this often under-estimated problem and mobilize political will and resources to combat foodborne diseases.

Physical Virology Virus Structure and Mechanics Springer
SickKids Handbook of Pediatric Thrombosis and Hemostasis takes the reader through the entire field of paediatric thrombosis and hemostasis. This practical reference book will be a convenient, comprehensive, source of information and provides up-to-date, evidence-based guidance in the diagnosis and management of inherited and acquired bleeding disorders and thrombotic events of the venous, arterial, cardiac and central

nervous systems that affect children, including the neonate. Written and reviewed by international experts in the field, SickKids Handbook of Pediatric Thrombosis and Hemostasis will guide health care professionals involved in the assessment and care of children with all types of bleeding and clotting disorders, including general and specialist pediatricians, in particular intensivists, neonatologists, cardiologists/cardiac surgeons, rheumatologists and nephrologists; hematologists/oncologists as well as nurses, nurse practitioners and pharmacists. Written in a user-friendly, algorithmic approach, the resource will serve students and trainees and assist teachers in developing practical lessons.

This Book of Abstracts is the main publication of the 72nd Annual Meeting of the European Federation of Animal Science (EAAP). It contains abstracts of the invited papers and contributed presentations of the sessions of EAAP's eleven Commissions: Animal Genetics, Animal Nutrition, Animal Management and Health, Animal Physiology, Cattle Production, Sheep and Goat Production, Pig Production, Horse Production and Livestock Farming Systems, Insects and Precision Livestock Farming.

First considers the assessment of the hydrological impacts of future climate and then addresses decision making for mitigation/adaptation strategies, given the uncertainties associated with predictions by water resources and hydrological extremes models.

Digital health and medical informatics have grown in importance in recent years, and have now become

central to the provision of effective healthcare around the world. This book presents the proceedings of the 30th Medical Informatics Europe conference (MIE). This edition of the conference, hosted by the European Federation for Medical Informatics (EFMI) since the 1970s, was due to be held in Geneva, Switzerland in April 2020, but as a result of measures to prevent the spread of the Covid19 pandemic, the conference itself had to be cancelled. Nevertheless, because this collection of papers offers a wealth of knowledge and experience across the full spectrum of digital health and medicine, it was decided to publish the submissions accepted in the review process and confirmed by the Scientific Program Committee for publication, and these are published here as planned. The 232 papers are themed under 6 section headings: biomedical data, tools and methods; supporting care delivery; health and prevention; precision medicine and public health; human factors and citizen centered digital health; and ethics, legal and societal aspects. A 7th section deals with the Swiss personalized health network, and section 8 includes the 125 posters accepted for the conference. Offering an overview of current trends and developments in digital health and medical informatics, the book provides a valuable information resource for researchers and health practitioners alike.

This in-depth survey of salutogenesis shows the breadth and strengths of this innovative perspective on health promotion, health care, and wellness. Background and historical chapters trace the development of the salutogenic model of health, and flesh out the central

concepts, most notably generalized resistance resources and the sense of coherence, that differentiate it from pathogenesis. From there, experts describe a range of real-world applications within and outside health contexts, from positive psychology to geriatrics, from small towns to corrections facilities, and from school and workplace to professional training. Perspectives from scholars publishing in languages other than English show the global relevance of the field. Among the topics in the Handbook:

- Emerging ideas relevant to the salutogenic model of health
- Specific resistance resources in the salutogenic model of health
- The sense of coherence and its measurement
- The application of salutogenesis in communities and neighborhoods
- The application of salutogenesis to health development in youth with chronic conditions
- The application of salutogenesis in mental health care settings

The Handbook of Salutogenesis summarizes an increasingly salient field for graduate and professional students of public health, nursing, psychology, and medicine, and for their instructors. It will also appeal to health-related academicians and professionals who wish to have a thorough grounding in the topic.

This book provides information essential for anyone interested in climate and environmental change of the Himalayan region, including land and resource managers, environmental planners, conservationists, environmentalists, geographers, climatologists, ecologists, and students. The book is unique in its coverage of the current understanding of the science of climate change in the Himalayan mountain system and

of the major impacts on physical systems and ecosystems. The book gives an overview of the physical science basis of climate change and explains drivers and processes of glacier and vegetation dynamics. The book covers relevant aspects of accelerated climate change observed in the Himalayan mountain system, and highlights the regional differentiation of climatic changes and associated environmental modifications. The focus is on climate variability and change, and how physical systems and ecosystems respond to climate change impacts. Consequences include impacts on physical systems such as glacier shrinkage, glacial lake outburst floods, altered hydrological characteristics, permafrost warming and thawing, and mass movements on slopes. Climate change is also a powerful stressor on ecosystems and induces range shifts of plant and animal species and alterations in terms of phenology, biomass, plant cover, plant group dominance and species composition. Thus, ecosystem structure and functioning will be strongly affected. The book has an introductory chapter followed by a section on climate change, a section on impacts on glaciers and hydrology, and a section on vegetation dynamics. Each section has several chapters presenting key concepts, major drivers and key processes of environmental change in the Himalayan region from different perspectives. Climate change impacts in the Himalaya have not been studied in much detail, and respective findings were not presented so far in a comprehensive overview. This book summarizes the current knowledge of interactions between climate change and the dynamics of glaciers,

hydrology, and vegetation.

This book explores a new challenge in virology: to understand how physical properties of virus particles (virions) and viruses (infected cells) affect the course of an infection. Insights from the emerging field of physical virology will contribute to understanding of the physical nature of viruses and cells, and will open new ways for anti-viral interference. Nine chapters and an editorial written by physicists, chemists, biologists and computational experts describe how virions serve as trail blazers in uncharted territory of cells. The authors outline how particles change in composition as they interact with host cells. Such virus dynamics are crucial for virus entry into cells and infection. It influences the modern concepts of virus-host interactions, viral lineages and evolution. The volume gives numerous up-to-date examples of modern virology and provides a fascinating read for researchers, clinicians and students in the field of infectious diseases.

Principles and Concepts of Behavioral Medicine A Global Handbook Edwin B. Fisher, Linda D. Cameron, Alan J. Christensen, Ulrike Ehlert, Brian Oldenburg, Frank J. Snoek and Yan Guo This definitive handbook brings together an international array of experts to present the broad, cells-to-society perspectives of behavioral medicine that complement conventional models of health, health care, and prevention. In addition to applications to assessment, diagnosis, intervention, and management, contributors offer innovative prevention and health promotion strategies informed by current knowledge of the mechanisms and pathways of behavior

change. Its range of conceptual and practical topics illustrates the central role of behavior in health at the individual, family, community, and population levels, and its increasing importance to person-centered care. The broad perspectives on risk (e.g., stress, lifestyle), management issues (e.g., adherence, social support), and overarching concerns (e.g., inequities, health policy) makes this reference uniquely global as it addresses the following core areas:

- The range of relationships and pathways between behavior and health.
- Knowing in behavioral medicine; epistemic foundations.
- Key influences on behavior and the relationships among behavior, health, and illness.
- Approaches to changing behavior related to health.
- Key areas of application in prevention and disease management.
- Interventions to improve quality of life.
- The contexts of behavioral medicine science and practice.

Principles and Concepts of Behavioral Medicine opens out the contemporary world of behavior and health to enhance the work of behavioral medicine specialists, health psychologists, public health professionals and policymakers, as well as physicians, nurses, social workers and those in many other fields of health practice around the world.

This timely work is a collection of papers presented at the XIth international congress of the International Association of Plant Tissue Culture & Biotechnology. It continues the tradition of the IAPTC&B in publishing the proceedings of its congresses. The work is an up-to-date report on the most significant advances in plant tissue culture and biotechnology as presented by leading international scientists. It will be crucial reading for

agricultural scientists, among others.

This issue will focus on treatments for Chronic Rhinosinusitis. Dr. Wyste Fokkens guest edits topics such as: "Inflammatory mechanisms in chronic rhinosinusitis with or without nasal polyposis," "European versus Asian Chronic rhinosinusitis. What did it teach us and what do we want to know," "Epithelium, cilia and mucus, their importance in chronic rhinosinusitis Noam Cohen Noam," "Aspirin intolerance: does desensitization alter the course of the disease," "Anti-inflammatory effects of macrolides: applications in CRS," and more! The book focuses on the evolutionary impact of horizontal gene transfer processes on pathogenicity, environmental adaptation and biological speciation. Newly acquired genetic material has been considered as a driving force in evolution for prokaryotic genomes for many years, with recent technical developments advancing this field further. However, the extent and implications of gene transfer between prokaryotes and eukaryotes still raise controversies. This multi-authored volume introduces various means by which DNA can be exchanged, covers gene transfer between prokaryotes and their viruses as well as between bacteria and eukaryotes, such as fungi, plants and animals, and addresses the role of horizontal gene transfer in human diseases. Aspects discussed also include the relevance for virulence and drug resistance development on one hand, and for the occurrence of naturally derived antibiotics and other secondary metabolites on the other hand. This book offers new insights to anyone interested in genome evolution and the exchange of DNA between

the different domains of life, the genetic toolkit for adaptation and the emergence of multidrug resistant bacteria.

Available Open Access under CC-BY-NC license. Health literacy addresses a range of social dimensions of health including knowledge, navigation, communication as well as individual and organizational skills for accessing, understanding, evaluating and using of information. Especially over the past decade, health literacy has become a major public health concern globally as an asset for promoting health, wellbeing and sustainable development. This comprehensive handbook provides an invaluable overview of current international thinking about health literacy, highlighting cutting edge research, policy and practice in the field. With a diverse team of contributors, the book addresses health literacy across the life-span and offers insights from different populations and settings. Providing a wide range of major findings, the book outlines current discourse in the field and examines necessary future dialogues and new perspectives.

Water is vital for life. Since the dawn of civilization, much effort has been made to harness sources of fresh water. Recent years have raised global awareness of the need for increasing demand of water worldwide, largely because of growing population, rising standard of living, higher demand for energy, and greater appreciation for environmental quality. As an example, the world population has increased threefold in the past five decades. In order to meet the rising water demand, water resources are being developed by building large

dams, reservoirs, barrages and weirs across rivers worldwide. The guiding principle for water resources development has been to ensure adequate supply of water for agriculture, domestic use (including fine drinking water), waste disposal, industries, and energy production, with due attention to maintain the ecosystem functions. This development, however, depends on a holistic, cooperative and scientific approach. The basic inputs in the assessment of water resources for a given region are from hydrological data and the subject of hydrology forms the core in achieving sustainable development of water resources. Barring a few exceptions, hydrological data for most river basins are sparse and therefore it is difficult to comprehensively assess their water resources. The major source of water is rainfall which occurs as a result of condensation of atmospheric moisture governed by the science of meteorology.

This second edition volume expands on the previous edition with a discussion of new and updated methods used to study the Herpes Simplex Virus (HSV), along with a look at the latest developing technologies such as next generation sequencing, CRISPR/Cas9 engineering, and the use of BioID to identify protein-protein interactions. Chapters cover topics such as the biology, life cycle, and current state of antiviral and vaccine development for HSV-1; protocols on growing viruses in cell culture and manipulating viral DNA; design and application of HSV-1 vectors for cancer- and gene-therapy; and

structural analyses, microscopy, proteomics, and testing of antivirals. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Cutting-edge and comprehensive, Herpes Simplex Virus: Methods and Protocols, Second Edition is a valuable resource for immunologists, and molecular and cell biologists. This book will also be useful for researchers who wish to initiate molecular and/or cellular-based approaches to study HSV. .

This book is written by experts with clinical expertise on diagnosis, treatment, and follow-up of women with cancer during pregnancy. It provides a comprehensive review of data and an overview of psychological, ethical, and social aspects. Chapters address the diagnosis, treatment, and follow-up of women with solid or hematologic cancers. The safety of subsequent pregnancy and the maintenance or enhancement of fertility in women undergoing cancer therapy are also addressed.

Vascular Liver Disease: Mechanisms and Management covers all of the disease entities that stem from abnormalities that affect the hepatic vasculature. This multi-authored text includes the mechanisms and management of intrahepatic

vascular disease, including the most common cause of vascular disease of the liver, cirrhosis. Other less common diseases of the liver vasculature are also covered such as sinusoidal obstruction syndrome (previously known as veno-occlusive disease), portal vein thrombosis, the Budd-Chiari syndrome and congenital vascular malformations. These entities, although rare, are a challenge to physicians and physician scientists. Although many textbooks have been written on the consequences of cirrhosis on the liver vasculature, this is the only volume that focuses on the liver vasculature as a separate entity, providing an innovative approach to liver disease management. *Vascular Liver Disease: Mechanisms and Management* will be of great value to clinical investigators and basic scientists interested in the liver circulation as well as clinical gastroenterologists and hepatologists, hepatobiliary surgeons and transplant surgeons, and to interventional radiologists with a particular interest in the liver.

Effects of global warming on the physical, chemical, ecological structure and function and biodiversity of freshwater ecosystems are not well understood and there are many opinions on how to adapt aquatic environments to global warming in order to minimize the negative effects of climate change. *Climatic Change and Global Warming of Inland Waters* presents a synthesis of the latest research on a whole range of inland water habitats – lakes, running

water, wetlands – and offers novel and timely suggestions for future research, monitoring and adaptation strategies. A global approach, offered in this book, encompasses systems from the arctic to the Antarctic, including warm-water systems in the tropics and subtropics and presents a unique and useful source for all those looking for contemporary case studies and presentation of the latest research findings and discussion of mitigation and adaptation throughout the world. Edited by three of the leading limnologists in the field this book represents the latest developments with a focus not only on the impact of climate change on freshwater ecosystems but also offers a framework and suggestions for future management strategies and how these can be implemented in the future. Limnologists, Climate change biologists, fresh water ecologists, palaeoclimatologists and students taking relevant courses within the earth and environmental sciences will find this book invaluable. The book will also be of interest to planners, catchment managers and engineers looking for solutions to broader environmental problems but who need to consider freshwater ecology.

This book discusses ethical questions surrounding research and innovation in military and humanitarian contexts. It focuses on human enhancement in the military. Recently, the availability of medical enhancement designed to make soldiers more

capable of surviving during conflict, as well as enabling them to defeat their enemies, has emerged. Innovation and medical research in military and humanitarian contexts may thus yield positive effects, but simultaneously leads to a number of highly problematic ethical issues. The work contains contributions on medical ethics that take into account the specific roles and obligations of military and humanitarian health care providers and the ethical problems they encounter. They cover different aspects of research and innovation such as vaccine development, medical enhancement, compassionate and experimental drug use, research and application of new technologies such as wearables, “Humanitarian innovation” to cope with scarce resources, Biometrics, big data, etc. The book is of interest and importance to researchers and policy makers involved with human enhancement, medical research, and innovation in military and humanitarian missions.

A team of veteran drug researchers in medicine, law, and the social sciences provides the most comprehensive, penetrating, and original analysis of the crack cocaine problem in America to date. Helps readers understand why the United States has the most repressive, expensive, yet least effective drug policy in the Western world.

'A Life Course Approach to Chronic Disease Epidemiology' provides a detailed and up-to-date

review of research findings which suggest that many of the chronic diseases prevalent in adult life have their origins in early life.

Predicting water runoff in ungauged water catchment areas is vital to practical applications such as the design of drainage infrastructure and flooding defences, runoff forecasting, and for catchment management tasks such as water allocation and climate impact analysis. This full colour book offers an impressive synthesis of decades of international research, forming a holistic approach to catchment hydrology and providing a one-stop resource for hydrologists in both developed and developing countries. Topics include data for runoff regionalisation, the prediction of runoff hydrographs, flow duration curves, flow paths and residence times, annual and seasonal runoff, and floods. Illustrated with many case studies and including a final chapter on recommendations for researchers and practitioners, this book is written by expert authors involved in the prestigious IAHS PUB initiative. It is a key resource for academic researchers and professionals in the fields of hydrology, hydrogeology, ecology, geography, soil science, and environmental and civil engineering.

Features real-world examples and a mini-dictionary Your friendly guide to understanding Chinese - quickly and easily! Curious about Chinese? Whether you're a student, a traveler, doing international business, or you just want to pick up basic Chinese, this clear, easy-to-follow guide will have you pronouncing words in standard Mandarin like a native speaker. From grammar, numbers, and vocabulary to greetings, popular expressions, and proper etiquette, you'll make yourself understood in no time! Discover how to * Have everyday conversations * Speak in "perfect pitch" * Construct sentences * Understand cultural rules and taboos * Get around in a Chinese-speaking country

This volume highlights the most interesting biomedical and clinical applications of high-dimensional flow and mass cytometry. It reviews current practical approaches used to perform high-dimensional experiments and addresses key bioinformatic techniques for the analysis of data sets involving dozens of parameters in millions of single cells. Topics include single cell cancer biology; studies of the human immunome; exploration of immunological cell types such as CD8+ T cells; decipherment of signaling processes of cancer; mass-tag cellular barcoding; analysis of protein interactions by proximity ligation assays; Cytobank, a platform for the analysis of cytometry data; computational analysis of high-dimensional flow cytometric data; computational deconvolution approaches for the description of intracellular signaling dynamics and hyperspectral cytometry. All 10 chapters of this book have been written by respected experts in their fields. It is an invaluable reference book for both basic and clinical researchers.

In this book, contributions from several experts specializing in the area of flood risk management are assembled into a single volume. Application and testing of numerical and statistical models that can simulate the complex reality along with effective flood management strategies that are being implemented in various nations are presented. This collection of topics will provide an update to the reader as to the state of the art in this important technical field.

This book examines one of the most important and complex of the world's tropical rainforest regions: the greater Panama Canal Watershed. The Rio Chagres is the primary water source for operating the Canal, and supplies potable water for municipal use and electricity generation, but science has left this important national resource largely unstudied. The text promotes understanding of the physical and ecological components of an isolated and largely pristine tropical

rainforest.

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