

Applied Hydrology

This textbook covers the main applications of statistical methods in hydrology. It is written for upper undergraduate and graduate students but can be used as a helpful guide for hydrologists, geographers, meteorologists and engineers. The book is very useful for teaching, as it covers the main topics of the subject and contains many worked out examples and proposed exercises. Starting from simple notions of the essential graphical examination of hydrological data, the book gives a complete account of the role that probability considerations must play during modelling, diagnosis of model fit, prediction and evaluating the uncertainty in model predictions, including the essence of Bayesian application in hydrology and statistical methods under nonstationarity. The book also offers a comprehensive and useful discussion on subjective topics, such as the selection of probability distributions suitable for hydrological variables. On a practical level, it explains MS Excel charting and computing capabilities, demonstrates the use of Winbugs free software to solve Monte Carlo Markov Chain (MCMC) simulations, and gives examples of free R code to solve nonstationary models with nonlinear link functions with climate covariates.

This state-of-the-art book clearly explains the basic principles of soil hydrology and the current knowledge in this field. It particularly highlights the estimation and application of measurements and evaluation of soil-hydrophysical characteristics using simulation models, with a focus on elucidating the basic hydrophysical characteristics of soil, such as soil water potential and hydraulic conductivity, as well as the methods of measurement. It also addresses topics such as stony soil, water repellent soils, and water movement modeling in those media. The book presents soil hydrology in a simple way, while quantitatively expressing the soil water state and movement. It clearly and precisely describes basic terms of soil hydrology with a minimum of mathematics. It also includes the latest research findings in the field as well as the basics of the mathematical modeling of water movement in the soil-plant-atmosphere system (SPAS), using original research results to illustrate these issues. This book is of interest to all scientists and professionals in soil hydrology, including beginners, as well as those interested and working in hydrology in general and soil hydrology in particular. In addition, it can also be used by specialists and students in related fields like agronomy, forestry, meteorology, hydrology, environmental engineering, environmental protection, and geography.

Statistical Methods in Water Resources

A Compendium of Water-resources Technology

Applied Hydrology

Third Edition

This updated and expanded edition provides a thorough understanding of the measurable properties of groundwater systems and the knowledge to apply hydrochemical, geological, isotopic, and dating approaches to their work. This volume includes question and answer discussions for key concepts presented in the text and the basic hydrological, geological, and physical parameters to be observed and measured. Chemical and Isotopic Groundwater Hydrology, Third Edition covers the chemical tools of groundwater hydrology, the isotopic composition of water and groundwater dating by tritium, carbon-14, Cl-36, and He-4, as well as the application of fossil groundwater as a paleoclimatic indicator.

This classic hydrology resource has been fully revised to reflect the latest advances and applications Long considered the " go to " book on the hydrologist ' s shelf, this comprehensive handbook has been thoroughly updated for the first time in 50 years. Chow ' s Handbook of Applied Hydrology, Second Edition discusses the history of hydrologic science and engineering and offers new topics, methods, processes and technologies. Featuring chapter contributions from a " who ' s who " in the field, this volume offers user-friendly explanations of hydrology principles and their latest, practical uses. Details are provided for a wide range of ecosystems, including large river and lake basins. You will get full coverage of hydrologic modeling and design, hydrometeorology, sediment and pollutant transport, and much more. Hydrology experts from around the world offer case studies and insights throughout End-of-chapter summaries and questions highlight key topics Updated by a colleague and former student of the late Dr. Chow

Applied Hydrology and Sedimentology for Disturbed Areas

Handbook of applied hydrology

Fundamentals of Statistical Hydrology

Handbook of Applied Hydrology. A Compendium of Water-resources Technology. Ven Te Chow ... Editor-in-chief. [With Illustrations.]

Applications in Hydrogeology for Geoscientists presents the most recent scientific developments in the field that are accessible yet rigorous enough for industry professionals and academic researchers alike. A multi-contributed reference that features the knowledge and experience of the field's experts, the book's chapters span the full scope of hydrogeology, introducing new approaches and progress in conceptualization, simulation of groundwater flow and transport, and progressive hydro-geophysical methods. Each chapter includes examples of recent developments in hydrogeology, groundwater, and hydrology that are underscored with perspectives regarding the challenges that are facing industry professionals, researchers, and academia. Several sub-themes—including theoretical advances in conceptualization and modeling of hydro-geologic challenges—connect the chapters and weave the topics together holistically. Advances in research are aided by insights arising from observations from both field and laboratory work. Introduces new approaches and progress in hydrogeology, including conceptualization, simulated groundwater flow and transport, and cutting edge hydro-geophysical methods Features more than 100 figures, diagrams, and illustrations to highlight major themes and aid in the retention of key concepts Presents a holistic approach to advances in hydrogeology, from the most recent developments in reservoirs and hydraulics to analytic modeling of transient multi-layer flow and aquifer flow theory Integrates real life data, examples and processes, making the content practical and immediately implementable Hydrogeology's importance has grown to become an integral part not only of geology curricula, but also those in environmental science and engineering. Applied Hydrogeology serves all these students, presenting the subject's fundamental concepts in addition to its importance in other disciplines. Fetter skillfully addresses both physical and chemical hydrogeology, highlighting problem solving throughout the book. Case studies, Excel-based projects, and working student versions of software used by groundwater professionals supplement the fourth edition's insightful explanations and succinct solutions to real-world challenges. Each chapter concludes with example problems, a notation of symbols, and informative analysis. A glossary of hydrogeological terms adds significant value to this comprehensive text. Fetter's accessible coverage prepares readers for success in their careers well beyond the classroom.

Applied Hydrology, 2nd Edition

Fourth Edition

Engineering Hydrology

Selected Chapters from Groundwater Hydrology/Herman Bouwer and Applied Hydrology/Ven Te Chow, David R. Maidment, Larry W. Mays

The first revision in more than 20 years of the renowned engineering hydrology text Applied Hydrology, Second Edition retains the successful outline of this classic text while adding new material on physical hydrologic modeling to cover advances in that field of hydrology. New coverage includes the advances in solving hydrology problems through the use of new methodologies such as GIS technology. The book is divided into three parts: Hydrologic Processes; Hydrologic Analysis; and Hydrologic Design, where most of the revisions occur. Applied Hydrology, Second Edition Emphasizes a unique, fundamental approach to hydrology, providing the basis for understanding methodologies and software used in applied hydrology Includes a wealth of new problems, both worked out examples and end-of-chapter problems Contains special topics, such as the hydrology of arid and semi-arid regions and hydrology of climate change Incorporates the very latest methodologies for solving hydrology problems, including radar rainfall (NEXRAD), GIS, and others Offers a comprehensive approach to hydrologic design, covering the hydrology of floodplain analysis and water supply analysis

There is a continued demand for well-trained and competent hydrogeologists, especially in the environmental sector. For decades, Fetter ' s Applied Hydrogeology has helped prepare students to excel in careers in hydrogeology or other areas of environmental science and engineering where a strong background in hydrogeology is needed. The text ' s long-standing tradition as a vital resource is further enhanced in the fifth edition by Kreamer ' s added expertise. Stressing the application of mathematics to problem-solving, example problems throughout the book provide students the opportunity to gain a much deeper understanding of the material. Some important topics include the properties of aquifers, the principles of groundwater flow, water chemistry, water quality and contamination, and groundwater development and management. The addition of new case studies and end-of-chapter problems will strengthen understanding of the occurrence and movement of ground water in a variety of geological settings.

Elements of Applied Hydrology

Handbook of Applied Hydrology

Practical and Applied Hydrogeology

Applied Hydrogeology of Fractured Rocks

Hydrology is a topical and growing subject, as the earth's water resources become scarcer and more vulnerable. Although more than half the surface area of continents is covered with hard fractured rocks, there has until now been no single book available dealing specifically with fractured rock hydrogeology. This book deals comprehensively with the fundamental principles for understanding these rocks, as well as with exploration techniques and assessment. It also provides in-depth discussion of structural mapping, remote sensing, geophysical exploration, GIS, field hydraulic testing, groundwater quality and contamination, geothermal reservoirs, and resources assessment and management. Hydrogeological aspects of various lithology groups, including crystalline rocks, volcanic rocks, carbonate rocks and clastic formations, are dealt with separately, using and discussing examples from all over the world. Applied Hydrogeology of Fractured Rocks will be an invaluable reference source for postgraduate students, researchers, exploration scientists, and engineers engaged in the field of groundwater development in fractured rock areas.

Hydrology is the discipline that focuses on the scientific study of water present on Earth or other planets. It includes the movement, quality and distribution of water on the planets including water resources, water cycle and environmental watershed sustainability. It focuses on analyzing water related problems such as water management, natural disasters, environmental preservation and provide their solutions. Hydrology is sub-divided into groundwater hydrology, surface water hydrology and marine water hydrology. Surface hydrology, hydrometeorology, hydrogeology, drainage basin management and water quality are some of the other domains of hydrology. Water circulation or water cycle is the central aspect of hydrology. It is concerned with how water circulates across the Earth through various pathways.

This book unravels the recent studies in the field of hydrology. Different approaches, evaluations, methodologies and advanced studies have been included herein. Those in search of information to further their knowledge will be assisted by this book.

Problems in Applied Hydrology

Chow's Handbook of Applied Hydrology, Second Edition

Handbook Of Applied Hydrology - A Compendium of Water-resources Technology

Handbook of Applied Hydrology, Second Edition

This book communicates some contemporary mathematical and statistical developments in river basin hydrology as they pertain to space-time rainfall, spatial landform and network structures and their role in understanding averages and fluctuations in the hydrologic water balance of river basins. While many of the mathematical and statistical nations have quite classical mathematical roots, the river basin data structure has led to many variations on the problems and theory.

Less than 1% of the Earth's water is available for human use, the average family uses 400 gallons of water daily, and expected population growth means an increase in water use. The study of hydrology—how water behaves as it moves through the water cycle—is vital to reducing strains on our water supply and infrastructure. Written for those who want to understand hydrologic principles without a background in mathematics, Manning's basic water science text begins with the physical and chemical attributes that make water a unique substance and proceeds with a step-by-step discussion of the water cycle. Scientific principles are illustrated by real-world examples, while “investigations” sections offer practical suggestions for making measurements and/or interpretations of hydrological variables in the local environment and for applying principles discussed in the text. This well-structured, reader-friendly text benefits not only students in elementary hydrology courses, but also those studying broader areas of natural resources, ecology, geography, and urban planning.

a compendium of water-resources technology

Applied Ground-water Hydrology and Well Hydraulics

HANDBOOK OF APPLIED HYDROLOGY: A COMPENDIUM OF WATER-RESOURCES TECHNOLOGY; ED. BY V.T. CHOW.

Chemical and Isotopic Groundwater Hydrology

Data on water quality and other environmental issues are being collected at an ever-increasing rate. In the past, however, the techniques used by scientists to interpret this data have not progressed as quickly. This is a book of modern statistical methods for analysis of practical problems in water quality and water resources. The last fifteen years have seen major advances in the fields of exploratory data analysis (EDA) and robust statistical methods. The 'real-life' characteristics of environmental data tend to drive analysis towards the use of these methods. These advances are presented in a practical and relevant format. Alternate methods are compared, highlighting the strengths and weaknesses of each as applied to environmental data. Techniques for trend analysis and dealing with water below the detection limit are topics covered, which are of great interest to consultants in water-quality and hydrology, scientists in state, provincial and federal water resources, and geological survey agencies. The practising water resources scientist will find the worked examples using actual field data from case studies of environmental problems, of real value. Exercises at the end of each chapter enable the mechanics of the methodological process to be fully understood, with data sets included on diskette for easy use. The result is a book that is both up-to-date and immediately relevant to ongoing work in the environmental and water sciences.

Fully Updated Hydrology Principles, Methods, and Applications Thoroughly revised for the first time in 50 years, this industry-standard resource features chapter contributions from a " who ' s who " of international hydrology experts. Compiled by a colleague of the late Dr. Chow, Chow ' s Handbook of Applied Hydrology, Second Edition, covers scientific and engineering fundamentals and presents all-new methods, processes, and technologies. Complete details are provided for the full range of ecosystems and models. Advanced chapters look to the future of hydrology, including climate change impacts, extraterrestrial water, social hydrology, and water security. Chow ' s Handbook of Applied Hydrology, Second Edition, covers: · The Fundamentals of Hydrology · Data Collection and Processing · Hydrology Methods · Hydrologic Processes and Modeling · Sediment and Pollutant Transport · Hydrometeorologic and Hydrologic Extremes · Systems Hydrology · Hydrology of Large River and Lake Basins · Applications and Design · The Future of Hydrology

Applied Soil Hydrology

A Compendium of Water-resources Technology

Fifth Edition

Stochastic Methods in Hydrology