

Gis Based Irrigation Water Management

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Irrigation Potential Analysis Using GIS and Remote Sensing - Gashaw Aleign 2013

In today's world, as we see the rapid population growth, irrigation agriculture becomes more important to meet the human needs. It allows double cropping and enables stabilization of supply and production of vegetables and fruits. Land and water resource suitability analysis plays an important role in maintaining and developing land and water use on a spatial basis of agriculture. This book identified the evaluation of land suitability for irrigation intensification. The aim of this study was to analyze the water and land resources potential and irrigation water management in river catchments of Andasa watershed for irrigation suitability by using Geographic Information System (GIS) and remote sensing. Identification of potential irrigable land, and socioeconomic factors that influence the use of surface irrigation water management were followed to analyze this irrigation potential. Analytic Hierarchy Process (AHP) evaluation method was used to evaluate the physical land characteristics of the study area for surface irrigation. The factors that were considered for evaluations of the land for surface irrigation include: slope, land use land cover, river distance, soil.

Impacts of Landscape Change on Water Resources - Manoj K. Jha

2020-11-13

Changes in land use and land cover can have many drivers, including population growth, urbanization, agriculture, demand for food, evolution of socio-economic structure, policy regulations, and climate variability. The impacts of these changes on water resources range from changes in water availability (due to changes in losses of water to evapotranspiration and recharge) to degradation of water quality (increased erosion, salinity, chemical loadings, and pathogens). The impacts are manifested through complex hydro-bio-geo-climate characteristics, which underscore the need for integrated scientific approaches to understand the impacts of landscape change on water resources. Several techniques, such as field studies, long-term monitoring, remote sensing technologies, and advanced modeling studies, have contributed to better understanding the modes and mechanisms by which landscape changes impact water resources. Such research studies can help unlock the complex interconnected influences of landscape on water resources in terms of quantity and quality at multiple spatial and temporal scales. In this Special Issue, we published a set of eight peer-reviewed articles elaborating on some of the specific topics of landscape changes and associated impacts on water resources.

Diagnosing Irrigation Water Resources with Multi-Sensor Rs and Gis - Pawan Kumar Sen 2010-08

With the combined information from GIS and satellite remote sensing with ground data, this research has developed a water balance model of the Roxo catchment (Portugal) by using Thornthwaite-Mather method based on the recent climatological data (2001- 2003) in order to assess available water for the irrigation. The study shows that depleted fraction during May-September, which is the core irrigation season, is around or higher than 1. This indicates the short supply of irrigation to the crops. Various irrigation performance indicators also describes that none of the major crops in the Roxo irrigation command area has a sufficient supply of water. The Surface Energy Balance Algorithm for Land (SEBAL) is applied to calculate actual evapotranspiration by using four Landsat and eleven Modis images. Estimation of actual evapotranspiration from the SEBAL algorithm is the most crucial part in the study of irrigation performance and water balance as it can map the spatial and temporal structure of evapotranspiration for every landcover type.

Impact of COVID-19 on Emerging Contaminants - Manish Kumar 2022

The book brings out several unique perspectives of impacts of COVID-19 on the environment with special emphasis on the risk and remediation of emerging contaminants. Idea is to work out under the one health framework and comprehend not only scientific and technical aspects but also environmental, legal and policy aspects for water resources management. The obvious stress is given to the occurrence, fate and transport of geogenic, microbial and anthropogenic contaminants of emerging concern under the preview of the fact that antibiotic and antiviral use has been unprecedented during the global pandemic of COVID-19. At the same time, this edited volume touches upon the broader framework of integrated water resource management, as well as mitigation and removal strategies to put forward a holistic picture to the readers and policymakers. These contents are divided into three sections: a) monitoring, occurrence, distribution and fate of emerging contaminants; b) source and effects of these contaminants on the total

environment; and c) treatment strategies, natural attenuation and mitigation.

Annual Report - International Irrigation Management Institute 1997

Encyclopedia of Business Analytics and Optimization - Wang, John 2014-02-28

As the age of Big Data emerges, it becomes necessary to take the five dimensions of Big Data- volume, variety, velocity, volatility, and veracity- and focus these dimensions towards one critical emphasis - value. The Encyclopedia of Business Analytics and Optimization confronts the challenges of information retrieval in the age of Big Data by exploring recent advances in the areas of knowledge management, data visualization, interdisciplinary communication, and others. Through its critical approach and practical application, this book will be a must-have reference for any professional, leader, analyst, or manager interested in making the most of the knowledge resources at their disposal.

GIS and Remote Sensing Techniques in Land- and Water-management - A. van Dijk 2001-03-31

Managing land and water is a complex affair. Decisions must be made constantly to allocate and use natural resources. Decision and action in any use of resources often have strong interactions and side-effects on others, therefore it is extremely important to monitor and forecast the impacts of the decisions very carefully. Reliable information and clear data manipulation procedures are compulsory for monitoring and forecasting. Remote Sensing has considerable potential to provide reliable information. A Geographic Information System is an easy tool for manipulating and analysing the data in a clear and fast way. This book describes in seven practical examples how GIS and Remote Sensing techniques are successfully applied in land and water management.

GIS for Water Resource and Watershed Management - John G. Lyon 2002-10-03

The use of GIS, and its application for solving environmental problems is growing rapidly. This powerful set of tools can be used to great effect in hydrological modeling, environment and habitat assessments, ecosystem

studies, monitoring of wetlands and forested watersheds, urban studies, agricultural impact assessment and much more. GIS for Water
Gis-Based Irrigation Land Suitability Assessment and Mapping - Dagnenet Sultan 2011-12

Irrigation land suitability assessment and mapping play an imperative role for sustainable utilization of scarce physical land resources. The study was conducted at Fogera catchment, South Gonder. Soil and water sampling spots were selected based on free and grid survey techniques and their locations were taken using Global Positioning System (GPS). Geographical Information System (GIS) techniques were used to develop irrigation land suitability map of the study area. Attributes of parameters were collected and used for suitability assessment. Attributes used as criteria for irrigation suitability analysis were E_{Ce}, ESP, soil depth, texture, PH, top and sub soil stoniness, water table depth, flood hazard, ground water quality (SAR and EC) and slope. On the basis of stoniness, soil salinity, soil alkalinity, soil depth and groundwater quality it was concluded that 72% of the study area is potentially suitable for irrigation and 28% was classified as unsuitable (N) due to drainage limitation, flood hazard, texture and slope factors. Of the potentially suitable land, 1% was highly suitable (S1), 28% was moderately suitable (S2), and 43% is marginally suitable (S3).

Understanding Hydrological Variability for Improved Water Management in the Semi-Arid Karkheh Basin, Iran - Ilyas Masih 2011-09-28

This study provides a hydrology based assessment of (surface) water resources and its continuum of variability and change at different spatio-temporal scales in the semi-arid Karkheh Basin, Iran, where water is scarce, competition among users is high and massive water resources development is under way. The study reveals that the ongoing allocation planning is not sustainable and essentially requires reformulation, with consideration of spatio-temporal variability and observed trends in the streamflows regarding flood intensification and decline in low flows. The development of innovative methods for quantification of the hydrological fluxes (i.e., regionalization of model parameters based on similarity of the flow duration curve and the use of areal precipitation input in the

hydrological modeling) helped better understanding and modeling the basin hydrology. The investigation of scenarios for upgrading rain-fed areas to irrigated agriculture, using SWAT, recommends the promotion of in-situ soil and water conservation techniques. Conversion of rain-fed areas to irrigation causes significant reduction in the downstream flows, and requires additional considerations such as less development in the upper catchments, practicing supplementary irrigation and developing water storage. The knowledge generated is instructive for hydrological assessment and its use in water resources planning and management in the river basin context.

Soil and Water Engineering - Balram Panigrahi 2017-03-03

Modeling aspects have added a new dimension in research innovations in all branches of engineering. In the field of soil and water engineering, they are increasingly used for planning, development, and management of land and water resources, including analysis of quantity and quality parameters of surface and ground water, flood forecasting and control measures, optimum allocation and utilization of irrigation water. The application of these models saves considerable time in decision support systems and helps in conservation and optimum allocations of scarce precious natural resources.

Water Management and Water Governance - Ashish Pandey 2020-11-11

This book focusses on hydrological modeling, water management, and water governance. It covers the applications of remote sensing and GIS tools and techniques for land use and land cover classifications, estimation of precipitation, evaluation of morphological changes, and monitoring of soil moisture variability. Moreover, remote sensing and GIS techniques have been applied for crop mapping to assess cropping patterns, computation of reference crop evapotranspiration, and crop coefficient. Hydrological modeling studies have been carried out to address various issues in the water sector. MODFLOW model was successfully applied for groundwater modeling and groundwater recharge estimation. Runoff modeling has been carried out to simulate the snowmelt runoff together with the rainfall and sub-surface flow

contributions for snow-fed basins. A study has been included, which predicts the impact of the land use and land cover on stream flow. Various problems in the water sector have been addressed employing hydrological models such as SWAT, ArcSWAT, and VIC. An experimental study has been presented wherein the laboratory performance of rainfall simulator has been evaluated. Hydrological modeling studies involving modifications in the curve number methodology for simulation of floods and sediment load have also been presented. This book is useful for academicians, water practitioners, scientists, water managers, environmentalists, and administrators, NGOs, researchers, and students who are involved in water management with the focus on hydrological modeling, water management, and water governance.

GIScience for the Sustainable Management of Water Resources - Gowhar Meraj 2022-12-22

Water is one of the most critical resources of nature that is necessary for sustaining life for all living things. This volume discusses in detail a selection of geospatial approaches, tools, and techniques for understanding the root causes behind the degradation of our water resources. Satellite remote sensing provides essential data for mapping water resources, hydrology flux measurement, monitoring drought, and flood inundation. With an abundance of informative case studies, this volume discusses the use of the satellite remote sensing and GIS-based systems for managing urban storm water; for flood and soil erosion management; for mapping groundwater zones; for crop production, including measuring soil moisture and aridity; for gauging the impact of climate change; for evaluating glacier change dynamics; for assessing the impact of urban growth on water resources; for measuring the degradation of rivers; and more.

Water Governance: Challenges and Prospects - Amarjit Singh 2019-01-31

The book is the first of its kind to deal with almost the entire swath of water resources assessment, development and sustainable management. The idea of the book crystallized during the long journey of the Editors on various facets of water issues in India and abroad during their extended association, at all levels with the Ministry of Water Resources,

River Development and Ganga Rejuvenation, as well as International Organizations dealing with water. Currently water-stressed, India is likely to become water scarce in not too distant a future. The global freshwater supply and its sustainable use for human consumption, and conservation of the ecosystem have never come under such a rigorous scrutiny before. The unplanned and reckless exploitation of this precious resource have led to a crisis situation, compounded by a real threat of climate change. This book is, therefore, timely and of particular relevance not only to India but the entire world. The book contains 20 chapters, beside the lead article by the Editors. The chapters are contributed by the eminent professionals, researchers, academicians and civil society representatives having an in-depth understanding of the issues. The contents of the chapters have been chosen to represent all aspects of water. The assessment of water resources using satellite data and in-depth analyses of groundwater sector like, the Aquifer Mapping Programme initiated by Government of India, application of gravity satellite data to assess the resource build up, artificial recharge of aquifers and its contamination, are dealt with by eminent experts. The articles on sustainable management of water through good governance by community participation and involvement of civil society are placed. Flood management both through a basin level approach as well as by building resilience in vulnerable areas is discussed. Other critical issues like water bodies management, constitutional provisions, water governance and financial issues, hydro-power and need of research and development in this sector are also dealt with aptly. In view of emerging crisis and complexities in this sector the future pathways and the paradigm shift that is required in administrative and policy level is also discussed.

Practical Applications of Agricultural System Models to Optimize the Use of Limited Water - Lajpat R. Ahuja 2020-01-22

Completely devoted to application of models to optimize the use of limited water and nutrients in various climates, this collection will inspire confidence in the capacity of modeling to tackle the biggest threats to secure agriculture. To obtain the most production from

available water while maintaining natural resources, we need whole system-based quantitative knowledge and tools to help select appropriate crops and manage water and associated inputs on a site-specific basis under changing climate. Site-specific experimental results are available for limited locations, limited periods of time, and limited management options. Well-tested process models of cropping systems can extend field research results to long-term weather conditions, as well as other climates and soils, allowing us to explore new management options. The case studies in this volume are promising examples of these kinds of solutions.

Resource Conserving Techniques In Crop Production - A.R. Sharma
2011-03-01

Recent researches on resource conserving techniques have provided exciting opportunities for improving input-use-efficiency, productivity and sustainability. These techniques include: zero tillage, minimum tillage, rotary tillage, bed planting, surface seeding, laser land leveling, pressurized irrigation systems, system of rice intensification, aerobic rice, soil solarization, residue management, site-specific nutrient management, crop diversification, precision farming employing use of modern tools and procedures etc. Adoption of these techniques is the need of the hour as a method of 'low-input agriculture' to reduce costs and achieve sustainability in Indian agriculture. This book provides the most updated and comprehensive information on resource conserving techniques for improving crop productivity. The text is divided into 9 sections: (i) Concept and approaches, (ii) Cropping systems and diversification, (iii) Soil use and management, (iv) Improving nutrient use efficiency, (v) Water-saving techniques, (vi) Weed dynamics and herbicide use, (vii) Energy conservation and farm machinery, (viii) Modern tools and approaches, (ix) On-farm testing and evaluation. In each section, there are chapters on specific topics, contributed by eminent scientists, who made notable research contributions in their field of specialization. The chapters have been thoroughly edited and presented in an easily understandable manner.

Geospatial Technology for Water Resource Applications - Prashant

K. Srivastava 2016-09-09

This book advances the scientific understanding, development, and application of geospatial technologies related to water resource management. It presents recent developments and applications specifically by utilizing new earth observation datasets such as TRMM/GPM, AMSR E/2, SMOS, SMAP and GCOM in combination with GIS, artificial intelligence, and hybrid techniques. By linking geospatial techniques with new satellite missions for earth and environmental science, the book promotes the synergistic and multidisciplinary activities of scientists and users working in the field of hydrological sciences.

Water Resource Modeling and Computational Technologies - Mohammad Zakwan 2022-10-22

Water Resource Modeling and Computational Technologies, Seventh Edition provides the reader with a comprehensive overview of the applications that computational techniques have in various sectors of water resource engineering. The book explores applications of recent modeling and computational techniques in various sectors of water resource engineering, including hydroinformatics, irrigation engineering, climate change, hydrologic forecasting, floods, droughts, image processing, GIS, water quality, aquifer mapping, basin scale modeling, computational fluid dynamics, numerical modeling of surges and groundwater flow, river engineering, optimal reservoir operation, multipurpose projects, and water resource management. As such, this is a must read for hydrologists, civil engineers and water resource managers. Presents contributed chapters from global experts in the field of water resources from both a science and engineering perspective. Includes case studies throughout, providing readers with an opportunity to understand how case specific challenges can help with computational techniques. Provides basic concepts as well as a literature review on the application of computational techniques in various sectors of water resources.

Encyclopedia of Geography - Barney Warf 2010-09-21

Simply stated, geography studies the locations of things and the

explanations that underlie spatial distributions. Profound forces at work throughout the world have made geographical knowledge increasingly important for understanding numerous human dilemmas and our capacities to address them. With more than 1,200 entries, the Encyclopedia of Geography reflects how the growth of geography has propelled a demand for intermediaries between the abstract language of academia and the ordinary language of everyday life. The six volumes of this encyclopedia encapsulate a diverse array of topics to offer a comprehensive and useful summary of the state of the discipline in the early 21st century. Key Features Gives a concise historical sketch of geography's long, rich, and fascinating history, including human geography, physical geography, and GIS Provides succinct summaries of trends such as globalization, environmental destruction, new geospatial technologies, and cyberspace Decomposes geography into the six broad subject areas: physical geography; human geography; nature and society; methods, models, and GIS; history of geography; and geographer biographies, geographic organizations, and important social movements Provides hundreds of color illustrations and images that lend depth and realism to the text Includes a special map section Key Themes Physical Geography Human Geography Nature and Society Methods, Models, and GIS People, Organizations, and Movements History of Geography This encyclopedia strategically reflects the enormous diversity of the discipline, the multiple meanings of space itself, and the diverse views of geographers. It brings together the diversity of geographical knowledge, making it an invaluable resource for any academic library.

Embedding Space in African Society - Annette Froehlich 2019-05-31

This book provides a detailed insight into how space and its applications are embedded, and can be further embedded, into African society in support of the SDGs, while taking into account the specific features, needs, and diversity of that society. Contributions drawn from across the continent and further afield provide analyses of the particular social situations in a variety of different African countries and regions, and highlight areas where space applications support the SDGs, and where they can further do so. The chapters cover a wide array of relevant and

timely topics including basic needs like water quality, education, and capacity building, as well as financial, security, and legal aspects, together with facets of space technologies and infrastructure in Africa. Embedding Space in African Society will be of great interest to students and professionals in sustainable development, governance, and space studies.

Water Resources Management IV - C.A. Brebbia 2007-05-08

Water resources are under extreme pressure today all over the world. The resulting problems have given rise to many activities which reflect the growing concern about them and the importance of effective management. As water increasingly becomes a precious resource on which the well-being of future generations depends, it is essential to discuss issues concerning quality, quantity, planning and other related topics. Containing papers presented at the Fourth International Conference on Water Resources Management, this book examines the recent technological and scientific developments associated with the management of surface and sub-surface water resources. The wide variety of subjects covered are as follows: Water Resource Management and Planning; Waste Water Treatment and Management; Water Markets and Policies; Urban Water Management; Water Quality; Storm Water Management; Water Security Systems; Pollution Control; Irrigation Problems; Reservoirs and Lakes; River Basin Management; Hydrological Modelling; Flood Risk; Decision Support Systems; Groundwater Flow Problems and Remediation Technologies; Coastal and Estuarial Problems; Soil and Water Conservation and Risk Analysis.

Practices of Irrigation & On-farm Water Management: Volume 2 - Hossain Ali 2011-01-11

The comprehensive and compact presentation in this book is the perfect format for a resource/textbook for undergraduate students in the areas of Agricultural Engineering, Biological Systems Engineering, Bio-Science Engineering, Water Resource Engineering, and Civil & Environmental Engineering. This book will also serve as a reference manual for researchers and extension workers in such diverse fields as agricultural engineering, agronomy, ecology, hydrology, and meteorology.

Workshop, Remote Sensing and GIS Applications in Water Resources Engineering, 29-31 August 2001, Lucknow - 2001

2018 Advances in Wireless and Optical Communications (RTUWO) - IEEE Staff 2018-11-15

Scientific conference RTUWO is focused to new digital and analog, electrical and optical techniques, which allow overcoming limits of currently used data communication systems Topics of the interest include general topics, such as signal modulation and demodulation, amplification, electronic and optical circuits, signal processing, networking, antennas and transducers, channel characterization as well as advanced and new topics, such as cognitive radio, sensor networks, optical multiple input multiple output (MIMO), broadband MIMO, optical signal processing and microwave photonics Conference calls for papers describing practical implementation activities, results and issues Papers describing novel paradigms, original directions, or non traditional perspectives are also encouraged

Selected Water Resources Abstracts - 1991

Case Studies in Geospatial Applications to Groundwater

Resources - Pravat Kumar Shit 2022-11-01

Case Studies in Geospatial Applications to Groundwater Resources provides thorough the most up-to-date techniques in GIS and geostatistics as they relate to groundwater, through detailed case studies that prove real-world applications of remote sensing applications to this subject. Groundwater is the primary source of fresh water in many parts of the world, while some regions are becoming overly dependent on it, consuming groundwater faster than it is naturally replenished and causing water tables to decline unremittingly. India is the largest user of groundwater in the world followed by China and the USA, with developing countries using groundwater at an unsustainable rate. Systematic planning of groundwater usage using modern techniques is essential for the proper utilization, management and modeling of this precious but shrinking natural resource. With the advent of powerful and

highspeed personal computers, efficient techniques for water management have evolved, of which remote sensing, GIS (Geographic Information Systems), GPS (Global Positioning Systems) and Geostatistical techniques are of great significance. This book advances the scientific understanding, development, and application of geospatial technologies related to water resource management. Case Studies in Geospatial Applications to Groundwater Resources is a valuable reference for researchers and postgraduate students in Earth and Environmental Sciences, especially GIS, agriculture, hydrology, natural resources, and soil science, who need to be able to apply the latest technologies in groundwater research in a practical manner. Provides detailed case studies on groundwater resources around the world, including regions with highest groundwater resource use Covers modern remote sensing and geostatistical technique-based groundwater resource mapping, monitoring, and modelling Describes novel region-specific management strategies and techniques for sustainability with case studies to illustrate effectiveness Includes practical coverage of the use of geospatial analysis techniques in groundwater resources

Assesing Irrigation Water Availability Using GIS and RS Techniques - Nhlanhla Ncube 2020-05-12

Sustainable irrigation planning and management demands full knowledge of current and future availability of land and water resources. The full knowledge required consist of a deep understanding of the cropwater requirements, sustainability and protection of available reservoirs, assessment of impacts of upstream landuse changes and knowing the water demand from all activities in a catchment. The integration of Remote Sensing and ground data into hydrological and cropwater requirement models enables water resources managers to adequately quantify the availability of water for irrigation in space and time. Thus the objective of this study was to use GIS, remote sensing and modeling techniques to assess the current and future irrigation water availability from Ruti Dam in Save catchment of Zimbabwe. The SEBS algorithm was used to derive actual evapotranspiration estimates using MODIS images to assess cropwater requirements in the Ruti irrigation

scheme after validation with ground based evapotranspiration measurements. Results show that actual evapotranspiration computed using SEBS (2.9 -5.8 mm/day) were comparable to those obtained using a CROPWAT model (3.03 -6.2 mm/day).

Proceedings of the Second International Scientific Conference "Intelligent Information Technologies for Industry" (IITI'17) - Ajith Abraham 2017-09-30

This volume of *Advances in Intelligent Systems and Computing* highlights key scientific achievements and innovations in all areas of automation, informatization, computer science, and artificial intelligence. It gathers papers presented at the IITI 2017, the Second International Conference on Intelligent Information Technologies for Industry, which was held in Varna, Bulgaria on September 14-16, 2017. The conference was jointly co-organized by Technical University of Varna (Bulgaria), Technical University of Sofia (Bulgaria), VSB Technical University of Ostrava (Czech Republic) and Rostov State Transport University (Russia). The IITI 2017 brought together international researchers and industrial practitioners interested in the development and implementation of modern technologies for automation, informatization, computer science, artificial intelligence, transport and power electrical engineering. In addition to advancing both fundamental research and innovative applications, the conference is intended to establish a new dissemination platform and an international network of researchers in these fields.

GIS in Water Resources Engineering - Gajraj Singh 2012-02-01

This book presents a thorough concepts and applications of GIS in the various sub-fields of water resources engineering. The book develops a general understanding of the nature of GIS and how it is used to create and analyse geographic data. The book addresses concepts and application in: surface water hydrology, groundwater hydrology, water supply and irrigation systems, flood pain management, water quality, water resource monitoring and forecasting, river basin planning and management. The book introduces primary field data collection methods and describes procedures for interpretation and analysis. Also it focuses on the linkage of GIS data with water resource analysis and management

models. Applications are presented with descriptions of GIS in water resources engineering arms engineers and planners with an arsenal of tools to assist in the creation of reliable, environmentally sensitive, infrastructure. The book examines various ways that innovative water resource managers are using spatial analysis and electronic mapping to provide increased functionality and reliability to the complex systems they oversee. The book also discusses GIS important tool for unity, as countries who are seeking acceptance to the economic union must use the technology to bring their water infrastructures into conformance with EU standards.

Cotton Production and Uses - Shakeel Ahmad 2020-03-05

This book provides a comprehensive and systematic overview of the recent developments in cotton production and processing, including a number of genetic approaches, such as GM cotton for pest resistance, which have been hotly debated in recent decades. In the era of climate change, cotton is facing diverse abiotic stresses such as salinity, drought, toxic metals and environmental pollutants. As such, scientists are developing stress-tolerant cultivars using agronomic, genetic and molecular approaches. Gathering papers on these developments, this timely book is a valuable resource for a wide audience, including plant scientists, agronomists, soil scientists, botanists, environmental scientists and extention workers.

Enhancing Irrigation Water Productivity - Anil Kumar Mishra 2020-09-01

Water a key natural resource, fundamental to life, livelihood, food security and sustainable development is rapidly becoming scarce and limited. Agriculture is the major water user in our country utilizing nearly 70-80 per cent of all the utilizable water resources of the country. Therefore, Agricultural Water Management (AWM) interventions aim at enhancing per capita benefits, while preventing the degradation of natural resource bases of land, water and ecosystem services. Evidence shows that AWM interventions have increased yields, which has helped areas with low productivity. In recent past a large number of new techniques and advanced tools have been invented in recent past which can enhance the water productivity in agriculture to a very high level.

Knowledge adoption and extensive use of these tools and techniques needs proper dissemination. There is a dearth of ample number of technically trained manpower to undertake the work of On-farm AWM. Therefore, the present book has been organized with following specific objectives: i) to impart the advanced knowledge of On-farm water management using modern concepts, tools and techniques for assessing, planning and designing the AWM (irrigation and drainage) systems and to disseminate these techniques for enhancing crop water use efficiencies; ii) to train the readers in designing, installation operation and automated operation, controls and management of high-tech irrigation water management systems; and iii). to provide the participants an opportunity to discuss and exchange the new ideas/knowledge with experts/resource persons who have contributed substantially in Agricultural Water Management (AWM). The book has a very wide spectrum covering almost all topics pertaining to advanced concepts and methods of modern Agricultural Water Management. The present book will provide to the readers an in-depth understanding of various related topics pertaining to highly efficient irrigation water management for crop production and enhancing agricultural water productivity such as scientific design and layout of farm irrigation and drainage, soil water content measurement using TDR/Neutron Moisture meters/Soil moisture probe, geophysical techniques of groundwater exploration etc. It will elaborate the concepts and methodology of using modern instruments and systems of irrigation such as drip, sprinkler, rain gun, level basin system etc. that would be an added benefit. Applications of modern techniques such as GIS and remote sensing applications for enhancing water resources use efficiencies in irrigation project, sensor based weather data collection and automated irrigation management and control systems under open field and covered cultivation have been explained in depth. The book shall impart the comprehensive knowledge on advanced concepts in Soil-Plant-Climate interactions, scientific estimation of crop water demand, various irrigation scheduling criteria and application of modern tools and techniques such as; application of computer softwares (such as

EQUITA/DRIPD/CROPWAT/AQACROP/IMPASSE/USAR etc.) for irrigation planning and management; under different water supply scenarios in a lucid manner.

International Journal of Advanced Remote Sensing and GIS - Cloud Publications 2012-01-01

International Journal of Advanced Remote Sensing and GIS (IJARSG, ISSN 2320 - 0243) is an open-access peer-reviewed scholarly journal publishes original research papers, reviews, case study, case reports, and methodology articles in all aspects of Remote Sensing and GIS including associated fields. This Journal commits to working for quality and transparency in its publishing by following standard Publication Ethics and Policies.

Groundwater in the Nile Delta - Abdelazim M. Negm 2018-12-28

This unique volume offers an up-to-date overview of all the main aspects of groundwater in the Nile Delta and its fringes, as well as latest research findings. The themes covered include: · Nile Delta aquifer formation and its characteristics · The use of the groundwater in the Nile Delta and its implications · Sedimentology and hydrogeophysical characteristics · Groundwater investigations and aquifer characterization using current direct resistivity and induced polarization · Groundwater contamination and degradation · Saltwater intrusion and its control · Delineation of groundwater flow and seawater intrusion using various techniques, including one-dimensional subsurface temperature profiles, geoelectrical resistivity, and integrated subsurface thermal regime and hydrogeochemical data · Modeling of groundwater and of saltwater intrusion in the Nile Delta aquifer · Excessive pumping and groundwater quality assessment for irrigation and drinking purposes · Groundwater management for sustainability in the Nile Delta. The volume appeals to postgraduate students, researchers, scientists, professionals, decision makers and planners.

GIS metadata for an irrigation system, volume 2: selected watercourses within Chishtian Sub-Division -

Water Policy and Governance in Canada - Steven Renzetti

2016-10-31

This book provides an insightful and critical assessment of the state of Canadian water governance and policy. It adopts a multidisciplinary variety of perspectives and considers local, basin, provincial and national scales. Canada's leading authorities from the social sciences, life and natural sciences address pressing water issues in a non-technical language, making them accessible to a wide audience. Even though Canada is seen as a water-rich country, with 7% of the world's reliable flow of freshwater and many of the world's largest rivers, the country nevertheless faces a number of significant water-related challenges, stemming in part from supply-demand imbalances but also a range of water quality issues. Against the backdrop of a water policy landscape that has changed significantly in recent years, this book therefore seeks to examine water-related issues that are not only important for the future of Canadian water management but also provide insights into transboundary management, non-market valuation of water, decentralized governance methods, the growing importance of the role of First Nations peoples, and other topics in water management that are vital to many jurisdictions globally. The book also presents forward-looking approaches such as resilience theory and geomatics to shed light on emerging water issues. Researchers, students and those directly involved in the management of Canadian waters will find this book a valuable source of insight. In addition, this book will appeal to policy analysts, people concerned about Canadian water resources specifically as well as global water issues.

Geographic Information Systems in Water Resources Engineering

- Lynn E. Johnson 2016-04-19

State-of-the-art GIS spatial data management and analysis tools are revolutionizing the field of water resource engineering. Familiarity with these technologies is now a prerequisite for success in engineers' and planners' efforts to create a reliable infrastructure. GIS in Water Resource Engineering presents a review of the concepts and application Integrated Water Resources Management in Alpine Regions - Davy Vanham 2011

Handbook of Irrigation System Selection for Semi-Arid Regions - Mohammad Albaji 2020-07-22

The Handbook of Irrigation System Selection for Semi-Arid Regions compares the various types of available irrigation systems for different regions and conditions, and explains how to analyze field data to determine the suitability of the land for surface, sprinkle, or drip irrigation systems. The book focuses on strategies for irrigation development and management and examines deficit irrigation and partial root-zone drying systems. Also, solute leaching modeling under different irrigation systems, soil moisture conditions, and organic fertilizer application in arid areas are discussed. Further, it examines multi-criteria decision making for irrigation management and the appraisal of agricultural lands for irrigation in hot, sub-humid regions. Features: Presents comparative analysis to aid in the selection of the most appropriate types of irrigation systems according to land characteristics. Includes numerous practical case studies. Offers parametric evaluation systems for irrigation purposes. Considers data from semi-arid zones, each with different sub-climates. Focusing on semi-arid land, the book highlights parametric evaluation systems for irrigation purposes, along with the use of analytical hierarchy processes integrated with GIS to determine which systems are best suited. This comprehensive and well-illustrated handbook will be of great interest to students, professionals, and researchers involved with all aspects of irrigation in semi-arid regions.

GIS and Remote Sensing Techniques in Land- and Water-management - A. van Dijk 2013-11-11

Managing land and water is a complex affair. Decisions must be made constantly to allocate and use natural resources. Decision and action in any use of resources often have strong interactions and side-effects on others, therefore it is extremely important to monitor and forecast the impacts of the decisions very carefully. Reliable information and clear data manipulation procedures are compulsory for monitoring and forecasting. Remote Sensing has considerable potential to provide reliable information. A Geographic Information System is an easy tool for

manipulating and analysing the data in a clear and fast way. This book describes in seven practical examples how GIS and Remote Sensing techniques are successfully applied in land and water management.

Agricultural Water Management - Prashant K. Srivastava 2020-11-18

Agricultural Water Management: Theories and Practices advances the scientific understanding, development and application of agricultural water management through an integrated approach. This book presents a collection of recent developments and applications of agricultural water management from advanced sources, such as satellite, mesoscale and climate models that are integrated with conceptual modeling systems. Users will find sections on drought, irrigation scheduling, weather forecasting, climate change, precipitation forecasting, and more. By linking these systems, this book provides the first resource to promote

the synergistic and multidisciplinary activities of scientists in hydro-meteorological and agricultural sciences. As agricultural water management has gained considerable momentum in recent decades among the earth and environmental science communities as they seek solutions and an understanding of the concepts integral to agricultural water management, this book is an ideal resource for study and reference. Presents translational insights into drought, irrigation scheduling, weather forecasting, climate change and precipitation forecasting Advances the scientific understanding, development and application of agricultural water management Integrates geo-spatial techniques, agriculture, remote sensing, sustainable water resource development, applications and other diverse areas within earth and environmental, meteorological and hydrological sciences