Peat Soil Carbon Monitoring And Management In Indonesia | 0dedb6c4fd583577df5d547d159bb7294

Modelling, Monitoring and Management of Forest Fires

Terrestrial Ecosystem Research Infrastructure

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Developments and Innovation in Carbon Dioxide (CO2) Capture and Storage

Technology: Ecology and Management of Forest Soils

Modelling, Monitoring and Management of Forest Fires

Carbon dioxide (CO2) capture and storage (CCS) is the one advanced technology that conventional power generation cannot do without. CCS technology reduces the carbon footprint of power plants by capturing, and storing the CO2 emissions from burning fossil-fuels and biomass. This volume provides a comprehensive reference on the state of the art research, development and demonstration of carbon storage and utilisation, covering all the storage options and their environmental impacts. It critically reviews geological, terrestrial and ocean sequestration, including enhanced oil and gas recovery, as well as other advanced concepts such as industrial utilisation, mineral carbonation, biofixation and photocatalytic reduction. Foreword written by Lord Oxburgh, Climate Science Peer

Comprehensively examines the different methods of storage of carbon dioxide (CO2) and the various concepts for utilisation Reviews geological sequestration of CO2, including coverage of reservoir sealing and monitoring and modelling techniques used to verify geological sequestration of CO2

Wetlands: Monitoring, Modelling and Management

Soil Carbon

In this "Tropical Peatland Eco-management" book, eco-management is now terminology as an abbreviation of "ecology-based management for natural capital enhancement". Key concept on this eco-management is derived from previous book: "Tropical Peatland Ecosystem"(Springer, 2015, eds. by M. Osaki and N. Tsuji). Based on this new concept, this book thoroughly examines tropical peatland eco-management for scientists, political decision makers, governmental officials, land managers, students, and NGO/NPOs who are interested in 1) what the impact of peatland on climate change and ecosystem function, 2) how the management of disturbed peatland, and 3) drawing global scale restoration mechanisms of peatland and wetland. In tropical peatland, a large amount of GHGs (carbon dioxide, methane, and nitrous oxide) is emitted due to the inappropriate development and inadequate management of peatland. The peatland ecosystems consist of the carbon-water complex, which is affected easily by the impact of human and climate change. Throughout the research of tropical peatland, the problems that result from development of tropical peatland are found to stem mainly from a lack of understanding of the complexities of this ecosystem and the fragility of the relationship between peat and forest and also between carbon and water. In past, almost all peatland development and management system have been generally designed on water drainage system. On the contrast of old system, an innovated eco-management is here, proposed as water irrigation system including water cycling and natural capital enhancement. Through this book readers will learn the advanced peatland eco-management, with more practical methods and procedure based on ecosystem knowledge.

Forest Soil Respiration under Climate Changing

Peatlands have so far been identified in 180 countries and they occur extensively in both the northern and tropical zones of our planet. They usually form in depressions where water permanently accumulates, either sustained by rainwater or underground sources. A lack of oxygen in the waterlogged environment slows decomposition of organic matter, leading to the accumulation of peat layers. However, across the globe peatlands are under threat from drainage and burning for agricultural, forestry and development uses. Fifteen percent of reserves are currently understood to be either destroyed or degraded. To help achieve these outcomes, this report assesses the extent of peatlands in the tropics, the threats they face and the action being taken to preserve them. 1. Peatlands are important to human societies around the world. They contribute significantly to climate change mitigation and adaptation through carbon sequestration and storage, biodiversity conservation, water regime and quality regulation, and the provision of other ecosystem services that support livelihoods. 2. Immediate action is required to prevent further peatland degradation and the serious environmental, economic and social repercussions it entails. Existing options to tackle the issue vary, and for that reason implementation should be regionally adapted to local environmental, economic and social needs and characteristics. 3. A landscape approach is vital and good practices in peatland management and restoration must be shared and implemented across all peatland landscapes to save these threatened ecosystems and their services to people. 4. Local communities should receive support to sustainably manage their peatlands by preserving traditional non-destructive uses and introducing innovative management alternatives. 5. A comprehensive mapping of peatlands worldwide is essential to better understanding their extent and status, and to enable us to safeguard them. Research and monitoring should be improved to provide better maps and tools for rapid assessment and transparent use of them to underpin action and multi-stakeholder engagement.

Soil Carbon in Sensitive European Ecosystems

The aim of this book is to provide an accessible overview for advanced students, resource professionals such as land managers, and policy makers to acquaint themselves with the established science, management practices and policies that facilitate sequestration and allow for the storage of carbon in forests. The book has value to the reader to better understand: a) carbon science and management of forests and wood products; b) the underlying social mechanisms of deforestation; and c) the policy options in order to formulate a cohesive strategy for implementing forest carbon projects and ultimately reducing emissions from forest land use.

Hydrology of Mediterranean and Semiarid Regions

Terrestrial Ecosystem Research Infrastructure
Agriculture and Climate Change

Published by the American Geophysical Union as part of the Geophysical Monograph Series, Volume 184. Carbon Cycling in Northern Peatlands examines the role that northern peatlands play in regulating the atmospheric carbon budget. It summarizes current research in four interconnected areas: large-scale peatland dynamics and carbon cycling; plant and microbial dynamics and their effect on carbon fluxes to the atmosphere; methane accumulation in, and loss from, peatlands; and water and dissolved carbon fluxes through peatlands. The volume highlights include: A thorough assessment of the challenges involved in incorporating carbon cycling in northern peatlands into global climate models; A conceptual model to examine the partitioning of terminal carbon mineralization into production of CO2 and CH4; A comprehensive review of the evidence for the accumulation of methane in deep and shallow peat; And a description of the hydrologic changes induced by peat harvesting and associated challenges in restoring altered peatlands to their natural hydrologic regime. Carbon Cycling in Northern Peatlands will be of interest to research scientists, graduate and undergraduate students, particularly those who wish to know more about the role of peatlands in the global carbon cycle and their role as modifiers of climate.

Biomass Burning in South and Southeast Asia

Terrestrial Ecosystem Research Infrastructures: Challenges and Opportunities reveals how environmental research infrastructures (ERIs) provide new valuable insights on ecological processes that cannot be realized by more traditional short-term funding cycles and are integral to understand our changing world. This book brings together the latest state-of-the-science knowledge on environmental ERIs, the challenges in creating them, their place in addressing scientific frontiers, and the new perspectives they bear. Each chapter is thoughtfully written with fresh viewpoints from the environmental RIs vantage as the authors explore and explain many topics such as the rationale and challenges in global change, field and modeling platforms, new tools, challenges in data management, distilling information into knowledge, and new developments in large-scale RIs. This work serves an advantageous guide for academics and practitioners alike who aim to deepen their knowledge in the field of science and project management, and logistics operations.

Medium term plan 2010–2012: Center for International Forestry Research

This book is an excellent resource for scientists, political decision makers, and students interested in the impact of peatlands on climate change and ecosystem functioning, containing a plethora of recent research results such as monitoring-sensing-modeling for carbon-water flux/storage, biodiversity and peatland management in tropical regions. It is estimated that more than 23 million hectares (62 %) of the total global tropical peatland area are located in Southeast Asia, in lowland or coastal areas of East Sumatra, Kalimantan, West Papua, Papua New Guinea, Brunei, Peninsular Malaysia, Sabah, Sarawak and Southeast Thailand. Tropical peatland has a vital carbon-water storage function and is host to a huge diversity of plant and animal species. Peatland ecosystems are extremely vulnerable to climate change and the impacts of human activities such as logging, drainage and conversion to agricultural land. In Southeast Asia, severe episodic droughts associated with the El Nino-Southern Oscillation, in combination with over-drainage, forest degradation, and land-use changes, have caused widespread peatland fires and microbial peat oxidation. Indonesia's 20 Mha peatland area is estimated to include about 45–55 GtC of carbon stocks. As a result of land use and development, Indonesia is the third largest emitter of greenhouse gases (2–3 GtC carbon dioxide equivalent per year), 80 % of which is due to deforestation and peatland loss. Thus, tropical peatlands are key ecosystems in terms of the carbon-water cycle and climate change.

Wetland Carbon and Environmental Management

At present there is insufficient knowledge of the behavior of fires and how they propagate. This lack of information makes it very hard to control these phenomena and is one of the biggest obstacles to the development of a reliable decision support system. Public concern regarding this topic is increasing as uncontrolled fires may lead to major ecological disasters, and usually result in negative economic and health implications for the country. The aim of this book is to present a list of recent research results such as fire propagation modeling, fire suppression, and fire management strategies in tropical peatland ecosystems. This book presents an international overview of wetland and peatland mapping experiences from Indonesia, Congo, Brazil, Australia, and Scotland. Several innovative techniques are discussed, including advanced digital imaging and remote sensing techniques, as well as geodatabase processing and field surveying. This book further discusses tropical wetland management as practiced in Indonesia, Vietnam, and Thailand. The contents of this book are suitable and should be a good reference for those who are involved in research, development, and management of tropical wetlands, including academics, soil scientists, environmentalists, researchers, agriculturists, students, agri-businessmen, policy makers, land managers and farmers.

Recarbonizing global soils - A technical manual of recommended management practices

This book contains papers presented at the International Workshop on Tropical Wetlands, held in Banjarmasin, Indonesia. This workshop discussed wetland mapping and characterization as well as wetland management for sustainable agriculture. This volume contains selected papers on tropical wetlands, more specifically, peatland, tidal land, and acid sulphate soils. This book presents an international overview of wetland and peatland mapping experiences from Indonesia, Congo, Brazil, Australia, and Scotland. Several innovative techniques are discussed, including advanced digital imaging and remote sensing techniques, as well as geodatabase processing and field surveying. This book further discusses tropical wetland management as practiced in Indonesia, Vietnam, and Thailand. The contents of this book are suitable and should be a good reference for those who are involved in research, development, and management of tropical wetlands, including academics, soil scientists, environmentalists, researchers, agriculturists, students, agri-businessmen, policy makers, land managers and farmers.

The Soils of Ireland

Peatlands in the Nordic Baltic region and elsewhere in the world store large amounts of carbon and are at the same time important for conservation of biodiversity. Thus peatlands are space-effective carbon stocks, but when drained carbon and nitrogen are released as greenhouse gases to the atmosphere and as nitrate to the surface water, while methane will be released when rewetting. New knowledge reveals that one of the most efficient means to mitigate emissions of greenhouse gases to the atmosphere is the restoration of drained peatlands to reestablish former high water tables on organic soils. This project on synergies between climate change mitigation and the restoration of peatlands has been conducted under a regional Ramsar initiative covering the Nordic and Baltic countries (NordBalNet), with support from the Nordic Council of Ministers. The report contains chapters on peatlands and their role in climate change mitigation, individual country chapters and the role of the Ramsar Convention.

Geoscience and Remote Sensing

Agriculture and climate change are inextricably linked. Agriculture is part of the climate change problem, contributing about 13.5 percent of annual greenhouse gas (GHG) emissions (with forestry contributing an additional 19 percent), compared with 13.1 percent from transportation. Agriculture is, however, also part of the solution, offering promising opportunities for mitigating GHG emissions through carbon sequestration, soil and land use management, and biomass production. Climate change threatens agricultural production through higher and more variable temperatures, changes in precipitation patterns, and increased occurrences of extreme events such as droughts and floods. And if agriculture is not included, or not well included, in the international climate change negotiations leading up to the 15th
Managing Forest Carbon in a Changing Climate

Natural Polymers and Biopolymers II

Soil Carbon in Sensitive European Ecosystems - From Science to Land Management is a comprehensive overview of the latest research in this field drawn together by a network of scientists from across Europe. Soil carbon assessments are crucial at present to our understanding of the dynamics of terrestrial ecosystems and our ability to assess implications for the global carbon exchange and its consequences on the future climate. This book focuses primarily on ecosystems and their soil carbon stocks. The book identifies three key sensitive ecosystems within Europe: Mediterranean Forest and Agricultural Systems; Mountain Ecosystems; and Peatland. Contributors include those currently working for the European research programme, COST Action 639 BurnOut (www.cost639.net; 2006-2010). COST Action 639 emerged from a demand from policy makers in Europe for more detailed information on soil carbon dynamics. The cooperation between experts for reporting and experts for soil dynamics is the focus of the book. This book seeks to provide an up-to-date account on the state-of-the-art research within this topical field.

Medium term plan for 2011-13: MTP

Biomass burning is one of the most important sources of greenhouse gas emissions and aerosols in South and Southeast Asia and greatly impacts other countries through transboundary air pollution. With contributions from leading scientists, this volume offers an interdisciplinary perspective on the impacts of biomass burning on the land resources, climate, and the atmosphere. It showcases several examples linking top-down remote sensing, bottom-up ground-based measurements, and an integrated modeling to address the impacts of biomass burning and land-atmosphere interactions. It is a valuable guide for readers in atmospheric science, ecology, spatial geography, remote sensing, and GIS. This book is unique as it highlights the sources and the causes of biomass burning and atmospheric research in South and Southeast Asia. It explains the latest tools and techniques, in particular the use of satellite remote sensing and geospatial technologies for fire mapping, monitoring, and land cover/land use change. It focuses on large spatial scales integrating top-down and bottom-up methodologies. It addresses the pressing issues of air pollution rampant in South and Southeast Asia. It includes contributions from global experts working on biomass burning projects in the USA, Japan, South/Southeast Asia, and Europe. The contents of this book will appeal to students and professionals using remote sensing and geospatial techniques, including geographers, ecologists, atmospheric and environmental scientists, and all who are interested in biomass burning pollution.

Biomass Burning in South and Southeast Asia, Two Volume Set

Carbon stored in soils represents the largest terrestrial carbon pool and factors affecting this will be vital in the understanding of future atmospheric CO2 concentrations. This book provides an integrated view on measuring and modeling soil carbon dynamics. Based on a broad range of in-depth contributions by leading scientists it gives an overview of current research concepts, developments and outlooks and introduces cutting-edge methodologies, ranging from questions of appropriate measurement design to the potential application of stable isotopes and molecular tools. It includes a standardized soil CO2 efflux protocol, aimed at data consistency and inter-site comparability and thus underpins a regional and global understanding of soil carbon dynamics. This book provides an important reference work for students and scientists interested in many aspects of soil ecology and biogeochemical cycles, policy makers, carbon traders and others concerned with the global carbon cycle.

Managing Protected Areas in Central and Eastern Europe Under Climate Change

In the summer of 2003, a workshop was held in Portsmouth, NH, to discuss land measurement techniques for the North American Carbon Program. Over 40 scientists representing government agencies, academia and nonprofit research organizations located in Canada, the US and Mexico participated. During the course of the workshop a number of topics were discussed, with an emphasis on the following: • The need for an intermediate tier of carbon measurements. This level of study would be more extensive than state-level inventories of the US Forest Service Forest Inventory and Analysis Program, but less detailed than intensive eco- two-studies sites such as those in Long Term Ecological Research network. This tier would ideally provide a basis to link long term remote sensing measurements and inventory data, and supply data required to parameterize existing models (see Naylor and Harriss 2002, Denning et al. 2005). • The design criteria that such a network of sites should meet. The network and e-planning design should be standardized, but flexible enough to be applied across North America. The design also needs to be efficient enough to be implemented without the need for large field crews, yet robust enough to provide useful information. Finally, the spatial scale must permit easy linkage to remotely sensed data. • The key variables that should be measured at each site, and the frequency of measurement.

Why Forests? Why Now?

Wetlands are complex and dynamic ecological systems incorporating two important, inter-linked components: hydrology and vegetation. Modelling wetland components and processes reveals the nature of wetland systems and helps to predict the effects of environmental change. The main goal of much current research is the construction of a vigorous and sp

Tropical Peatland Ecosystems

This book is a printed edition of the Special Issue "Forest Soil Respiration under Climate Change" that was published in Forests

Soil Carbon Dynamics

Beginning with an overview of data and concepts developed in the EU-project HABIT-CHANGE, this book addresses the need for sharing knowledge and experience in the field of biodiversity conservation and climate change. There is an urgent need to build capacity in protected areas to monitor, assess, manage and report the effects of climate change and their interaction with other pressures. The contributors identify barriers to the adaptation of conservation management, such as the mismatch between planning reality and the decision context at site level. Short and vivid descriptions of case studies, drawn from investigation areas all over Central and Eastern Europe, illustrate both the local impacts of climate change and their consequences for future management. These focus on ecosystems most vulnerable to changes
in climatic conditions, including alpine areas, wetlands, forests, lowland grasslands and coastal areas. The case studies demonstrate the application of adaptation strategies in protected areas like National Parks, Biosphere Reserves and Natural Parks, and reflect the potential benefits as well as existing obstacles. A general section provides the necessary background information on climate trends and their effects on abiotic and biotic components. Often, the parties to policy change and conservation management, including managers, land users and stakeholders, lack both expertise and incentives to undertake adaptation activities. The authors recognize that achieving the needed changes in behavior - habit - is as much a social learning process as a matter of science-based procedure. They describe the implementation of action, impact assessment, and monitoring of climate change and show how results can support efforts to increase stakeholders involvement in local adaptation strategies. The book concludes by pointing out the need for more work to communicate the cross-sectoral nature of biodiversity protection, the value of well-informed planning in the long-term process of adaptation, the definition of acceptable change, and the motivational value of exchanging experience and examples of good practice.

Halting Biodiversity Loss

This proceedings volume focuses on different aspects of environmental assessment, monitoring, and management of urban and technogenic soils. Soils of Urban, Industrial, Traffic, Mining and Military Areas (SUITMAs) differ substantially from their natural zonal counterparts in their physical, chemical and biological features, their performed functions, and supported services. This book discusses the monitoring, analysis and assessment of the effects of urbanization on soil functions and services. Further, it helps to find solutions to the environmental consequences of urbanization and discusses best management practices such as management and design of urban green infrastructures, waste management, waste purification, land reclamation and remediation of contaminated urban development. The book includes thematic sections corresponding to 14 sessions of the SUITMA 9 congress, covering broad topics that highlight the importance of urban soils for society and environment and summarizing the lessons learned and existing methodologies in analyses, assessments, and modeling of anthropogenic effects on soils and the related ecological risks. This proceedings book appeals to scientists, students as well as practitioners in soil and environmental science, urban planning, geography and related disciplines, and provides useful information for policy makers and other stakeholders working in urban management and greenery.

Urbanization: Challenge and Opportunity for Soil Functions and Ecosystem Services

During the last decades, soil organic carbon (SOC) attracted the attention of a much wider array of specialists beyond agriculture and soil science, as it was proven to be one of the most crucial components of the earth’s climate system, which has a great potential to be managed by humans. Soils as a carbon pool are one of the key factors in several Sustainable Development Goals, in particular Goal 15, “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt biodiversity loss” with the SOC stock being explicitly cited in Indicator 15.3.1. This technical manual is the first attempt to gather, in a standardized format, the existing data on the impacts of the main soil management practices on SOC content in a wide array of environments, including the advantages, drawbacks and constraints. This manual presents different sustainable soil management (SSM) practices at different scales and in different contexts, supported by case studies that have been shown with quantitative data to have a positive effect on SOC stocks and successful experiences of SOC sequestration in practical field applications. Volume 5 includes 24 practices that have a direct impact on SOC sequestration and maintenance in forestry, wetlands and urban soils.

Carbon Cycling in Northern Peatlands

Explores how the management of wetlands can influence carbon storage and fluxes. Wetlands are vital natural assets, including their ability to take-up atmospheric carbon and restrict subsequent carbon loss to land degradation and coastal ecosystems. The wetlands are also a carbon sink. This book presents a collection of wetland research studies from around the world to demonstrate how environmental management can improve carbon sequestration while enhancing wetland health and function. Volume highlights include: Overview of carbon storage in the landscape Introduction to wetland management practices Comparisons of natural, managed, and impacted wetlands. The impact of wetland management on carbon storage is discussed. Case studies covering tropical, coastal, inland, and northern wetlands primer for carbon offset trading programs and how wetlands might contribute. The American Geophysical Union promotes discovery in Earth and space science for the benefit of humanity. Its publications disseminate scientific knowledge and provide resources for researchers, students, and professionals.

Unlocking the potential of soil organic carbon

Remote Sensing is collecting and interpreting information on targets without being in physical contact with the objects. Aircraft, satellites etc are the major platforms for remote sensing observations. Unlike electrical, magnetic and gravity surveys that measure force fields, remote sensing technology is commonly referred to methods that employ electromagnetic energy as radio waves, light and heat as the means of detecting and measuring target characteristics. Geosciences is a study of nature world from the core of the earth, to the depths of oceans and to the outer space. This branch of study can help mitigate volcanic eruptions, floods, landslides etc. gigantic human life disaster and help develop ground waters, mineral ores, fossils fuels and construction materials. Also, it studies physical, chemical reactions to understand the distribution of the nature resources. Therefore, the geosciences encompass earth, atmospheric, oceanography, pedology, petrology, mineralogy, hydrology and geology. This book covers latest and futuristic developments in remote sensing novel theory and applications by numerous scholars, researchers and experts. It is organized into 26 excellent chapters which include optical and infrared modeling, microwave scattering process, forests and vegetation, soils, ocean temperature, geographic information, object classification, data mining, image processing, passive optical sensor, multispectral and hyperspectral sensing, lidar, radiometer instruments, calibration, active microwave and SAR processing. Last but not the least, this book presented chapters that highlight frontier works in remote sensing information processing. I am very pleased to have leaders in the field to prepare and contribute their most current research and development work. Although no attempt is made to cover every topic in remote sensing and geoscience, these entire 26 remote sensing technology chapters shall give readers a good insight. All topics listed are equal important and significant.

Mathematics of Planet Earth

BioPolymers could be either natural polymers - polymer naturally occurring in Nature, such as cellulose or starch, or biobased polymers that are artificially synthesized from natural resources. Since the late 1990s, the polymer industry has faced two serious problems: global warming and anticipation of limitation to the access to fossil resources. One solution consists in the use of sustainable resources including renewable resources. Some bio-based feedstocks are promising resources and biopolymers are one of the most dynamic polymer area. Additionally, biodegradability is a special functionality conferred to a material, bio-based or not. Very recently, facing the awareness of the volumes of plastic wastes, biodegradable polymers are gaining increasing attention from the market and industrial community. This special issue of Molecules deals with the current scientific and industrial challenges of Natural and Biobased Polymers, through the access of new biobased monomers, improved thermo-mechanical properties, the valorization of non-food residual biomass, and biobased Polymers which clearly demonstrate the increased interest in this field. We hope that this will inspire researchers to further develop this area and thus contribute to futures more sustainable society."

Tropical Peatland Eco-management

The increasing intensity and frequency of natural disasters all around the world has caused severe socioeconomic impacts, especially in South and Southeast Asia. This region is particularly susceptible to vegetation fires, leading to biomass burning pollution with impacts on other countries through trans-boundary air pollution. Despite the growing body of information on biomass pollutants worldwide, only a
modest amount of data from these regions are available. With fires and biomass burning identified as a vital issue in South/Southeast Asia, this two-volume set was created to meet community research and application needs. To better serve the atmospheric, environmental, and remote sensing communities, and to address air quality, climate, and the human health impacts of greenhouse gases and aerosols from biomass burning, this set brings together the collective achievements of experts in these regions and the state-of-the-art technologies and spatial analyses to model and monitor biomass burning events and their impacts. This first volume covers various topics on fire, biomass burning, mapping and monitoring while the second volume highlights the impact of biomass burning on the biosphere and reflects extensive research by interdisciplinary teams of experts. This set will serve as a valuable resource for remote sensing, geographers, ecologists, atmospheric scientists, environmental scientists, and all who wish to advance their knowledge on fires, biomass burning, and biomass burning pollution in South/Southeast Asia Specific Features: Unique in its discussion of the sources and the causes of biomass burning and atmospheric research in South and Southeast Asia. Explains how remote sensing and geospatial technologies help the mapping and monitoring of biomass burning events and their impacts. Focuses on large spatial scales integrating top-down and bottom-up methodologies. Addresses the pressing issues of environmental pollution that are rampant in South and Southeast Asia. Includes contributions from global experts currently working on biomass burning projects in the US, Japan, South/Southeast Asia, and Europe.

Smoke on Water

This book presents an analysis of land and water resources in Siberia, initially characterizing the landscapes, their ecosystems, crucial processes, human impacts on soil and water quality, and the status quo of local research. Further chapters deal with modern monitoring and management methods that can lead to a significant knowledge shift and initiate sustainable soil and water resource use. These include soil hydrological laboratory measurement methods; process-based field evaluation methods for land and water quality; remote sensing and GIS technology-based landscape monitoring methods; process and ecosystem modeling approaches; methods of process and remote sensing evaluation and functional soil mapping; and tools for controlling agricultural land use systems. More than 15 of these concrete monitoring and management tools can immediately be incorporated into research and practice. Maintaining the functions of great landscapes for future generations will be the reward for these efforts.

Tropical Wetlands – Innovation in Mapping and Management

Field Measurements for Forest Carbon Monitoring

The role of soils and soil organic carbon in climate change adaptation and mitigation has been recognized and validated both experimentally and through modelling. The outcomes of this symposium led by FAO will contribute to building scientific evidence.

Novel Methods for Monitoring and Managing Land and Water Resources in Siberia

This is the thirteenth report from the Environmental Audit Committee of the 2007-08 session (HC 743, ISBN 9780215524843). The Committee states, that the Government will fail to meet the 2010 target to halt biodiversity loss, although the target might have been unrealistic. The Committee does see some progress, with 80% of Sites of Special Scientific Interest (SSSIs) in a favourable condition, with a number of rare species having recovered. In general, though, biodiversity loss continues in the wider countryside with many species and habitats facing severe declines and local extinctions. The Committee does believe that with leadership and effective policies, biodiversity loss could in fact be reversed, and states the Government should adopt a new target to halt the loss. Biodiversity policies need to be cross-departmental, and the Government’s ecosystem assessment is a way forward, by encouraging such an approach and promoting biodiversity protection at the regional and local scales. The Committee further states that the Government could make a large contribution in preventing biodiversity loss through more support for the UK Overseas Territories.

Pesticides Abstracts

Human-driven greenhouse emissions are increasing the velocity of climate change and the frequency and intensity of climate extremes far above historical levels. These changes, along with other human-perturbations, are setting the conditions for more rapid and abrupt ecosystem dynamics and collapse. This book presents new evidence on the rapid emergence of ecosystem collapse in response to the progression of anthropogenic climate change dynamics that are expected to intensify as the climate continues to warm. Discussing implications for biodiversity conservation, the chapters provide examples of such dynamics globally covering polar and boreal ecosystems, temperate and semi-arid ecosystems, as well as tropical and temperate coastal ecosystems. Given its scope, the volume appeals to scientists in the fields of general ecology, terrestrial and coastal ecology, climate change impacts, and biodiversity conservation.

Carbon Stocks in Nunukan, East Kalimantan

This book brings together the essential evidence and policy opportunities regarding the global importance of soil carbon for sustaining Earth’s life support system for humanity. Covering the science and policy background for this important natural resource, it describes land management options that improve soil carbon status and therefore increase the benefits that humans derive from the environment. Written by renowned global experts, it is the principal output from a SCOPE rapid assessment process project.

Peatlands mapping and monitoring

Integration of peatlands into land-use monitoring systems is central to the conservation of their carbon storage - be they conserved, degraded or restored. Healthy peatlands mitigate climate change, enhance adaptive capacity and maintain ecosystem services and biodiversity. Albeit peatlands are starting to receive a high level of attention and the scientific basis for their monitoring has quickly developed over the last few years. Robust and practical approaches and tools for developing and integrating peatland-monitoring into national monitoring and reporting frameworks is an important opportunity for countries to limit global warming to 2 °C.

Ecosystem Collapse and Climate Change

The Geomorphology of Upland Peat offers a detailed synthesis of existing literature on peat erosion, incorporating new research ideas and data from two leading experts in the field. Presents the most detailed and current work to date Written in a style that is both intelligent and accessible Fully illustrated with original drawings and photographs Relevant and information for a broad audience working on organic sediments in various environments

Peatlands and Climate in a Ramsar context

Contemporary soil science and conservation methods of effective forestry Forests and the soils that serve as their foundation cover almost a third of the world’s land area. Soils influenced by forest cover
have different properties than soils cultivated for agricultural use. Ecology and Management of Forest Soils provides a clear and comprehensive overview of the composition, structure, processes, and management of the largest terrestrial ecosystem. From composition and biogeochemistry to dynamics and management, this essential text enables readers to understand the vital components of sustainable, long-term forest soil fertility. The interaction of trees, animals, microbes, and vegetation alter the biology and chemistry of forest soils—these dynamics are also subject to human management, requiring conservationists to be conversant in the philosophy and methods of soil science. Now in its fifth edition, this classic text includes new coverage of uptake of organic nitrogen in forests, ISN retention studies, the effects of N additions on C accumulation, evidence-based examples of the dynamics of soils, and more. Extensive updates and revisions to topics such as spatial implications of megafires, long-term organic matter accumulation, soil characterization, and molecular soil measurement techniques reflect contemporary research and practices in the field. This informative overview of forest soils integrates clear and accurate descriptions of central concepts and logically organized chapters to provide readers with foundational knowledge of major soil features, processes, measurement techniques, and management methods. This authoritative survey of the management and ecology of forest soils: Offers full-color photographs and illustrations, real-world examples and case studies, and clear overviews to each topic Presents up-to-date and accessible coverage of contemporary forest science literature and research Addresses topical issues relevant to areas such as ecology, forest management, conservation, and government policy Provides a comprehensive, global perspective on forest soils, from tropical to temperate to boreal. Ecology and Management of Forest Soils offers students in areas of soil science and forestry, natural resource and environmental management, ecology, agronomy, and conservation an invaluable overview of the field, while providing forestry professionals an efficient and current work of reference.

Developments and Innovation in Carbon Dioxide (CO2) Capture and Storage Technology

Tropical forests are an undervalued asset in meeting the greatest global challenges of our time—averting climate change and promoting development. Despite their importance, tropical forests and their ecosystems are being destroyed at a high and even increasing rate in most forest-rich countries. The good news is that the science, economics, and politics are aligned to support a major international effort over the next five years to reverse tropical deforestation. Why Forests? Why Now? synthesizes the latest evidence on the importance of tropical forests in a way that is accessible to anyone interested in climate change and development and to readers already familiar with the problem of deforestation. It makes the case to decisionmakers in rich countries that rewarding developing countries for protecting their forests is urgent, affordable, and achievable.

Ecology and Management of Forest Soils

It is widely recognized that the degree of development of a science is given by the transition from a mainly descriptive stage to a more quantitative stage. In this transition, qualitative interpretations (conceptual models) are complemented with quantification (numerical models, both, deterministic and stochastic). This has been the main task of mathematical geoscientists during the last forty years—to establish new frontiers and new challenges in the study and understanding of the natural world. Mathematics of Planet Earth comprises the proceedings of the International Association for Mathematical Geosciences Conference (IAMG2013), held in Madrid from September 2–6, 2013. The Conference addresses researchers, professionals and students. The proceedings contain more than 150 original contributions and give a multidisciplinary vision of mathematical geosciences.