

Journal Of Earth Systems Science

Ecosystem Services: Global Issues, Local Practices covers scientific input, socioeconomic considerations, and governance issues on ecosystem services. This book provides hands-on transdisciplinary reflections by administrators and sector representatives involved in the ecosystem service community. Ecosystem Services develops shared approaches and scientific methods to achieve knowledge-based sustainable planning and management of ecosystem services. Professionals engaged in ecosystem service implementation have two options: de-emphasize the ecological and socioeconomic complexity and advance in the theoretical, abstract field, or try to develop research that is policy relevant and inclusive in an uncertain environment. This book provides a wide overview of issues at stake, of interest for any professional wishing to develop a broader view on ecosystem service science and practice. Examines a broad scope of relevant issues to create common understanding in the ecosystem services community Includes contributions from several backgrounds, providing a broad, multidisciplinary view Offers recommendations to develop a thorough understanding and management of ecosystem services based on tools and research in larger territories as well as on local scales

Computers in Earth and Environmental Sciences: Artificial Intelligence and Advanced Technologies in Hazards and Risk Management addresses the need for a comprehensive book that focuses on multi-hazard assessments, natural and manmade hazards, and risk management using new methods and technologies that employ GIS, artificial intelligence, spatial modeling, machine learning tools and meta-heuristic techniques. The book is clearly organized into four parts that cover natural hazards, environmental hazards, advanced tools and technologies in risk management, and future challenges in computer applications to hazards and risk management. Researchers and professionals in Earth and Environmental Science who require the latest technologies and advances in hazards, remote sensing, geosciences, spatial modeling and machine learning will find this book to be an invaluable source of information on the latest tools and technologies available. Covers advanced tools and technologies in risk management of hazards in both the Earth and Environmental Sciences Details the benefits and applications of various technologies to assist researchers in choosing the most appropriate techniques for purpose Expansively covers specific future challenges in the use of computers in Earth and Environmental Science Includes case studies that detail the applications of the discussed technologies down to individual hazards

Scientists have long sought to unravel the fundamental mysteries of the land, life, water, and air that surround us. But as the consequences of humanity's impact on the planet become increasingly evident, governments are realizing the critical importance of understanding these environmental systems and investing billions of dollars in research to do so. To identify high-priority environmental science projects, Grand Challenges in Environmental Sciences explores the most important areas of research for the next generation. The book's goal is not to list the world's biggest environmental problems. Rather it is to determine areas of opportunity that with a concerted investment could yield significant new findings. Nominations for

environmental science's grand challenges were solicited from thousands of scientists worldwide. Based on their responses, eight major areas of focus were identified—areas that offer the potential for a major scientific breakthrough of practical importance to humankind, and that are feasible if given major new funding. The book further pinpoints four areas for immediate action and investment.

Since this new science is of an unprecedented interdisciplinary nature, the book does not merely take stock of its numerous ingredients, but also delivers their multifaceted integration. The resulting master paradigm - the co-evolution of nature and anthroposphere within a geo-cybernetic continuum of processes - is based on a structured manifold of partial paradigms with their specific ranges. Most importantly, this serves the scientific foundation of a meaningful, safe and efficient environment and development management for solving the most burning questions concerning humankind and its natural environment. The more concrete elucidation of the natural and human dimensions, as well as various attempts and instruments of integration are represented in the different parts of the book, while the didactic quality is heightened by many allegoric illustrations.

Hailed by The New York Times for writing “with wonderful clarity about science . . . that effortlessly teaches as it zips along,” nationally bestselling author Robert M. Hazen offers a radical new approach to Earth history in this intertwined tale of the planet's living and nonliving spheres. With an astrobiologist's imagination, a historian's perspective, and a naturalist's eye, Hazen calls upon twenty-first-century discoveries that have revolutionized geology and enabled scientists to envision Earth's many iterations in vivid detail—from the mile-high lava tides of its infancy to the early organisms responsible for more than two-thirds of the mineral varieties beneath our feet. Lucid, controversial, and on the cutting edge of its field, *The Story of Earth* is popular science of the highest order. "A sweeping rip-roaring yarn of immense scope, from the birth of the elements in the stars to meditations on the future habitability of our world." -*Science* "A fascinating story." -Bill McKibben

"Climate change is an issue that transcends and exceeds formal political and geographical boundaries. Social scientists are increasingly studying how effective policies on climate change can be enacted at the global level, 'beyond the state'. Such perspectives take into account governance mechanisms with public, hybrid and private sources of authority. Studies are raising questions about the ways in which state authority is constituted and practiced in the climate arena, and the implications for how we understand the potential and limits for addressing the climate problem. This book focuses on the rationalities and practices by which a carbon-constrained world is represented, categorized and ordered. The book will enable investigations into a range of sites (e.g., the body, home, shopping centre, firm, city, forests, streets, international bureaucracies, financial flows, migrants and refugees) where subjectivities around climate change and carbon are formed and contested. Despite a growing interest in this area of work, the field remains fragmented and diffuse. This edited collection brings together the leading scholarship in the field to cast new light on the question of how, why, and with what implications climate governance is taking place. It is the first volume to collect this body of scholarship, and provides a key reference point in the growing debate about climate change across the social sciences"--

Explaining the what, the how and the why of climate science, this multidisciplinary new book provides a review of research from the last decade, illustrated with cutting-edge data and observations. A key focus is the development of analysis tools that can be used to demonstrate options for mitigating and adapting to increasing climate risks. Emphasis is given to the importance of Earth system feedback mechanisms and the role of the biosphere. The book explains advances in modelling, process understanding and observations, and the development of consistent and coherent studies of past, present and 'possible' climates. This highly illustrated, data-rich book is written by leading scientists involved in QUEST, a major UK-led research programme. It forms a concise and up-to-date reference for academic researchers or students in the fields of climatology, Earth system science and ecology, and also a vital resource for professionals and policymakers working on any aspect of global change.

The use of models to assess water quality is becoming increasingly important worldwide. In order to be able to develop a good model, it is necessary to have a good quantitative and ecological description of physical, chemical and biological processes in ecosystems. Such descriptions may be called "submodels". This book presents the most important, but not all, submodels applied in water quality modelling. Each chapter deals with a specific physical process and covers its importance, the most applicable submodels (and how to select one), parameter values and their determination, and future research needs. The book will be an excellent reference source for environmental engineers, ecological modellers and all those interested in the modelling of water quality systems.

The majority of the examples are taken from regions where the rivers run most of the year.

"Science Advice and Global Environmental Governance" examines expert committees established to provide advice on science to multilateral environmental agreements. By focusing on how these institutions are sites of coproduction of knowledge and policy, this work brings to light the politics of science advice and details how these committees are contributing to an emerging global environmental constitutionalism.

Grounded in participant observation, elite interviews and document analysis, this book uses the lenses of the body of experts, body of knowledge and institutional body to focus on three treaties: the Montreal Protocol on Substances That Deplete the Ozone Layer, the Stockholm Convention on Persistent Organic Pollutants and the UN Convention to Combat Desertification.

Natural and human-induced changes in Earth's interior, land surface, biosphere, atmosphere, and oceans affect all aspects of life.

Understanding these changes requires a range of observations acquired from land-, sea-, air-, and space-based platforms. To assist NASA, NOAA, and USGS in developing these tools, the NRC was asked to carry out a "decadal strategy" survey of Earth science and applications from space that would develop the key scientific questions on which to focus Earth and environmental observations in the period 2005-2015 and beyond, and present a prioritized list of space programs, missions, and supporting activities to address these questions. This report presents a vision for the Earth science program; an analysis of the existing Earth Observing System and recommendations to help restore its capabilities; an assessment of and recommendations for new observations and missions for the next decade; an examination of and recommendations for effective application of those observations; and an analysis of how best to sustain that observation and applications system.

The authors propose the science curriculum concept of Global Science Literacy justifying its use internationally with reference to the nature of

science, the probable direction of science in the new millennium, the capability for GSL to develop inter-cultural understanding, and its relevance to non-Western cultures and traditions. It is relevant to curriculum developers, researchers, teachers and graduate students. Spatial Modeling in GIS and R for Earth and Environmental Sciences offers an integrated approach to spatial modelling using both GIS and R. Given the importance of Geographical Information Systems and geostatistics across a variety of applications in Earth and Environmental Science, a clear link between GIS and open source software is essential for the study of spatial objects or phenomena that occur in the real world and facilitate problem-solving. Organized into clear sections on applications and using case studies, the book helps researchers to more quickly understand GIS data and formulate more complex conclusions. The book is the first reference to provide methods and applications for combining the use of R and GIS in modeling spatial processes. It is an essential tool for students and researchers in earth and environmental science, especially those looking to better utilize GIS and spatial modeling. Offers a clear, interdisciplinary guide to serve researchers in a variety of fields, including hazards, land surveying, remote sensing, cartography, geophysics, geology, natural resources, environment and geography Provides an overview, methods and case studies for each application Expresses concepts and methods at an appropriate level for both students and new users to learn by example

The Earth that sustains us today was born out of a few remarkable, near-catastrophic revolutions, started by biological innovations and marked by global environmental consequences. The revolutions have certain features in common, such as an increase in complexity, energy utilization, and information processing by life. This book describes these revolutions, showing the fundamental interdependence of the evolution of life and its non-living environment. We would not exist unless these upheavals had led eventually to 'successful' outcomes - meaning that after each one, at length, a new stable world emerged. The current planet-reshaping activities of our species may be the start of another great Earth system revolution, but there is no guarantee that this one will be successful. The book explains what a successful transition through it might look like, if we are wise enough to steer such a course. This book places humanity in context as part of the Earth system, using a new scientific synthesis to illustrate our debt to the deep past and our potential for the future.

This book highlights the problems that have developed as students lack either the social or cultural capital to take the opportunity of Higher Education through conventional routes. This might be due to leaving school early, lacking entry qualifications or wanting to further their education and prospects after entering the workplace. Foundation courses help to widen participation and create a route towards higher education. This book offers tried and tested practical solutions, from the notion of widening participation, to recruitment of students and to ways of helping them to make the most of themselves and develop the skills they need to progress on degree courses of their choice.

Using the earth systems approach, Dr Merritts and her colleagues guide readers towards an understanding of Earth's varied environments, the whole-Earth systems connecting them and the ramifications of natural events and human interaction.

When humanity first glimpsed planet Earth from space, the unity of the system that supports humankind entered the popular consciousness. The concept of the Earth's atmosphere, biosphere, oceans, soil, and rocks operating as a closely interacting system has rapidly gained ground in science. This new field, involving geographers, geologists, biologists, oceanographers, and atmospheric physicists, is known as Earth System Science. In this Very Short Introduction, Tim Lenton considers how a world in which humans could evolve was created; how, as a species, we are now reshaping that world; and what a sustainable future for humanity within the Earth System might look like. Drawing on elements of

geology, biology, chemistry, physics, and mathematics, Lenton asks whether Earth System Science can help guide us onto a sustainable course before we alter the Earth system to the point where we destroy ourselves and our current civilisation. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Advances in Earth Science outlines the latest developments and new research directions currently being made world-wide in the earth sciences. It contains invited and refereed articles by leading younger researchers on their cutting-edge research, but aimed at a general scientific audience. This exciting volume explains how powerful methodologies such as satellite remote sensing and supercomputing simulations are now profoundly changing research in the earth sciences; how the earth system is increasingly being viewed in a holistic way, linking the atmosphere, ocean and solid earth; and how the societal impact of the research in the earth sciences has never been more important. Published by Imperial College Press in collaboration with the Royal Society of London, the book features many articles originating from invited papers published in the Philosophical Transactions of the Royal Society. Eleven of the distinguished contributors hold prestigious Royal Society Research Fellowships. Contents: Environmental Change: The Price of Climate Change (D S Reay) Carbon in the Atmosphere and Terrestrial Biosphere in the Early Anthropocene (Y Malhi) Dust in the Earth System: The Biogeochemical Linking of Land, Air, and Sea (A Ridgwell & K E Kohfeld) The Late Permian Mass Extinction Event and Recovery: Biological Catastrophe in a Greenhouse World (R J Twitchett) Dynamics of the Earth: Space-Plasma Imaging — Past, Present and Future (C N Mitchell) Fault Structure, Stress, Friction and Rupture Dynamics of Earthquakes (E Fukuyama) Some Remarks on the Time Scales of Magmatic Processes Occurring Beneath Island Arc Volcanoes (S P Turner) The Break-Up of Continents and the Generation of Ocean Basins (T A Minshull) Properties and Evolution of the Earth's Core and Geodynamo (F Nimmo & D Alfè) Applied Earth Science: Giant Catastrophic Landslides (C R J Kilburn) Remote Monitoring of the Earthquake Cycle Using Satellite Radar Interferometry (T J Wright) Human Influence on the Global Geochemical Cycle of Lead (D J Weiss et al.) Natural and Artificial Platinum and Palladium Occurrences World-Wide (H M Prichard) Data Assimilation and Objectively Optimised Earth Observation (D J Lary & A Koratkar) Readership: General scientific readers interested in the new research directions in the earth sciences; researchers and students in the earth and environmental sciences, geophysics, environmental chemistry, biology and evolution. Keywords: Climate Change; Environmental Change; Earth Dynamics

Encyclopedia of Geology, Second Edition presents in six volumes state-of-the-art reviews on the various aspects of

geologic research, all of which have moved on considerably since the writing of the first edition. New areas of discussion include extinctions, origins of life, plate tectonics and its influence on faunal provinces, new types of mineral and hydrocarbon deposits, new methods of dating rocks, and geological processes. Users will find this to be a fundamental resource for teachers and students of geology, as well as researchers and non-geology professionals seeking up-to-date reviews of geologic research. Provides a comprehensive and accessible one-stop shop for information on the subject of geology, explaining methodologies and technical jargon used in the field Highlights connections between geology and other physical and biological sciences, tackling research problems that span multiple fields Fills a critical gap of information in a field that has seen significant progress in past years Presents an ideal reference for a wide range of scientists in earth and environmental areas of study

Tackling environmental issues such as global warming, ozone depletion, acid rain, water pollution, and soil contamination requires an understanding of the underlying science and chemistry of these processes in real-world systems and situations. Chemistry for Environmental and Earth Sciences provides a student-friendly introduction to the basic chemistry used for the mitigation, remediation, and elimination of pollutants. Written and organized in a style that is accessible to science as well as non-science majors, this textbook divides its content into four intuitive chapters: Fire, Earth, Water, and Air. The first chapter explains classical concepts in chemistry that occur in nature such as atomic and molecular structures, chemical bonding and reactions, states of matter, phase transitions, and radioactivity. Subsequent chapters focus on the chemistry relating to the geosphere, hydrosphere, and atmosphere—including the chemical aspects of soil, water, and air pollution, respectively. Chemistry for Environmental and Earth Sciences uses worked examples and case studies drawn from current applications along with clear diagrams and concise explanations to illustrate the relevance of chemistry to geosciences. In-text and end-of-chapter questions with complete solutions also help students gain confidence in applying concepts from this book towards solving current, real-world problems.

Humans are no longer spectators who need to adapt to their natural environment. Our impact on the earth has caused changes that are outside the range of natural variability and are equivalent to such major geological disruptions as ice ages. Some scientists argue that we have entered a new epoch in planetary history: the Anthropocene. In such an era of planet-wide transformation, we need a new model for planet-wide environmental politics. In this book, Frank Biermann proposes "earth system" governance as just such a new paradigm. Biermann offers both analytical and normative perspectives. He provides detailed analysis of global environmental politics in terms of five dimensions of effective governance: agency, particularly agency beyond that of state actors; architecture of governance, from local to global levels; accountability and legitimacy; equitable allocation of resources; and adaptiveness of governance systems.

Biermann goes on to offer a wide range of policy proposals for future environmental governance and a revitalized United Nations, including the establishment of a World Environment Organization and a UN Sustainable Development Council, new mechanisms for strengthened representation of civil society and scientists in global decision making, innovative systems of qualified majority voting in multilateral negotiations, and novel institutions to protect those impacted by global change. Drawing on ten years of research, Biermann formulates earth system governance as an empirical reality and a political necessity.

From the Foreword: "While large-scale machine learning and data mining have greatly impacted a range of commercial applications, their use in the field of Earth sciences is still in the early stages. This book, edited by Ashok Srivastava, Ramakrishna Nemani, and Karsten Steinhäuser, serves as an outstanding resource for anyone interested in the opportunities and challenges for the machine learning community in analyzing these data sets to answer questions of urgent societal interest...I hope that this book will inspire more computer scientists to focus on environmental applications, and Earth scientists to seek collaborations with researchers in machine learning and data mining to advance the frontiers in Earth sciences." --Vipin Kumar, University of Minnesota Large-Scale Machine Learning in the Earth Sciences provides researchers and practitioners with a broad overview of some of the key challenges in the intersection of Earth science, computer science, statistics, and related fields. It explores a wide range of topics and provides a compilation of recent research in the application of machine learning in the field of Earth Science. Making predictions based on observational data is a theme of the book, and the book includes chapters on the use of network science to understand and discover teleconnections in extreme climate and weather events, as well as using structured estimation in high dimensions. The use of ensemble machine learning models to combine predictions of global climate models using information from spatial and temporal patterns is also explored. The second part of the book features a discussion on statistical downscaling in climate with state-of-the-art scalable machine learning, as well as an overview of methods to understand and predict the proliferation of biological species due to changes in environmental conditions. The problem of using large-scale machine learning to study the formation of tornadoes is also explored in depth. The last part of the book covers the use of deep learning algorithms to classify images that have very high resolution, as well as the unmixing of spectral signals in remote sensing images of land cover. The authors also apply long-tail distributions to geoscience resources, in the final chapter of the book.

This book provides a sound introduction to the basic physical processes that dominate the workings of the Earth, its atmosphere and hydrosphere. It systematically introduces the physical processes involved in the Earth's systems without assuming an advanced physics or mathematical background. Offers an integrated approach to the study of earth, marine

and atmospheric environmental sciences, reflecting current trends in undergraduate courses. Natural examples of physical processes, rather than abstract physics and maths, are used throughout to illustrate the scientific principles involved.

Artwork from the book is available to instructors online at www.blackwellpublishing.com/leeder.

As the world population grows, so does the demand for food, putting unprecedented pressure on agricultural lands. In many desert dryland regions, however, intensive cultivation is causing their productivity to decline precipitously.

"Rewilding" the least productive of these landscapes offers a sensible way to reverse the damage, recover natural diversity, and ensure long-term sustainability of remaining farms and the communities they support. This accessibly written, groundbreaking contributed volume is the first to examine in detail what it would take to retire eligible farmland and restore functioning natural ecosystems. The lessons in *Rewilding Agricultural Landscapes* will be useful to conservation leaders, policymakers, groundwater agencies, and water managers looking for inspiration and practical advice for solving the complicated issues of agricultural sustainability and water management.

This book presents the complete story of the inseparably intertwined evolution of life and matter on earth, focussing on four major topics. It analyzes the driving forces behind global change and uses this knowledge to propose principles for global stewardship.

Science tells us that a new and dangerous stage in planetary evolution has begun—the Anthropocene, a time of rising temperatures, extreme weather, rising oceans, and mass species extinctions. Humanity faces not just more pollution or warmer weather, but a crisis of the Earth System. If business as usual continues, this century will be marked by rapid deterioration of our physical, social, and economic environment. Large parts of Earth will become uninhabitable, and civilization itself will be threatened. *Facing the Anthropocene* shows what has caused this planetary emergency, and what we must do to meet the challenge. Bridging the gap between Earth System science and ecological Marxism, Ian Angus examines not only the latest scientific findings about the physical causes and consequences of the Anthropocene transition, but also the social and economic trends that underlie the crisis. Cogent and compellingly written, *Facing the Anthropocene* offers a unique synthesis of natural and social science that illustrates how capitalism's inexorable drive for growth, powered by the rapid burning of fossil fuels that took millions of years to form, has driven our world to the brink of disaster. Survival in the Anthropocene, Angus argues, requires radical social change, replacing fossil capitalism with a new, ecosocialist civilization.

Early Earth Systems provides a complete history of the Earth from its beginnings to the end of the Archaean. This journey through the Earth's early history begins with the Earth's origin, then examines the evolution of the mantle, the origin of the continental crust, the origin and evolution of the Earth's atmosphere and oceans, and ends with the origin of

life. Looks at the evidence for the Earth's very early differentiation into core, mantle, crust, atmosphere and oceans and how this differentiation saw extreme interactions within the Earth system. Discusses Archaean Earth processes within the framework of the Earth System Science paradigm, providing a qualitative assessment of the principal reservoirs and fluxes in the early Earth. "The book would be perfect for a graduate-level or upper level undergraduate course on the early Earth. It will also serve as a great starting point for researchers in solid-Earth geochemistry who want to know more about the Earth's early atmosphere and biosphere, and vice versa for low temperature geochemists who want to get a modern overview of the Earth's interior." Geological Magazine, 2008

Collecting the insightful teaching experiences of an internationally respected group of researchers and lecturers, this undergraduate textbook will impact the future development of environmental studies and earth system science.

Integrating the principles of the natural sciences, engineering, and economics as they pertain to the global environment, Earth Systems: Processes and Issues explains the complex couplings and feedback mechanisms linking the geosphere, biosphere, hydrosphere, and atmosphere. This volume uniquely combines topics in the physical and life sciences with engineering environmental systems, regional case studies, and the economic implications of environmental public policy decisions. Fully integrated, it is an ideal textbook for a wide range of courses dealing with environmental issues, including earth and atmospheric science, environmental science, biological science, oceanography, geography, civil engineering, and social science. Each chapter includes a reading list of the most important references, and problem sets will encourage students to explore the subject further.

This book systematically explores the emerging legal discipline of Earth System Law (ESL), challenging the closed system of law and marking a new era in law and society scholarship. Law has historically provided stability, certainty, and predictability in the ordering of social relations (predominantly between humans). However, in recent decades the Earth's relationship in law has changed with increasing recognition of the standing of Mother Earth, inherent rights of the environment (such as flora and fauna, rivers), and now recognition of the multiple relations of the Anthropocene. This book questions the fundamental assumption that 'the law' only applies to humans, and that the earth, as a system, has intrinsic rights and responsibilities. In the last ten years the planet has experienced its hottest period since human evolution, and by the year 2100, unless substantive action is taken, many species will be lost, and planetary conditions will be intolerable for human civilisation as it currently exists. Relationships between humans, the biosphere, and all planetary systems must change. The authors address these challenging topics, setting the groundwork of ESL to ensure sustainable development of the coupled socio-ecological system that the Earth has become. Earth System Law is an interdisciplinary and transdisciplinary research project, and, as such, this book will be of great interest to researchers and

stakeholders from a wide range of disciplines, including political science, anthropology, economics, law, ethics, sociology, and psychology.

Since 1960, there have been two major theoretical advances in the Earth sciences: the theory of plate tectonics and the advent of Earth systems science. Stephen Marshak's beautifully written and illustrated new text is the first to incorporate both of these discoveries from its inception. *Earth: Portrait of a Planet* covers all the topics of a traditional physical geology course, but also includes such topics as historical geology, environmental geology, the Earth's resources, the oceans and atmosphere, cosmology, and global change. What results is a fascinating, comprehensive portrait of planet Earth.

Remote Sensing Applications in Environmental and Earth System Sciences is a contemporary, multi-disciplinary, multi-scaling, updated, and upgraded approach of applied remote sensing in the environment. The book begins with an overview of remote sensing technology, and then explains the types of data that can be used as well as the image processing and analysis methods that can be applied to each type of application through the use of case studies throughout. Includes a wide spectrum of environmental applications and issues Explains methodological image analysis and interpretation procedures for conducting a variety of environmental analyses Discusses the development of early warning systems Covers monitoring of the environment as a whole – atmosphere, land, and water Explores the latest remote sensing systems in environmental applications This book is an excellent resource for anyone who is interested in remote sensing technologies and their use in Earth systems, natural resources, and environmental science.

Earth System Analysis for Sustainability MIT Press

Climate change: watershed or endgame? In this compelling new book, Noam Chomsky, the world's leading public intellectual, and Robert Pollin, a renowned progressive economist, map out the catastrophic consequences of unchecked climate change—and present a realistic blueprint for change: the Green New Deal. Together, Chomsky and Pollin show how the forecasts for a hotter planet strain the imagination: vast stretches of the Earth will become uninhabitable, plagued by extreme weather, drought, rising seas, and crop failure. Arguing against the misplaced fear of economic disaster and unemployment arising from the transition to a green economy, they show how this bogus concern encourages climate denialism. Humanity must stop burning fossil fuels within the next thirty years and do so in a way that improves living standards and opportunities for working people. This is the goal of the Green New Deal and, as the authors make clear, it is entirely feasible. Climate change is an emergency that cannot be ignored. This book shows how it can be overcome both politically and economically.

The Blue Planet: An Introduction to Earth System Sciences, 3rd Edition is an innovative text for the earth systems

science course. It treats earth science from a systems perspective, now showing the five spheres and how they are interrelated. There are many photos and figures in the text to develop a strong understanding of the material presented. This along with the new media for instructors makes this a strong text for any earth systems science course.

Unleash your iPhone and take it to the limit using powerful tips and techniques from tech consultant Steve Sande and gadget hacker Erica Sadun. Fast and fun to read, *Taking Your iPhone 4 to the Max* shows you how to get the most out of Apple's iPhone 4. You'll find all the best undocumented tricks as well as the most efficient and enjoyable introduction to the iPhone available. Starting with an introduction to iPhone basics, you'll quickly move on to discover the iPhone's hidden potential, like how to connect to a TV, use Voice Control, have video chats with FaceTime, and call friends overseas with low-cost VoIP. From the unified email inbox and surfing the Web with Mobile Safari, exploring the world of social networking, using the multitasking capabilities of iOS 4, taking and editing photos, shopping for apps, media, and books, or just managing phone calls you'll find it all in this book. You'll even learn tips on where to get the best iPhone accessories. Get ready to take iPhone 4 to the max!

An analysis of how responsive governance has shaped the evolution of global fisheries in cyclical patterns of depletion and rebuilding dubbed the "management treadmill."

Humans have difficulty thinking at the global scale. Yet as we come to understand our planet as a single, interconnected, complex system and encounter compelling evidence of human impact on Earth's climate and biosphere, the need for a truly global effort is increasingly urgent. In this concise and accessible text, David P. Turner presents an overview of global environmental change and a synthesis of research and ideas from the rapidly evolving fields of earth system science and sustainability science that is suitable for anyone interested in humanity's current predicaments and what we can do about them. *The Green Marble* examines Earth's past, contemporary human disruption, and the prospects for global environmental governance. Turner emphasizes the functioning of the biosphere—the totality of life on Earth—including its influence on geologic history, its sensitivity to human impacts, and its possible role in ameliorating climate change. Relying on models of the earth system that synthesize vast amounts of monitoring information and recent research on biophysical processes, *The Green Marble* describes a range of scenarios for our planetary home, exploring the effects of anthropogenic greenhouse gas emissions and factors such as economic globalization. Turner juxtaposes cutting-edge ideas from both the geosciences and the social sciences to illustrate how humanity has arrived upon its current dangerous trajectory, and how we might pull back from the brink of civilization-challenging environmental change. Growing out of the author's popular course on global environmental change, *The Green Marble* is accessible to non-science majors and provides a framework for understanding the complex relationship of humanity to the global

environment.

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