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Carbon Dioxide and Climate Springer

Climate Change 2001: The Scientific Basis is the most comprehensive and up-to-date scientific assessment of past, present and future climate change. The report: • Analyses an enormous body of observations of all parts of the climate system. • Catalogues increasing concentrations of atmospheric greenhouse gases. • Assesses our understanding of the processes and feedbacks which govern the climate system. • Projects scenarios of future climate change using a wide range of models of future emissions of greenhouse gases and aerosols. • Makes a detailed study of whether a human influence on climate can be identified. • Suggests gaps in information and understanding that remain in our knowledge of climate change and how these might be addressed. This latest IPCC assessment will again form the standard scientific reference for all concerned with climate change and its consequences, including students and researchers in all aspects of environmental and atmospheric science, and policymakers in governments and industry worldwide.

Carbon Dioxide and the Greenhouse Effect Springer Science & Business Media

This volume provides an authentic and rigorous way to engage students in science and environmental issues and is a unique and essential resource for high school or college-level classroom.

Studying the Sciences, Physics - Grades 10-12 National Academies Press

In the case of responding to climate change and related environmental problems, opinions about the best course of action have become starkly polarized along ideological lines. The identity-protective cognition thesis posits that when individuals experience a sense of challenge to these identities, they are motivated to engage in cognitive shortcuts and other reasoning processes to protect these identities against threat. In this research, I discuss three investigations into identity-protective cognition in the context of responding to environmental problems, applying the broader identity-protective cognition framework to a diverse set of theoretical and practical questions. Chapter 2 highlights research exploring the effect of motivated reasoning on responses to natural disasters linked with climate change. Chapter 3 looks at how brand and environmental identities influence responses to corporate environmental scandals that are personally relevant and require individual-level action. Chapter 4 extends this research paradigm by exploring public responses to visual imagery used to depict climate change across three countries, while also examining how identity-protective processes shape these responses. In addition to the theoretical and practical contributions for environmental engagement, explicit emphasis is placed on the use of full Bayesian inference for quantitative environmental decision making research. Implications for theory, methodology, and practice are considered.

From Turbulence to Climate John Wiley & Sons

Climate change will have disproportionate effects across species, as responses to abiotic drivers vary. The effects of changing winter climate are overlooked, especially in temperate regions. I used long-term observational data and a common garden experiment to understand plant responses to changing winter.First, I examined the relationship between winter and summer climate and annual relative growth rates over two decades for seven tree species. I found that winter variables were more important than summer variables for five species. Further, the presence or absence of snow affected growth for two species. However, trends in species' growth rates over time were mostly inconsistent with model predictions. Second, I investigated the effects of snow on growth, survival, and fecundity for twenty herbaceous plant species. Snow removal resulted in more freeze-thaw events in the soil. Responses to snow cover were species specific. However, we found that species with early phenologies were more likely to suffer over winter mortality when snowpack was reduced at the end of the season only. High mortality rates across species and treatments suggest these species may be sensitive to changes in climate and hard to restore. Next, I investigated the responses of Thalictrum dioicum, whose high survival and fecundity allowed for deeper investigation into the role of life history tradeoffs. We found that changes in snow cover affected reproduction and recruitment, but not survival. Specifically, reductions in snow throughout winter resulted in fewer more massive seeds, while a late season snow reduction produced more, less massive seeds. Germination was also adversely affected by snow reduction. Finally, I investigated how snow cover affected Thalictrum dioicum's demography. Reductions in snow throughout winter suppressed population growth and seed survival was important in buffering these populations from decline. This suggests that seed banks may play an important role in buffering populations under climate change.These studies

demonstrate the importance of continuing investigation into the effects of changing winter climate, as responses are species specific. Also, these studies highlight the inherently high interannual variability of winter conditions, suggesting that future investigations should incorporate diverse representations of the winter season, especially in temperate regions.

The Potential Effects of Global Climate Change on the United States Cambridge University Press

Hurricanes are nature ' s most destructive agents. Widespread interest surrounds the possibility that they might get even more destructive in the future. Policy makers consider it a call for action. Answers about when and by how much hurricanes will change are sought by financial institutions especially industry. And scientists are challenged by the range and interactions of the processes involved. This book, arising from the 2nd International Summit on Hurricanes and Climate Change, contains new research on topics related to hurricanes and climate change since the 1st Summit. Chapters are grouped into research studies using global climate models and those taking empirical and statistical approaches. The latter include investigations of basin-wide and regional hurricane activity.

Examining the Influence of Winter Climate Change Across Species and Scales University Press of Colorado

It has long been recognized that science is the pursuit of knowledge, knowledge is power, and power is political. However, the fantasy of science being apolitical is a hallmark legacy of the enlightenment era, an era that romanticized pursuit of knowledge, disconnected from the baggage of power, politics, and dogmatic assertions. Yet, while the age of information has exponentially increased our access to knowledge, we can see, as clearly as ever, that scientific knowledge is neither apolitical nor dogma-free, and it certainly is not disconnected from power. It is hard to imagine another era when the separation between science and politics has been this blurred as it is today. At the same time, it is true that no other topic than climate change has been so politically charged, with one side dominating the scientific narration and branding anyone opposing the mainstream as a " climate change denier, " and the other standing in staunch defiance that climate change exists. In an age of political and scientific turmoil, how can we navigate out way to coming towards a more objective understanding of the scientific issues surrounding the climate change debate? This book presents the current debate of climate change as scientifically futile, on both sides of the scientific, and often, political, spectrum. The climate change debate has become like obesity, cancer, diabetes or opioid addiction, which is to say that the debate should not be if these maladies exist, but rather, what causes them. Instead of looking for the cause and making adjustments to remove those causes from our lifestyle, a combination of the capitalist drive towards mass production and a lack of identifying the roots of the problems, new solutions, or substitutes, have been proposed as " quick fixes " to the problems. This book identifies the root causes of climate change and shows that climate change is real and it is also preventable, but that it can be reversed only if we stop introducing pollutants in the ensuing greenhouse gases. The book brings back common sense and grounds scientists to the fundamentals of heat and mass transfer, while at the same time disconnecting politicking and hysteria from true scientific analysis of the phenomenon of global climate.

How the World's Religions are Responding to Climate Change Macmillan Publishing Company

A growing chorus of voices has suggested that the world ' s religions may become critical actors as the climate crisis unfolds, particularly in light of international paralysis on the issue. In recent years, many faiths have begun to address climate change and its consequences for human societies, especially the world ' s poor. This is the first volume to use social science to examine how religions are helping to address one of the most significant and far-reaching challenges of our time. While there is a growing literature in theology and ethics about climate change and religion, little research has been previously published about the ways in which religious institutions, groups and individuals are responding to the problem of climate change. Seventeen research-driven chapters are written by sociologists, anthropologists, geographers and other social scientists. This book explores what effects religions are having, what barriers they are running into or creating, and what this means for the global struggle to address climate change.

EOS Reference Handbook National Academies Press

How the World's Religions are Responding to Climate ChangeRoutledge

Climate Change from Pole to Pole How the World's Religions are Responding to Climate Change

Much recent archaeological research focuses on social forces as the impetus for cultural change. Soils, Climate and Society, however, focuses on the complex relationship between human populations and the physical environment, particularly the land--the foundation of agricultural production and, by extension, of agricultural peoples. The volume traces the origins of agriculture, the transition to agrarian societies, the sociocultural implications of agriculture, agriculture's effects on population, and the theory of carrying capacity, considering the relation of agriculture to the profound social changes that it wrought in the New World. Soil science plays a significant, though varied, role in each case study, and is the common component of each analysis. Soil chemistry is also of particular importance to several of the studies, as it determines the amount of food that can be produced in a particular soil and the effects of occupation or cultivation on that soil, thus having consequences for future cultivators. Soils, Climate and Society demonstrates that renewed investigation of agricultural production and demography can answer questions about the past, as well as stimulate further research. It will be of interest to scholars of archaeology, historical ecology and geography, and agricultural history.

Our Changing Climate Emerald Group Publishing

This volume covers aspects of numerical modeling of the atmosphere and climate from the microscales of turbulence to the very large scales associated with climate and climatic change. Each of the three major spatio-temporal scales of the atmosphere, namely, the microscale, the mesoscale, and the macroscale is addressed through a hierarchy of models. Results of model simulations are illustrated throughout the text, with many of these examples based on the author's original research work. For each type of model discussed here, the theoretical background, including governing equation sets, simplifying assumptions, and advantages and limits of the models, is provided. An attempt is made throughout the book to highlight interdisciplinary nature of atmospheric modelling.

Government Secrecy Springer Nature

A growing chorus of voices has suggested that the worlde(tm)s religions may become critical actors as the climate crisis unfolds, particularly in light of international paralysis on the issue. In recent years, many faiths have begun to address climate change and its consequences for human societies, especially the worlde(tm)s poor. This is the first volume to use social science to examine how religions are helping to address one of the most significant and far-reaching challenges of our time. While there is a growing literature in theology and ethics about climate change and religion, little research has been previously published about the ways in which religious institutions, groups and individuals are responding to the problem of climate change.Seventeen research-driven chapters are written by sociologists, anthropologists, geographers and other social scientists. This book explores what effects religions are having, what barriers they are running into or creating, and what this means for the global struggle to address climate change.

New Reclamation Era Springer

This dissertation explores the psychosocial consequences of climate change and psychosocial adaptation opportunities in High River, Alberta. Influenced by the theoretical approach of Political Ecology, I investigate community impacts and community-based mental health responses in High River following the 2013 Southern Alberta floods. Research methods include: a desktop climate

change and health vulnerability and adaptation assessment that includes over 116 data sources; telephone interviews with key informant health and social services leaders (n = 14); four focus group sessions with front-line health and social services workers (n = 14); and, semi-structured interviews (n = 18) with a sample of community-members exposed to the 2013 flood and who self-identify in any one or more ways: female, youth, elderly, non-white, someone living in a low socio-economic status, someone with pre-existing health concerns. A total of 46 participants were recruited in this research. Results of the empirical investigation in High River are showcased in three manuscripts. The first manuscript, informed by critical Political Ecology, is an investigation of sociopolitical conditions that influence health inequities and adaptation opportunities (or lack thereof) in a changing climate in High River. The second is an empirical exploration of the long-term psychosocial consequences of the 2013 flood, relating these consequences to the broader issue of climate change and psychosocial health. The third manuscript is an exploration of how the long-term psychosocial risks and impacts of the 2013 flood are being addressed via response interventions and connecting these lessons-learned to the broader topic of climate change and psychosocial adaptation. This research suggests that a Political Ecology lens can support a critical analysis of what the environment means and to whom, with a particular focus on what adaptation to our changing climate means and to whom. Further, findings from this empirical research suggest that there are a range of psychosocial outcomes related to the 2013 Southern Alberta flood, and these outcomes continue to affect the psychosocial wellbeing of High River residents, particularly those most marginalized, five years post-flood. Findings also suggest that there are lessons-learned from High River about actions to support or enhance psychosocial adaptation to a changing climate.

U.S. Weather and Environmental Satellites National Academies Press

This study brings together decades of research on the modern natural environment of Washington's Olympic Peninsula, reviews past research on paleoenvironmental change since the Late Pleistocene, and finally presents paleoecological records of changing forest composition and fire over the last 14,000 years. The focus of this study is on the authors ' studies of five pollen records from the Olympic Peninsula. Maps and other data graphics are used extensively. Paleoecology can effectively address some of these challenges we face in understanding the biotic response to climate change and other agents of change in ecosystems. First, species responses to climate change are mediated by changing disturbance regimes. Second, biotic hotspots today suggest a long-term maintenance of diversity in an area, and researchers approach the maintenance of diversity from a wide range and angles (CITE). Mountain regions may maintain biodiversity through significant climate change in ' refugia ': locations where components of diversity retreat to and expand from during periods of unfavorable climate (Keppel et al., 2012). Paleoecological studies can describe the context for which biodiversity persisted through time climate refugia. Third, the paleoecological approach is especially suited for long-lived organisms. For example, a tree species that may typically reach reproductive sizes only after 50 years and remain fertile for 300 years, will experience only 30 to 200 generations since colonizing a location after Holocene warming about 11,000 years ago. Thus, by summarizing community change through multiple generations and natural disturbance events, paleoecological studies can examine the resilience of ecosystems to disturbances in the past, showing how many ecosystems recover quickly while others may not (Willis et al., 2010).

Applications and Investigations in Earth Science Lulu.com

This fascinating book examines some of the characteristics of technological/engineering models that are likely to be unfamiliar to those who are interested primarily in the history and philosophy of science and mathematics, and which differentiate technological models from scientific and mathematical ones. Themes that are highlighted include: • the role of language: the models developed for engineering design have resulted in new ways of talking about technological systems • communities of practice: related to the previous point, particular engineering communities have particular ways of sharing and developing knowledge • graphical (re)presentation: engineers have developed many ways of reducing quite complex mathematical models to more simple representations • reification: highly abstract mathematical models are turned into ' objects ' that can be manipulated almost like components of a physical system • machines: not only the currently ubiquitous digital computer, but also older analogue devices – slide rules, physical models, wind tunnels and other small-scale simulators, as well as mechanical, electrical and electronic analogue computers • mathematics and modelling as a bridging tool between disciplines This book studies primarily modelling in technological practice. It is worth noting that models of the type considered in the book are not always highly valued in formal engineering education at university level, which often takes an " applied science " approach close to that of the natural sciences (something that can result in disaffection on the part of students). Yet in an informal context, such as laboratories, industrial placements, and so on, a very different situation obtains. A number of chapters considers such epistemological aspects, as well as the status of different types of models within the engineering education community. The book will be of interest to practising engineers and technologists; sociologists of science and technology; and historians and philosophers of science and mathematics. It will also be written in a way that will be accessible to non-specialists.

Justice in Climate Action Planning NSTA Press

A growing chorus of voices has suggested that the world's religions may become critical actors as the climate crisis unfolds, particularly in light of international paralysis on the issue. In recent years, many faiths have begun to address climate change and its consequences for human societies, especially the world's poor. This is the first volume to use social science to examine how religions are helping to address one of the most significant and far-reaching challenges of our time. While there is a growing literature in theology and ethics about climate change and religion, little research has been previously published about the ways in which religious institutions, groups and individuals are responding to the problem of climate change. Seventeen research-driven chapters are written by sociologists, anthropologists, geographers and other social scientists. This book explores what effects religions are having, what barriers they are running into or creating, and what this means for the global struggle to address climate change.

Soils, Climate and Society Springer Science & Business Media

Applications and Investigations in Earth Science is a laboratory manual that gets the user actively involved in utilizing organized and unique investigations of the principles and concepts of geology, meteorology, oceanography, and astronomy. Twenty-two exercises offer both scope of coverage and versatility of the major topics in Earth Science. The exercises presented cover topics in Geology, Oceanography, Meteorology, Astronomy, and Earth Science Skills such as location and distance, the metric system, measurements, and scientific inquiry.

How the World's Religions Are Responding to Climate Change Routledge

This Handbook provides a comprehensive statement and reference point for theory, research and practice with regard to environment and communication, and it does this from a perspective which is both international and multi-disciplinary in scope. Offering comprehensive critical reviews of the history and state of the art of research into the key dimensions of environmental communication, the chapters of this handbook together demonstrate the strengths of multi-disciplinary and cross-disciplinary approaches to understanding the centrality of communication to how the environment is constructed, and indeed

contested, socially, politically and culturally. Organised in five thematic sections, The Routledge Handbook of Environment and Communication includes contributions from internationally recognised leaders in the field. The first section looks at the history and development of the discipline from a range of theoretical perspectives. Section two considers the sources, communicators and media professionals involved in producing environmental communication. Section three examines research on news, entertainment media and cultural representations of the environment. The fourth section looks at the social and political implications of environmental communication, with the final section discussing likely future trajectories for the field. The first reference Handbook to offer a state of the art comprehensive overview of the emerging field of environmental communication research, this authoritative text is a must for scholars of environmental communication across a range of disciplines, including environmental studies, media and communication studies, cultural studies and related disciplines.

An Investigation of Safety Climate on Hong Kong Construction Sites

This dissertation, "An Investigation of Safety Climate on Hong Kong Construction Sites" by Yuzhong, Shen, 申玉忠, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Keeping stakeholders far from danger is even more urgent for the construction industry which features higher than average accident and fatality rates worldwide. Improving safety proactively and thus saving huge losses incurred through cultivating safety climate (i.e. people''s perception and attitude of safety policies, procedures, and practices at workplaces) has been advocated and studied since 1980s. Nevertheless, the issue remains that what are the antecedents and how do they impact on safety climate and hence safety behavior at the individual level. With the construction industry of Hong Kong in perspective, a plateau of accident statistics reached since the entry into the new millennium calls for research into possible human factors behind the scene. Against such backdrop, the investigation is carried out in an attempt to tackle the issue with both theoretical and practical implications. With the aim at a better understanding of the research question, a two-stage mixed method research design featured with both qualitative and quantitative approaches is adopted. At the first stage, based on extant literature and 17 interviews with local construction practitioners, antecedents of safety climate are ascertained and categorized into five general perspectives, i.e. structural perspective, perceptual perspective, interactive perspective, cultural perspective, and to-be-confirmed perspective capturing factors not belonging to the first four perspectives. To increase the conceptual precision of safety climate and reveal the working mechanism of safety climate, a series of safety climate related outcomes are integrated into an initially hypothesized research model. Measurement instruments and practical relevance of latent constructs of interest are obtained by literature review and interviews. At the second stage, a large scale questionnaire survey targeting at construction practitioners across Hong Kong and case study of a local civil engineering project are conducted concurrently. Based on 292 valid responses, most of the bi-variate correlations between constructs demonstrate support for the hypothesized relationships, despite of some unexpectedly weak effects implied by path coefficients of the initial structural model. After modification based on theory and practice, the modified structural model reveals four routes to forming safety climate, i.e. 1) sound organizational climate through fluent leader-member exchange; 2) client involvement via enforcing safety management system; 3) individualism leading to negative safety climate; and 4) sound supervisory practice contributing to positive safety climate. Furthermore, the revised model confirms the previously found relationships among safety climate and its related outcomes. Learning from the case study which involves six interviews, participant observations of onsite meetings, and analysis of documents including safety plan, safety manual, minutes of safety related meetings, and content analysis of the primary 17 interviews generally corroborate the findings. Taken together, the research achieves the established objectives, provides a framework for future investigations into antecedents of safety climate, and hence suggests that safety is an emergent property of a complicated socio-technical system, involving diversifying factors. The implications of the findings have for devising safety interventions are discussed in the conclusion section

The Routledge Handbook of Environment and Communication

How can we understand and rise to the environmental challenges of global change? One clear answer is to understand the science of global change, not solely in terms of the processes that control changes in climate and the composition of the atmosphere, but in how ecosystems and human society interact with these changes. In the last two decades of the twentieth century, a number of such research efforts--supported by computer and satellite technology--have been launched. Yet many opportunities for integration remain unexploited, and many fundamental questions remain about the earth's capacity to support a growing human population. This volume encourages a renewed commitment to understanding global change and sets a direction for research in the decade ahead. Through case studies the book explores what can be learned from the lessons of the past 20 years and what are the outstanding scientific questions. Highlights include: Research imperatives and strategies for investigators in the areas of atmospheric chemistry, climate, ecosystem studies, and human dimensions of global change. The context of climate change, including lessons to be gleaned from paleoclimatology. Human responses to--and forcing of--projected global change. This book offers a comprehensive overview of global change research to date and provides a framework for answering urgent questions.

The Science of Climate Change

This edited volume examines how climate action plans engage justice at the scale of the city. Recent events in the United States make the context particularly ripe for a discussion of justice in urban climate politics. On the one hand, the emergence of the Black Lives Matter movement, George Floyd ’ s death, and the prominence of racial discrimination in the public realm have mainstreamed the notion of justice. On the other hand, the dire consequences of increased frequency and severity of climate events on vulnerable segments of urban populations are undeniable. While some cities have been proactive about integrating justice in their climate action planning, in most places an explicit and systematic link between both spheres has been lacking. This book explores this interface as it seeks to understand how cities can respond to climate change in a just way and for just outcomes. While resilience strategies based on “ development ” may engage historic inequities, they may at the same time result in marginalizing certain populations through various processes, from mismatched solutions to outright exclusion and climate gentrification. By identifying how certain populations are included in or excluded from climate action planning practices, the chapters in this volume draw on case studies to outline the differential outcomes of climate action in American cities, also proposing a template for comparative work beyond the US. The authors tackle the debate about how justice is or is not integrated in climate action plans and assess practical implications, while also making theoretical and methodological contributions. As it fills a gap in the literature at the intersection of justice and climate action, the book produces new insights for a wide-ranging audience: students, practitioners, policy-makers, planners, the non-profit sector, and scholars in geography, urban planning, urban studies, environmental studies, ecology, political science, or anthropology. Along five axes of investigation—theory, resilience, equity, community, and comparison as method—the contributors offer various pathways into the intersection between urban climate action and different understandings of justice. Collectively, they invite a reflection that can lead to practical initiatives in climate mitigation, while also advancing the theorization of social justice to account for the urban as a node where (in)justice plays out and can be addressed with significant results.