
Book Reviews

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- 1 Climate Forcing of Geological Hazards**
by: Bill MCGuire and Mark Maslin
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The Atrium, Southern Gate, Chichester,
West Sussex, PO 19 8SQ, UK, 311pp, 12 chapters
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Anthropogenic action causes significant changes to the global climate. The effects on ecosystems, health and socio-economic constellations are now extensively documented. The reciprocal effects on and from the solid earth (geosphere) are less studied. While it is common knowledge that dust and gaseous emissions from volcanic eruptions affect the climate, the reverse, that climate change can trigger volcanic eruptions, is less known among environmental scientists.

This book is about responses of the geosphere to climate change and might mitigate this lack of interest in the geological effects of a profoundly changing environment. Next to a preface which overviews the contents, the 12 chapters of the book describe and assess the main geological hazardous responses to a changing atmosphere.

The two introductory chapters summarise the evidence for effects on the lithosphere of periods of exceptional past climate change and of modelled projections in the future. These chapters also pay attention to important delayed effects and point to uncertainties in the link between climate change and geosphere responses.

The following three chapters are about volcanic activity. Chapter 3 describes collateral collapse and valley formation in the Mount Etna (Sicily, Italy), while Chapter 4 looks into how the melting ice caps on active volcanoes may influence their eruption pattern. The third chapter of this group discusses the multiple effects of ice loading and unloading on magma in Iceland.

The loading-unloading theme is further explored in Chapter 6. This entails a discussion on the response of geographical faults to climate driven changes in the water and ice of the ecosphere. Although most of the research areas reviewed in the book are located in the Northern hemisphere, Chapter 7 is of particular importance for Latin America. It presents the results of a statistical correlation analysis between recent variations in the El Niño-Southern Oscillation and the occurrence of earthquakes on the East Pacific Rise. The authors conclude that larger changes in sea level rise or more intense storms may trigger more earthquake activity in the sea and at the coast.

Chapter 8 is about submarine mass failures as a source of tsunamis, in particular at high latitudes where climate change is occurring rapidly. Chapters 9 and 10 are the last ones on climate change induced fault movement. They deal respectively with high mountains during recent and future extreme warm events in Alaska, New Zealand and the European Alps, and with flood hazards, also in the Swiss, Austrian and Italian Alps.

The two concluding chapters focus on gas hydrates and more in particular on methane release from both marine and continental stocks. Chapter 11 considers the hazard potential of gas hydrates at a global scale. The last chapter of the book evaluates the effects of the rapid release of thousands of gigatons of greenhouse gasses during the Cenozoic.

This book shows a set of convincing strengths:

- It provides an excellent overview of relevant research on a less often addressed group of effects of climate changes.
- It describes, analyses and assesses fundamental environmental science characteristics in a most illustrative way: the interconnectedness of nature, the impressive time scale, the combination of experimental results and modelling, the combination of appropriate analysis and prediction, the uncertainties about the results, to list just a few examples.
- The maturity of the contributions. The chapters built on presentations during a colloquium held at the University College London in 2009. This material was substantially modified and updated for this book.
- A team of 33 expert authors from mainly geological, paleoecological and environmental departments, predominantly working in Western Europe.
- The supreme quality of the editing and the presentation of the text which is illustrated by a wealth of colour figures and tables. The chapter summarise over 2,000 relevant references from the literature.

All this makes this book an excellent source of information in the current climate change debate and its implications for natural hazards.

On the other hand the information on the geological hazards is limited to their physic-geographical-environmental aspects (as may be expected on the basis of the selection of the authors). For many issues raised by the book this provides a necessary but incomplete view on the situation. One of the common aspects of hazards associated with volcanoes, El-Niño, tsunamis, landslides and methane release is the extent of the impacts. Therefore, it is legitimate asking about the socio-economic impacts of the described trends. It is equally interesting knowing about the responsibilities of international organisations as the World Bank or the OECD in this respect. The book does not deal with these aspects of the discussion.

Overall this publication should be on the bookshelf of geologists, physical geographers, hydrologists, ecologists, environmental scientists, politicians, and anyone interested or involved in climate change. The wealth of concise information makes it an excellent reference for teaching on the interdisciplinary aspects of environmental science and climate change.

2 Tropical Wetland Management. The South-American Pantanal and the International Experience**by: Antonio Augusto Rossotto Ioris (Ed.)****Published 2012****by Ashgate Publishing Limited****Wey Court East, Union Road, Farnham,****Surrey, GU9 7PT, UK, 12 chapters; 351 pp****ISBN: 9781409418788 (hbk); ISBN: 9781409418795 (ebk-PDF)**

The 'Pantanal' (which means 'wetland') is a unique and extremely biodiversity rich tropical wetland. The area is of international importance such as the Everglades in the USA or the Okavango in Botswana. This inland delta is localised south of the Brazilian Amazon and East of the Bolivian border with Brazil. During the 6 months long wet period, 80% of the land which mainly entails forests and savannah is flooded. This is followed by an extremely dry period, resulting in a most particular ecosystem with serious treats to the species. The faunal diversity of the area competes with this of the Amazon and Southern and Eastern Africa. The region hosts the highest concentration of reptiles in the world and is the habitat of most of the jaguars in Brazil. Birds, fishes, rodents and mammals, quite a number of which are rare and threatened, are abundant. The 80 metre high and over 3 km wide waterfalls of Foz do Iguacu are the biggest in the world. Indians colonised the area more than 8,000 years ago. Today, the descendants of these original inhabitants are complemented with an increasing number of extensive cattle rangers.

Today, the Brazilian Constitution has declared the Pantanal as National Patrimony. This opened opportunities for a better protection, management, more research and international networking on this most valuable ecosystem. This edited book mirrors this new situation. It provides a critical update of recent scientific development and politico-institutional experiences related to the conservation of the Pantanal. It compares the Pantanal with other wetlands of international importance in North America, Europe and Southern Africa.

The introductory chapter overviews the book as a whole. Seven chapters are about the Pantanal. They deal with the social (perception and the historical role of the traditional rangers in the management of the ecosystem, the economic and welfare pressures, and the need for wetland-friendly activities maintaining low-density cattle ranching), hydrological, and ecological aspects of the Pantanal (Chapters 2, 3, 4, 5). They provide the basic information establishing a zoning model for the protection of this wetland heritage (Chapter 6). Chapters 7 and 8 provide a detailed analysis of the stakeholders (e.g., how the rangers are affected by globalisation and intensification, and how increasing scales of cattle ranging threaten the ecosystem) and their values. They introduce the concept of socio-natural systems. Comparison with other wetland systems of international importance is made: with the Okavango inland delta in Botswana where the increase of the elephant population and the introduction of alien species are the main treats (Chapter 9); with European wetlands (cases of the UK and Scotland) where the experience with the Wetlands Directive demonstrates that restoration and recovery of deteriorated wetlands is much more expensive than keeping them intact (Chapter 10); with the US Everglades National Park which supported the rapid economic growth of the area and for which promising restoration projects are expected (Chapter 11).

Most interesting is the concluding chapter by Junk and Cunha. The authors do not only summarise the conclusions of the previous chapters, but they equally offer perspectives on the future of the Pantanal. They advocate a comprehensive and integrated management plan, embracing the different bio-physical (hydro-ecological) and socio-economic processes of the entire basin as a main instrument safeguarding this area of high biodiversity value.

More fundamentally, this book is a well-documented illustration of the main contemporary science-policy paradoxes: while the intricacy and magnitude of environmental impacts are increasingly documented by science and more and more recognised by society and decision makers, the reactions to these problems remain fragmented and inadequate. Therefore, in-depth studies as the one presented in this book remain of utmost importance. Moreover, the book provides a most interesting polychromatic, kaleidoscopic but scientifically well founded picture of this area which is important for wetland management worldwide.

The 12 chapters of this book have been written by over 50 experts. Their manuscripts show how they lived a dedicated life of researching, characterising, campaigning and promoting sustainable management in this unique part of the world.

This book deserves wider attention than this of wetland management experts alone. It has documentary and didactical value for students in environmental, interdisciplinary and management sciences. It offers excellent material for decision makers in nature conservation issues. It provides intriguing examples for all those dealing with involving local stakeholders in constructive environmental debates.