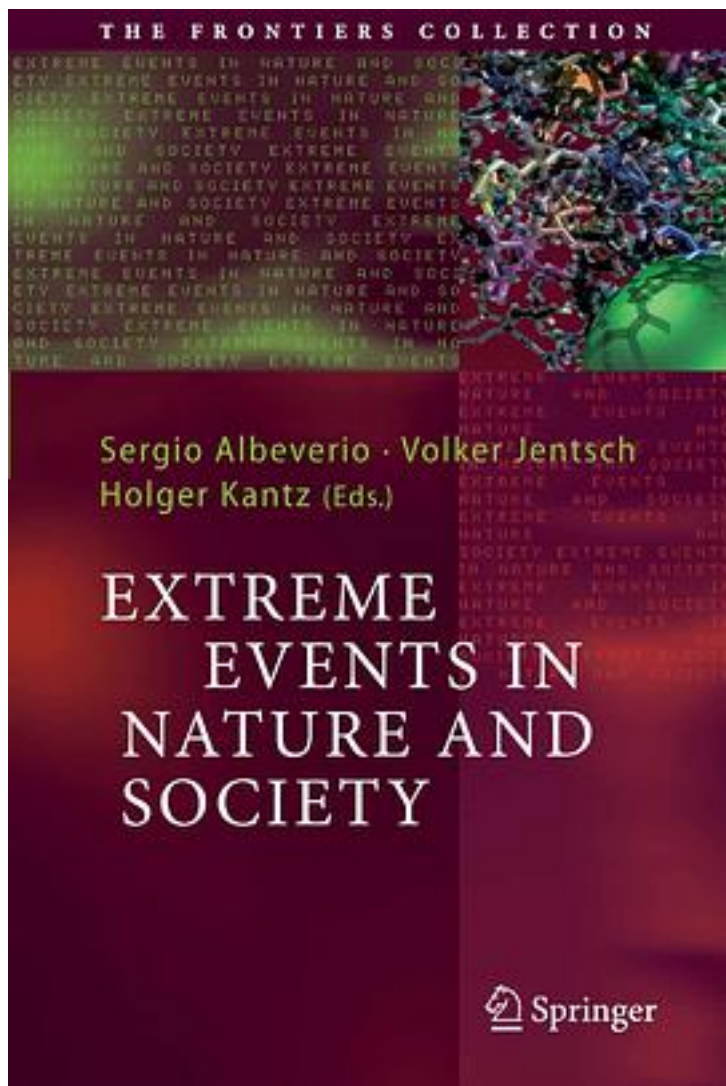


Extreme Events in Nature And Society



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Preface

Somebody once remarked on how unjust it is that chaos has always had such a bad press. Whenever there is a traffic jam in the morning, when the children don't keep their things in order, when politics is turning crazy, it is always the fault of chaos. And yet, if there was no chaos, things would be pretty boring. Nothing unexpected would ever happen, and we could predict that the same dull things would happen today as they did yesterday. That's if we could predict anything at all – without chaos it would be quite likely that our thoughts would be trapped in some limited cycle and our brains would be quite useless!

The same also applies to extremes. Usually, when one thinks of extremes, negative connotations come to mind. Extremely hot weather is as unpleasant as extremely cold weather, and if it rains like crazy it is just as bad as when it is extremely dry. Extreme stock market fluctuations often result in large financial losses; earthquakes and floods can kill thousands of people, and global terrorism is strongly linked to political extremism.

But now try to imagine a world without extremes. Putting grand events like the Big Bang or the extinction of the dinosaurs – without which we humans would not exist – to one side, consider a world with constant lukewarm weather, where no-one ever fell in love, where there was never any deviation from the average. One can argue that even catastrophes have their positive sides, since they force us to look beyond our comfortable, well trodden paths. Although instinctively we would like to minimize their effects, that fact that we have to deal with them often leads to progress. Without extremes, there would be no shake-ups leading to novel situations and opportunities. And the Olympic Games would not be much fun either!

The present collection of articles, all written by well known experts in

their fields, demonstrates these two aspects of extremes perfectly. On the one hand, we have to cope with their unpleasant sides, by predicting them as much as possible and by minimizing their effects. Most of the articles are therefore written from the point of view of the engineer or applied scientist who has to deal with this. But despite of the diversity of extreme phenomena – ranging from economic and geologic disasters via the breaking of steel to extreme neural bursts in epileptic seizures – the authors manage to show that there is a common underlying conceptual frame that links them. Indeed, as well as being linked by these concepts, various mathematical tools can be applied to most problems involving extremes. Therefore, this book demonstrates (without overstressing the point – just by providing the facts) that there is an emerging unifying and truly interdisciplinary science of extreme events.

Finally, the authors would not be good scientists if the fascinating and exciting aspects of the science of extremes did not permeate through every page. This another positive aspect of extremes: that they have led to this fascinating book, which is a real pleasure to read and which is sure to stimulate much further research.

Jülich, June 2005 Peter Grassberger

作者介绍:

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