
Contents

List of Contributors	IX
Acronyms	XIII
1. Introduction: The Anthropocene	
1.0 Global Change Research in the Anthropocene: Introductory Remarks	3
<i>W. Mauser</i>	
1.1 Managing Global Change: Earth System Science in the Anthropocene	5
<i>E. Ehlers and T. Krafft</i>	
1.2 The “Anthropocene”	13
<i>P. J. Crutzen</i>	
1.3 Sustainability Science	19
<i>J. Jäger</i>	
1.4 What about Complexity of Earth Systems?	27
<i>H. J. Neugebauer</i>	
2. Global Change and Human Security	
2.1 Climate Change, New Weather Extremes and Climate Policy	41
<i>H. Graßl</i>	
2.2 Assessing Human Vulnerability to Global Climatic Change	51
<i>M. Brklacich and H.-G. Bohle</i>	
2.3 Fire Ecology of the Recent Anthropocene	63
<i>J. G. Goldammer</i>	
2.4 Disaster Prevention	87
<i>E. J. Plate</i>	
2.5 Global Environmental Change and Human Health	113
<i>R. Sauerborn and F. Matthies</i>	
2.6 Urban Disasters as Indicators of Global Environmental Change: Assessing Functional Varieties of Vulnerability	135
<i>J. K. Mitchell</i>	
2.7 Energy in a Sustainable Development Perspective	153
<i>A. Voß</i>	
3. Interfaces between Nature and Society	
3.1 Integrative Water Research: GLOWA Volta	169
<i>N. van de Giesen, T. Berger, M. Iskandarani, S. Park and P. Vlek</i>	
3.2 Global Carbon Cycle	187

3.2.1 Carbon Cycle Research as a Challenge of the Anthropocene	187
<i>K. Lochte</i>	
3.2.2 International Institutions and the Carbon Regime	203
<i>G. Klepper</i>	
3.3 Food Systems	217
3.3.1 Global Environmental Change and Food Systems GECAFS: A new interdisciplinary research project	217
<i>J. Ingram and M. Brklacich</i>	
3.3.2 Food Security in South Asia	229
<i>W.-P. Zingel</i>	
4. Scientific Challenges for Anthropogenic Research in the 21 st Century	
4.1 Scientific Challenges for Anthropogenic Research in the 21 st Century: Problems of Scale	249
<i>R. Leemans</i>	
Index	263