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Nota di contenuto	Cover; Foreword; Preface; Contents; List of abbreviations; List of contributors; 1 Ocean acidification: background and history; 1.1 Introduction; 1.2 What is ocean acidification?; 1.3 The biological and biogeochemical processes that are potentially affected; 1.4 A short history of ocean acidification research; 1.5 Risks and policy implications; 1.6 Conclusions; 1.7 Acknowledgements; 2 Past changes in ocean carbonate chemistry; 2.1 Introduction; 2.2 Seawater carbonate chemistry; 2.3 Controls on ocean carbonate chemistry; 2.4 Long-term changes during earth's history (quasi-steady states) 2.5 Ocean acidification events in earth's history2.6 Conclusions; 2.7 Acknowledgements; 3 Recent and future changes in ocean carbonate chemistry; 3.1 Introduction; 3.2 Basic chemistry under change; 3.3 Atmospheric CO <sub>2</sub> emissions, sources, and sinks during the industrial era; 3.4 Observed changes in ocean carbonate chemistry during recent decades; 3.5 Future scenarios; 3.6 Projecting future changes in carbonate chemistry; 3.7 Conclusions; 3.8 Acknowledgements; 4 Skeletons and ocean chemistry: the long view; 4.1 Introduction; 4.2 A record of atmospheric pCO <sub>2</sub> and past

global change

4.3 Is there a more general historical pattern? 4.4 Summary, with lessons for the future; 4.5 Acknowledgements; 5 Effects of ocean acidification on the diversity and activity of heterotrophic marine microorganisms; 5.1 Introduction; 5.2 Microbes in the ocean; 5.3 Ocean acidification: approaches and evidence; 5.4 Implications; 5.5 Acknowledgements; 6 Effects of ocean acidification on pelagic organisms and ecosystems; 6.1 Introduction; 6.2 Planktonic processes and the marine carbon cycle; 6.3 Direct effects of ocean acidification on planktonic organisms; 6.4 Synergistic effects of ocean acidification with other environmental changes; 6.5 Ecological processes and biogeochemical feedbacks; 6.6 Critical information gaps; 6.7 Acknowledgements; 7 Effects of ocean acidification on benthic processes, organisms, and ecosystems; 7.1 Introduction; 7.2 The effect of ocean acidification on major biogeochemical processes; 7.3 Effect of ocean acidification on benthic organisms, communities, and ecosystems; 7.4 Conclusions and final remarks; 7.5 Acknowledgements; 8 Effects of ocean acidification on nektonic organisms; 8.1 Integrative concepts relevant in ocean acidification research; 8.2 Effects of ocean acidification on fishes; 8.3 Effects of ocean acidification on cephalopods; 8.4 Conclusions and perspectives; 9 Effects of ocean acidification on sediment fauna; 9.1 Introduction; 9.2 Distribution of carbon dioxide (CO<sub>2</sub>) and pH within sediments; 9.3 The impact of macrofaunal activity on microbially driven geochemical processes; 9.4 Sediment fauna as 'ecosystem engineers'; 9.5 Assessing the potential impacts of ocean acidification on infaunal organisms; 9.6 Summarizing the vulnerability of infaunal organisms to ocean acidification

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Sommario/riassunto

The ocean helps moderate climate change thanks to its considerable capacity to store CO<sub>2</sub>, however the consequences of this process, known as 'ocean acidification', are raising concerns for the biological, ecological, and biogeochemical health of the world's oceans, as well as the potential societal implications.

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