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Nota di contenuto	FUNDAMENTALS OF GEOBIOLOGY; Contents; Contributors; 1. What is Geobiology?; 1.1 Introduction; 1.2 Life interacting with the Earth; 1.3 Pattern and process in geobiology; 1.4 New horizons in geobiology; References; 2. The Global Carbon Cycle: Biological Processes; 2.1 Introduction; 2.2 A brief primer on redox reactions; 2.3 Carbon as a substrate for biological reactions; 2.4 The evolution of photosynthesis; 2.5 The evolution of oxygenic phototrophs; 2.6 Net primary production; 2.7 What limits NPP on land and in the ocean?; 2.8 Is NPP in balance with respiration?; 2.9 Conclusions and extensions References3. The Global Carbon Cycle: Geological Processes; 3.1 Introduction; 3.2 Organic carbon cycling; 3.3 Carbonate cycling; 3.4 Mantle degassing; 3.5 Metamorphism; 3.6 Silicate weathering; 3.7 Feedbacks; 3.8 Balancing the geological carbon cycle; 3.9 Evolution of the geological carbon cycle through Earth's history: proxies and models; 3.10 The geological C cycle through time; 3.11 Limitations and perspectives; References; 4. The Global Nitrogen Cycle; 4.1 Introduction; 4.2 Geological nitrogen cycle; 4.3 Components of the

global nitrogen cycle; 4.4 Nitrogen redox chemistry
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 Acknowledgements; References; 7. The Global Oxygen Cycle; 7.1 Introduction; 7.2 The chemistry and biochemistry of oxygen; 7.3 The concept of redox balance; 7.4 The modern O₂ cycle; 7.5 Cycling of O₂ and H₂ on the early Earth; 7.6 Synthesis: speculations about the timing and cause of the rise of atmospheric O₂; References; 8. Bacterial Biomineralization; 8.1 Introduction; 8.2 Mineral nucleation and growth; 8.3 How bacteria facilitate biomineralization; 8.4 Iron oxyhydroxides; 8.5 Calcium carbonates; Acknowledgements; References; 9. Mineral-Organic-Microbe Interfacial Chemistry
 9.1 Introduction
 9.2 The mineral surface (and mineral-bio interface) and techniques for its study; 9.3 Mineral-organic-microbe interfacial processes: some key examples; Acknowledgements; References; 10. Eukaryotic Skeletal Formation; 10.1 Introduction; 10.2 Mineralization by unicellular organisms; 10.3 Mineralization by multicellular organisms; 10.4 A brief history of skeletons; 10.5 Summary; Acknowledgements; References; 11. Plants and Animals as Geobiological Agents; 11.1 Introduction; 11.2 Land plants as geobiological agents; 11.3 Animals as geobiological agents; 11.4 Conclusions
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Sommario/riassunto

2012 PROSE Award, Earth Science: Honorable Mention For more than fifty years scientists have been concerned with the interrelationships of Earth and life. Over the past decade, however, geobiology, the name given to this interdisciplinary endeavour, has emerged as an exciting and rapidly expanding field, fuelled by advances in molecular phylogeny, a new microbial ecology made possible by the molecular revolution, increasingly sophisticated new techniques for imaging and determining chemical compositions of solids on nanometer scales, the development of non-traditional stable
