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The Inner Core; Composition of the Core; Age of the Core; Generation of the Earth's Magnetic Field; Origin of the Core; Where Do We Go From Here?; Further Reading; Chapter 6. The Atmosphere and Oceans; Introduction; General Features of the Atmosphere; The Primitive Atmosphere; The Secondary Atmosphere; The Carbon Cycle; The Precambrian Atmosphere; The Origin of Oxygen; Phanerozoic Atmospheric History; The Oceans; Paleoclimates; Conclusions; Further Reading; Chapter 7. Living Systems; General Features; Origin of Life First Fossils Origin of Photosynthesis; Tree of Life; Stromatolites; Appearance of Eukaryotes; Origin of Metazoans; Neoproterozoic Multicellular Organisms; Evolution of Phanerozoic Life Forms; Biologic Benchmarks; Mass Extinctions; Further Reading; Chapter 8. Crustal and Mantle Evolution; Introduction; Earth's Thermal History; Earth's Primitive Crust; Earth's Oldest Rocks and Minerals; Crustal Origin; How Continents Grew; Continental Growth Rates; Secular Changes in the Crust; Secular Changes in the Mantle; Evolution of the Crust...Mantle System; Further Reading
Chapter 9. The Supercontinent Cycle and Mantle-Plume Events Introduction; Supercontinent Cycle; Supercontinents, Mantle Plumes, and Earth Systems; Mantle-Plume Events Through Time; What Causes a Mantle-Plume Event?; Mantle-Plume Events and Supercontinents; Further Reading; Chapter 10. Comparative Planetary Evolution; Introduction; Impact Chronology in the Inner Solar System; Members of the Solar System; Chemical Composition of the Earth and the Moon; Age and Early Evolution of the Earth; Comparative Evolution of the Atmospheres of the Earth, Venus, and Mars; Continuously Habitable Zone
Condensation and Accretion of the Planets

Sommario/riassunto

Earth as an Evolving Planetary System presents the key topics and questions relating to the evolution of the Earth's crust and mantle over the last four billion years. It examines the role of plate tectonics in the geological past via geological evidence and proposed plate reconstruction. Kent Condie synthesizes data from the fields of oceanography, geophysics, planetology, and geochemistry to examine the key topics and questions relating to the evolution of the Earth's crust and mantle. This volume provides a substantial update to Condie's established text, Plate Tectonics
