

A satellite image of Earth showing the Americas and the Atlantic Ocean. The landmasses are green and brown, while the oceans are dark blue. White clouds are scattered across the scene.

PART I

Earth Materials

- 1 Planet Earth**
- 2 Geologic Systems**
- 3 Minerals**
- 4 Igneous Rocks**
- 5 Sedimentary Rocks**
- 6 Metamorphic Rocks**
- 7 Structure of Rock Bodies**
- 8 Geologic Time**

We begin this study of planet Earth with an examination of Earth's composition and take you on a brief tour across its surface and into its deepest interior. Earth is a major system of energy and matter with many interconnected and interrelated subsystems. These systems are the mechanism by which energy and matter interact to create the infinite array of landforms and landscapes, structures and stones. In this part of the book, you will be introduced to each major system, to the energy that drives the flow of matter and makes Earth truly dynamic, and to rocks and minerals—the materials that this energy acts upon. But even after a rock body is formed, it is not static. Forces in the tectonic system can contort and deform it, and we will guide you through a basic understanding of the resulting structures.

Here you will be introduced to the great planetary systems—plate tectonics and the hydrologic system. Finally, you will see that geology is also a historical science. Our present is affected by our past; and the present will shape the future. This is what makes geology so fascinating—it is the study of changes that affect every aspect of our lives.