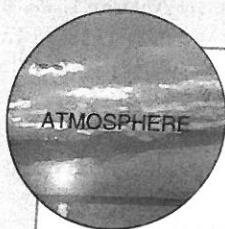


Earth's four "spheres"—the atmosphere, hydrosphere, lithosphere, and biosphere—are the open systems that form the part structure for *Elemental Geosystems*: The Energy–Atmosphere System; Water, Weather, and Climate Systems; The Earth–Atmosphere Interface; and Soils, Ecosystems, and Biomes. In each part, the chapter sequence generally follows the system inputs, actions, and outputs. Human–Earth connections are an integral part of all Earth systems and their interactions.

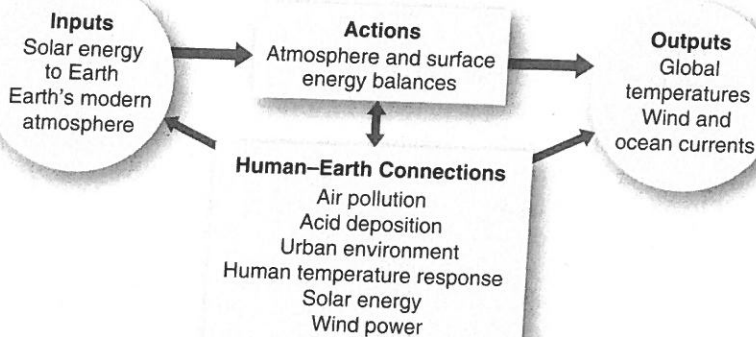


Part I The Energy–Atmosphere System

Incoming solar radiation provides the energy input that drives Earth's physical systems, determining weather and climate patterns and influencing living organisms.

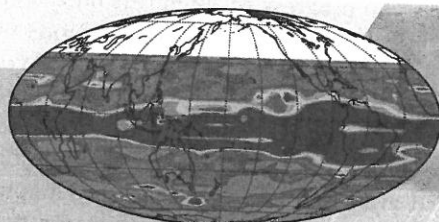
Chapters 2–4

- 2 Solar Energy, Seasons, and the Atmosphere
- 3 Atmospheric Energy and Global Temperatures
- 4 Atmospheric and Oceanic Circulations

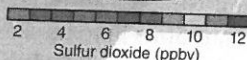


Throughout *Elemental Geosystems*, we discuss the linkages and global impacts of the Mount Pinatubo volcanic explosion. Begin in southeast Asia, and follow the effects counterclockwise around the map.

Aerosol cloud causes colorful twilight and dawn skies worldwide, and increases atmospheric reflectivity (albedo) by 1.5%.



A thin aerosol cloud affects 42% of globe (20° S to 30° N)



Effects on Earth systems:

Reduced sunlight at Earth's surface decreases average temperatures in the Northern Hemisphere by 0.5 C° (0.9 F°)

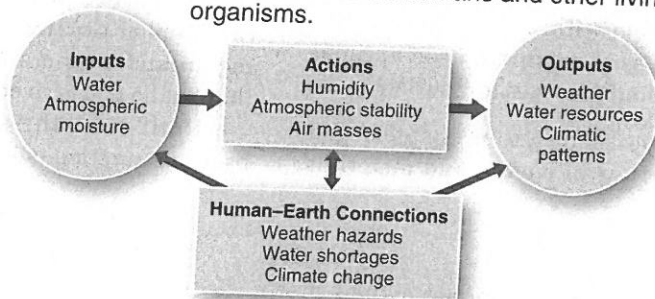


Part II Water, Weather, and Climate Systems

The distribution and circulation of water in Earth's atmosphere and hydrosphere are key influences on weather and determine the water available for humans and other living organisms.

Chapters 5–8

- 5 Atmospheric Water and Weather
- 6 Water Resources
- 7 Earth's Climatic Regions
- 8 Climate Change



Video The Changing Face of Earth



<http://goo.gl/yevJeg>

MasteringGeography™

Visit the Study Area in MasteringGeography™ to explore Earth systems.

Visualize: Study geosciences animations of Earth's radiation balance, the hydrologic cycle, and the rock cycle.

Assess: Demonstrate understanding of Earth-system interactions (if assigned by instructor).