

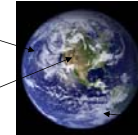
Introduction to Earth Science

1

Earth's Physical Environment

Hydrosphere: Earth's dynamic water system, including water in the oceans, in the atmosphere, and on land

Biosphere: All life on Earth (located in parts of the hydrosphere, atmosphere, and lithosphere).



Lithosphere: Earth's rigid outer layer, including the crust and the upper mantle

Atmosphere: Earth's gaseous envelope

Image Credit: NASA Goddard Space Flight Center image by Reto Stockli (land surface, shallow water, clouds). Enhancements by Robert Simmon (ocean color, compositing, 3D globe, animation). Data and technical support: MODIS Land Group; MODIS Science Data Support Team; MODIS Atmosphere Group; MODIS Ocean Group. Additional data: USGS EROS Data Center (topography); USGS Terrestrial Remote Sensing Flagstaff Field Center (Antarctica); Defense Meteorological Satellite Program (city lights).

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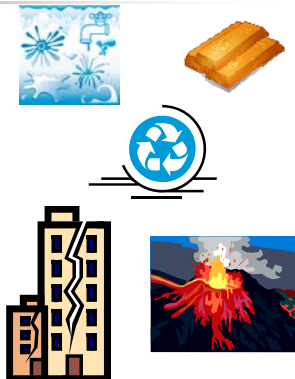
Earth Sciences

- **Geology** – study of lithosphere
 - Literally means “Study of the Earth”
 - Two areas:
 - Physical geology – examines materials that compose the solid Earth and the processes that change it
 - Historical geology – examines the origin of Earth and its 4.6-billion-year history
- **Oceanography** – study of hydrosphere
 - Involves study of ocean composition and movement, seafloor topography, coastline processes and marine life
 - Integrates chemistry, physics, geology and biology
- **Meteorology** – study of atmosphere, weather and climate
- **Astronomy** – study of the universe
 - Study of the Earth is not confined to our own planet – we are part of the universe
 - Helps probe the origins of our own environment

3

Why study our Earth?

- To understand water, food, mineral and energy resources (renewable and nonrenewable)
- To learn how to preserve these resources and/or increase our efficient use of them as our population grows
- To understand the dangers posed by natural Earth processes (like earthquakes, hurricanes, and volcanic eruptions) and learn how to avoid damage by these processes



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