



# The Earth as a System

Earth's Spheres

# What is a System?

A set of connected items or devices  
that operate together





# Earth System Science (ESS)

- The study of the interactions between and among events and Earth's spheres
- A relatively new science (1988)



# Earth's Sphere

- Atmosphere
- Hydrosphere
- Lithosphere
- Biosphere
- Cryosphere

# Atmosphere

- A gaseous sphere and it envelopes the Earth,
- Consists of a mixture of gases composed primarily of nitrogen, oxygen, carbon dioxide, and water vapor.



# Hydrosphere

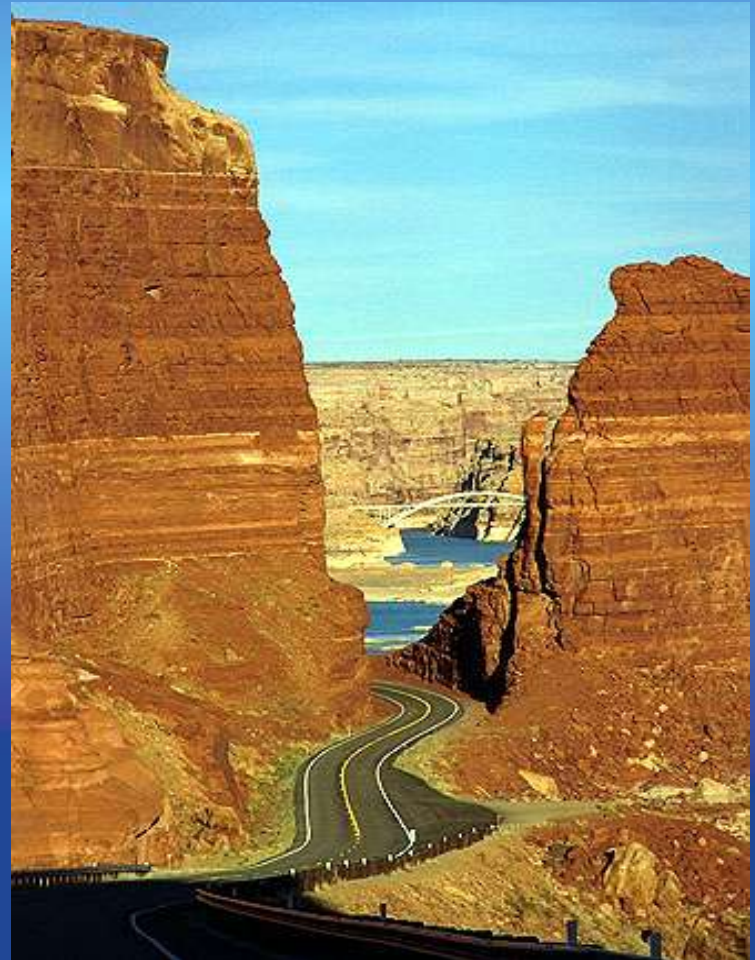


- All of the water on Earth
- 71% of the earth is covered by water and only 29% is terra firma



# Lithosphere

- The Earth's solid surface, often called the crust of the earth. It includes continental and oceanic crust as well as the various layers of the Earth's interior.



# Biosphere

- All life on earth, including man, and all organisms.
- The life zone on our planet distinguishes our planet from the others in the solar system.





# Interconnected Spheres

- Spheres are closely connected
- Changes are often chain reactions
- A change in one sphere results in changes in others - called an event
  - Forest fire destroys plants in an area
- Interactions between spheres
  - No plants => erosion
  - Soil in water => increased turbidity (muddy water)
  - Turbidity => impacts water plants/animals