

## Why Should We Study Geography?

**Study: Geography Greek to Young Americans**  
 Thursday, May 4, 2006

WASHINGTON (CNN) -- After more than three years of combat, nearly two-thirds of Americans aged 18 to 24 still cannot find Iraq on a map.

Six months after Hurricane Katrina devastated New Orleans and the Gulf Coast, 33 percent could not point out Louisiana on a U.S. map.




## Geography is:

- The science that studies the relationships among
  - natural systems,
  - geographic areas,
  - society,
  - cultural activities,
  - and the interdependence of all of these over space.

Are there famous geographers?

1. Prince William graduated with a Master of Arts in Geography from the University of St Andrews.
2. Michael Jordan earned a basketball scholarship to the University of North Carolina, where he majored in geography.
3. Mother Theresa taught geography.





## The Science of Geography

- Geography – from *geo* "Earth" and *graphein* "to write"
- Geography is
  - a method, not a body of knowledge
- Geographers use spatial analysis
- Geography is commonly divided into two major branches:
  - 1- **cultural geography** (human geography) and
  - 2- **physical geography** (natural geography).

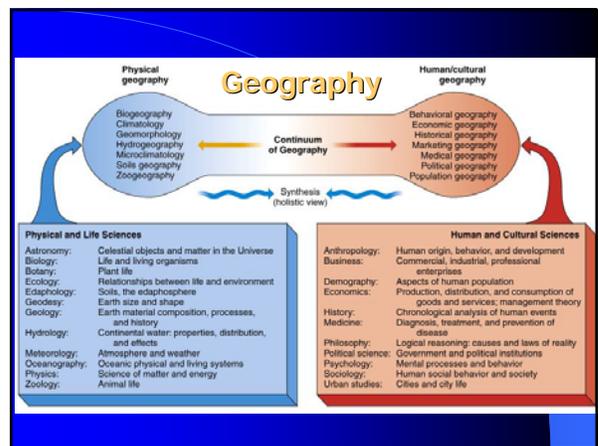


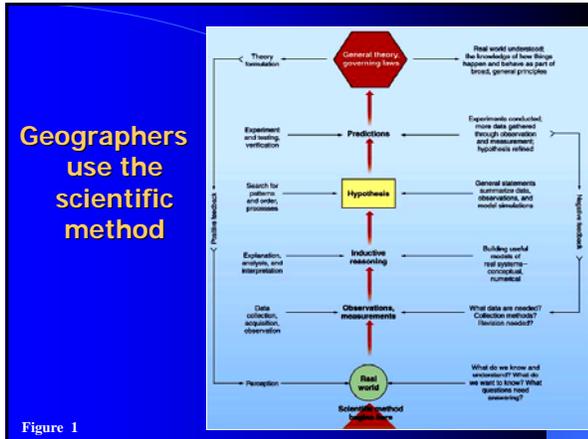
## Physical Geography

The spatial analysis of all the physical elements and processes that make up the Earth's **hydrosphere, biosphere, atmosphere, and lithosphere.**





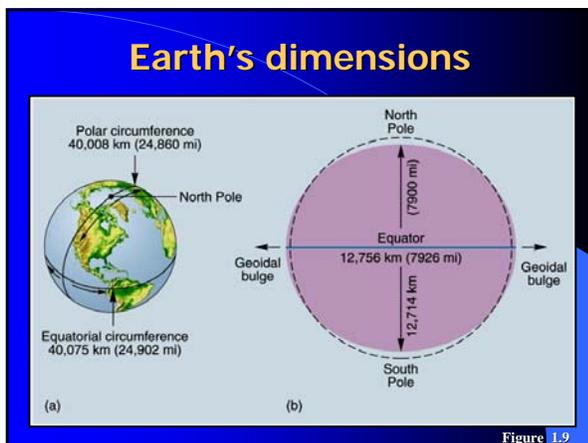
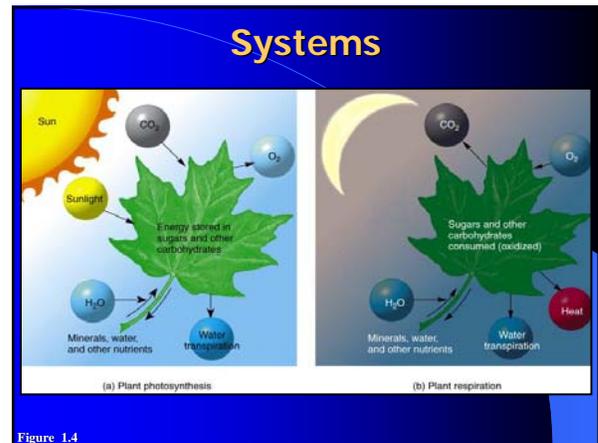
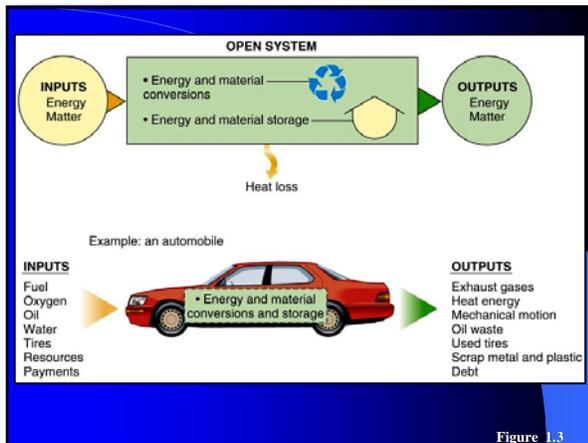


### Earth Systems Concepts

- **Open systems**
- **Closed systems**

The Earth system *as a whole* is a closed system. The boundary of the Earth system is the outer edge of the atmosphere. Virtually no mass is exchanged between the Earth system and the rest of the universe (except for an occasional meteorite).

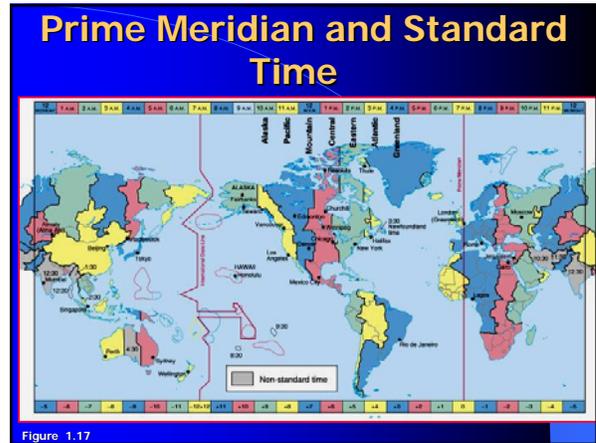
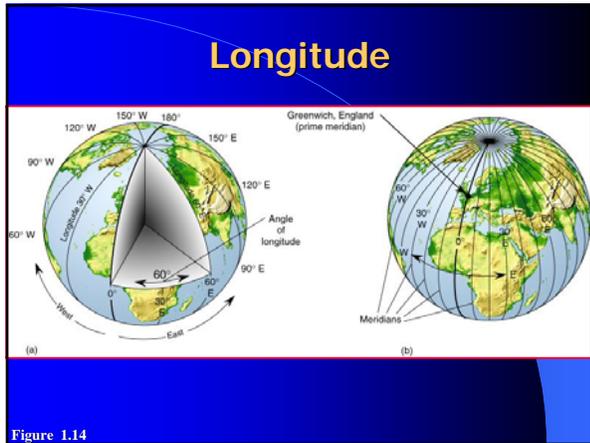
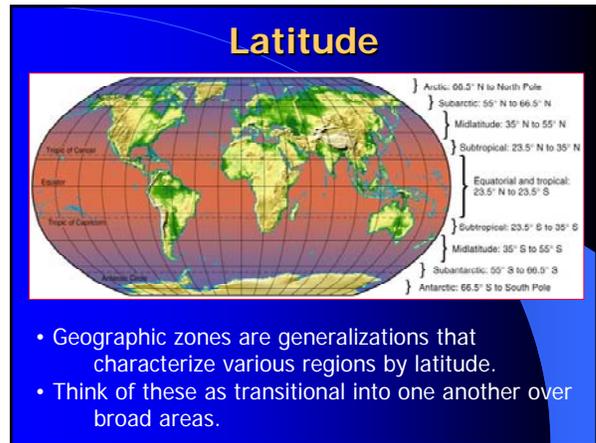
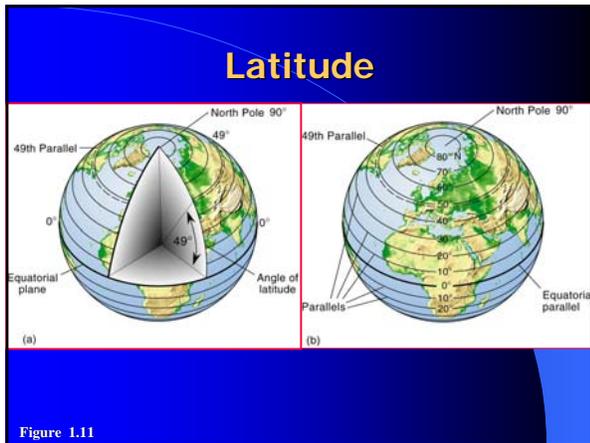
The functioning of our planet relies on a constant input of energy from the sun. This energy leaves Earth in the form of heat flowing to outer space. From a systems point of view, Earth is an open system with respect to energy.



### Location and Time on Earth

- **Latitude**
- **Longitude**
- **Great circles**
- **Prime Meridian and standard time**

Great circles



## Maps, Scales, and Projections

- Map – a generalized view of an area, as seen from above and reduced in size
- Scale – ratio of map units to ground units
- Projection – process of transforming spherical Earth to flat map

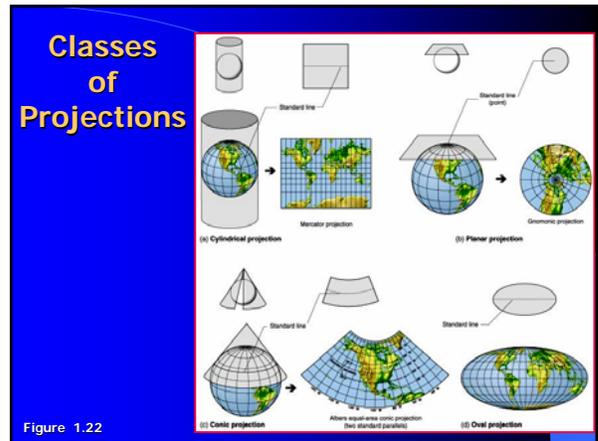
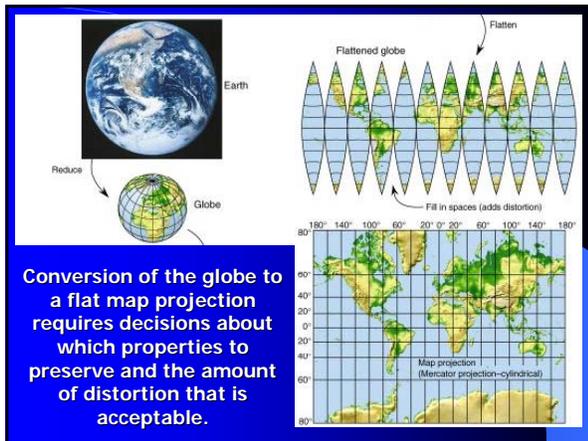
## Scale

**Written scale**  
One inch equals four miles  
(English units in U.S.)

**Representative fraction**  
1:250,000 or  $\frac{1}{250,000}$

**Graphic scale**

Three common expressions of map scale-written scale, representative fraction, and graphic scale.



### Remote Sensing

Remote Sensing is the science and art of acquiring information (spectral, spatial, temporal) about material objects, area, or phenomenon, without coming into physical contact with the objects, area, or phenomenon under investigation.

**Active remote sensing**  
Makes use of sensors that detect reflected responses from objects that are irradiated from artificially-generated energy sources, such as radar.

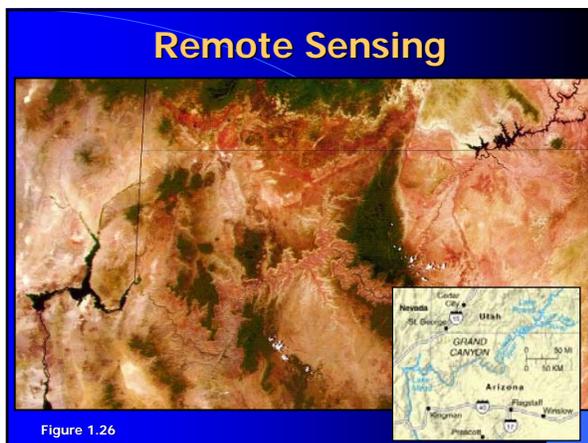
**Passive remote sensing**  
Makes use of sensors that detect the reflected or emitted electro-magnetic radiation from natural sources.

### Active and Passive Remote Sensing

Passive sensing visible light

Active sensing radar

Figure 1.25



### Geographic Information Systems

- GIS systems combine spatial and attribute data
- Maps can contain multiple data layers:
  - Physical features
  - Cultural features
- Layers can be added to create composite overlay

Simply put, a GIS combines layers of information about a place to give you a better understanding of that place. What layers of information you combine depends on your purpose—finding the best location for a new store, analyzing environmental damage, viewing similar crimes in a city to detect a pattern, and so on.