

Human Environment

Chapter 13

Key Question:
How has the Earth Environment Changed over Time?

Earth Environment

Pangaea – the supercontinent that broke apart into fragments we know as continents.

CONTINENTAL DRIFT

The image shows three globes illustrating continental drift. The top globe is labeled 'Upper Carboniferous' and shows a single supercontinent, Pangaea. The middle globe is labeled 'Older Quaternary' and shows the continents beginning to separate. The bottom globe is labeled 'Eocene' and shows the continents further apart in their current positions.

Plate Tectonics –

the earth is divided into plates, which are in motion. Earthquakes and volcanoes often occur along plate boundaries.

The map displays the world's major tectonic plates, including the Eurasian Plate, North American Plate, Pacific Plate, African Plate, Australian Plate, Antarctic Plate, Nazca Plate, South American Plate, Indian Plate, and Australian Plate. Arrows indicate the direction of plate movement.

Pacific Ring of Fire

The map shows the Pacific Ring of Fire, a major area of seismicity and volcanism. It is characterized by a high concentration of active volcanoes (marked with triangles) and earthquake origins (marked with dots) along the western Pacific Ocean basin, the Mediterranean-Himalayan region, and the western United States. A legend indicates that triangles represent active volcanoes and dots represent earthquake origins. A scale bar shows distances up to 5000 kilometers and 4000 miles.

Compare locations of volcanoes and earthquakes to plate boundaries.

Indian Ocean Tsunami, 2004

As population grows and more development occurs on coastlines, more people are vulnerable to environmental hazards.

The photograph shows the aftermath of the 2004 Indian Ocean tsunami. It depicts a coastal area with significant destruction, including collapsed buildings, debris, and damaged infrastructure. The image highlights the vulnerability of coastal populations to natural disasters.

Glaciations and Volcanoes

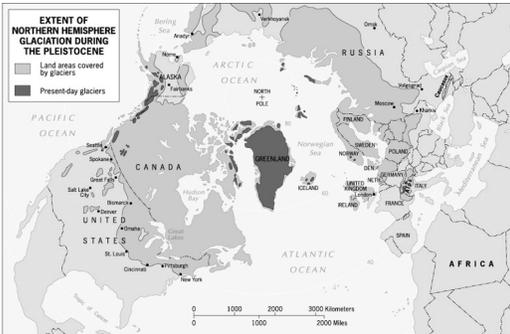
During the Pleistocene (less than 2 million years ago), the planet was in a deep freeze.

Pleistocene marked by:

glaciations – permanent ice stable and growing

interglaciation – warming spell in which ice recedes

Wisconsin Glaciation – the most recent glaciation of the Pleistocene.



Mount Toba

73,500 years ago, Mount Toba erupted on island of Sumatra. The entire mountain exploded, altering global climate and leaving this caldera. Restricted land usable by humans and created an “evolutionary bottleneck.”



Holocene –

interglaciation, which began 18,000 years ago.

Little Ice Age –

a minor glaciation that began in the early 1300s. Glaciers began to grow, and affected agriculture production.

Tambora Volcano -

erupted in 1815, changing climate again and putting an end to the Little Ice Age.

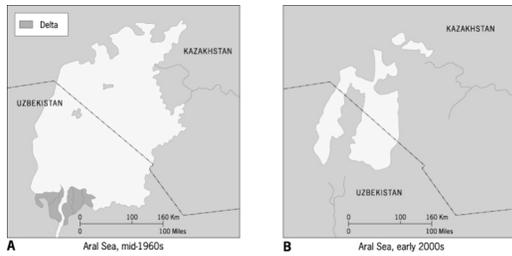
Key Question:

How have Humans Impacted
the Earth Environment?

Humans impact Environment by:

- Altering ecosystems
 - All humans (over time) alter their environments.
 - With growth in population, impact is greater.
- Environmental Stress
 - Cutting forests, emitting pollutants, spilling oil
 - Burying toxic waste, dumping garbage in oceans

The Dying Aral Sea



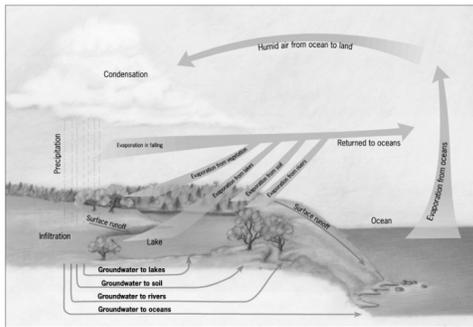
Affected by climatic cycles and afflicted by human interference, the Aral Sea is dying. In 25 years, it lost 75% of its surface area.

Humans impact Environment by:

- Water Shortages
 - Water is a renewable resource, but we are depleting water in aquifers (porous, water holding rocks) at a fast rate.
- What causes the shortages?
 - Growing population
 - Large population concentrations near small supplies
 - Agricultural and industrial use

Hydrological Cycle –

carries moisture from the oceans and other water bodies over the land, where precipitation, runoff, and evapotranspiration sustain the system.



In arid landscapes, such as the American Southwest, dams and narrow ribbons of water bring water to the people.



Tucson, Arizona

Key Water Resources in the Middle East

Jordan River
Aquifer under West Bank

Who should control/who will control the water resources?



Humans impact Environment by:

- Atmosphere
 - A thin layer of air lying directly above the lands and oceans.
- What is breaking down the atmosphere?
 - Human pollution
 - Volcanic action (dust into atmosphere)
- Impacts
 - Global Warming
 - Acid Rain

Humans impact Environment by:

- The Land
 - Humans causing deforestation, soil erosion, and desertification.
- What are the impacts?
- Deforestation: affect oxygen cycle
 - Soil Erosion: soil not having enough time to rebound
 - Waste Disposal: solid waste is filling landfills and toxic and radioactive wastes are difficult to dispose of and keep confined.

Deforestation –

In the rainforest of South America, new roads, such as this one in Para, Brazil, push deforestation farther into the forest.



Soil Erosion -

Overuse of land in Guangxi-Zhuang, China has led to the collapse of formerly-sound terracing systems.



Humans impact Environment by:

- Biodiversity
 - Loss of biodiversity because species are threatened or quite concentrated.
- What species are most affected?
- The species with a small range
- Why?
- Destruction of a relatively small habitat area can cause extinction of a species with a small range.

THINKING GEOGRAPHICALLY

What is the greatest environmental concern facing the region where you live, and in what other regions of the world is this a major concern?

Key Question:

What are the Major Factors Contributing to Environmental Change Today?

Political Ecology

- Political Ecology –
An approach to studying nature-society relations that is concerned with the ways in which environmental issues both reflect, and are the result of, the political and socioeconomic contexts in which they are situated.

eg. Use scale to see how attempts to “solve” environmental problems varies by scale.

Geographer William Moseley studied conservation behaviors in southern Mali.

Found: Poorer people did **not** degrade the land more than wealthier people, at the local scale.

Why?
Poorer farmers use organic materials to replenish soils.

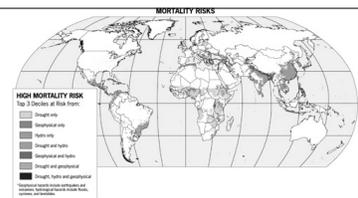


Major Factors Contributing to Environmental Change

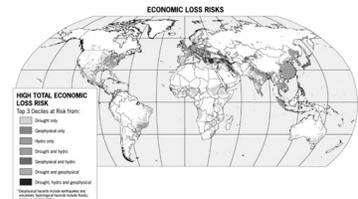
- Population
Where is population growing?
What places are most vulnerable to hazards?

Natural Disaster Hot Spots

Top map shows potential for mortality risks if major natural disasters occur.



Bottom map shows the potential economic risks if major natural disasters occur.

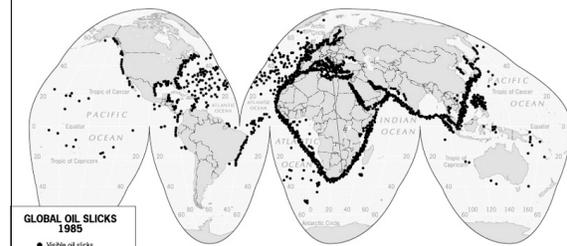


Major Factors Contributing to Environmental Change

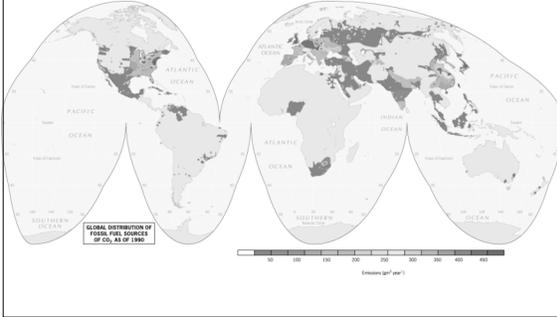
- Technology
– Resource extraction to fuel technologies
- Transportation
– Significant pollution
– Energy Demands
• OIL!

Locations of Visible Oil Slicks

Oil dependency and transportation creates more opportunities for oil slicks.



**World Distribution of Fossil Fuels
Sources of Carbon Dioxide**
Places where most carbon dioxide is emitted on earth.



**Alternative
Energy Sources**

Wind energy parks, such as this one in Lake Benton, Minnesota, are filled with hundreds of enormous turbines to generate energy.

Wind is a clean, renewable energy.



Key Question:

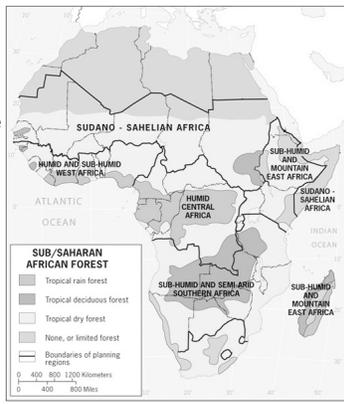
**How are Humans Responding
to Environmental Change?**

**Issues with Solving
Environmental Problems**

- Environmental problems are not confined to states, but states pass the laws that affect change.
eg. Air pollution drifts across borders

Lack of fit between
State and
Environmental Issue

The Major Forest
Regions of Africa do
not follow state
boundaries, but the
World Bank's planning
regions are drawn
along state boundaries.



**Issues with Solving
Environmental Problems**

- Global Conventions on Environmental Problems
eg. Convention on Biological Diversity
Vienna Convention for the
Protection of the Ozone Layer
Kyoto Protocol on Climate Change