

AP PREP

The Planet and Humanity

Environmental Geography

Fill in the blanks to complete the definition or sentence. Note: ALL of the following information is important.

The “Little Ice Age” in Europe

- The _____ diffused from Central Asia (e.g. China) to the west during the 14th c.; in the process they brought with them the _____, and its vector – the _____ (which bit into rats, which transferred the disease to cats, which transferred the disease to humans). The Plague killed an estimated ___ million in Europe from 1347 to 1352!
- The “Little Ice Age” necessitated the onset of the _____; field methods improved (planting, sowing, watering, harvesting,...); transportation and storage of produce involved less waste & loss.
- The area around _____ (c. 1607) experienced the worst drought in eight centuries (1606-12)!
- The “real” Little Ice Age occurred from _____ - _____ (cooler temp. began in the 13th c.):
- The _____ eruption (1783, Iceland) lowered temperatures in N. America by ~7 degrees (e.g. _____ didn’t ripen in New England in the “year without a summer”).



The “Little Ice Age” in Asia (a.k.a. “Why we Don’t Speak Chinese”)

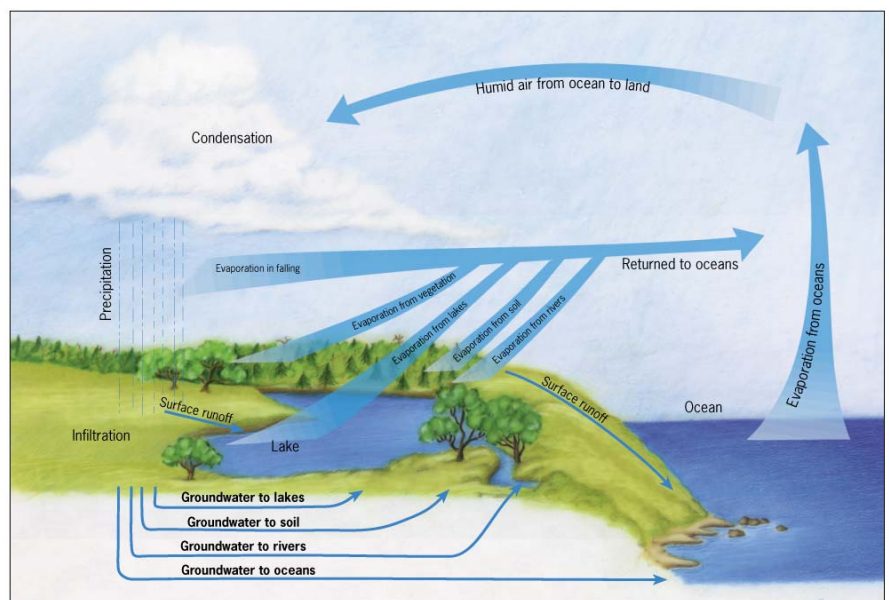
- Early _____ (1368-1644) rulers (in China) had a huge oceangoing fleet (> 6,000 ships); they sponsored massive _____ (their vessels (junks) were far superior to that of the Europeans).
- Colder weather caused famines, epidemics, especially in the North where _____ was primarily grown; the _____ (1644-1912) rulers ordered an end to overseas expeditions; built only ships for the _____ (with cargoes of Southern rice brought to the North; rice became the staple crop of the Chinese).
- This is a classic example of _____.

The Industrial Optimum

- Post-_____ phase; glaciers are retreating; global _____ are warming; _____ has expanded.
- The Industrial Optimum was interrupted by cooler decades from _____ - _____ (this led to the _____); but temperatures are rising again (natural or human-induced?).

Water

- Water, the essence of life, is a _____ resource; as opposed to _____ - _____ resources such as oil or natural gas.
- The available supply of _____ water is not evenly distributed across the globe; that distribution is sustained by the _____ cycle (depicted to the right), which brings rain and snow from the oceans to the landmasses.
- Much of that water is lost through _____ & _____, but a substantial amount seeps downward into porous, water-holding rocks called _____.





- Nearly $\frac{3}{4}$ of all the fresh water in the world is consumed in _____, not in cities. _____ use another 20%, sometimes contributing heavily to pollution.
- One of the great ecological disasters of the 20th c. has involved the _____ Sea, located between Kazakhstan & Uzbekistan. Streams that fed this large sea were diverted to _____ the surrounding desert (mainly for commercial cotton production).
- Chemical _____ have ruined the groundwater below, causing a major health crisis.

- The Aral Sea also began to dry up – by the 1990s it had lost more than ____ of its original surface area!

Atmosphere

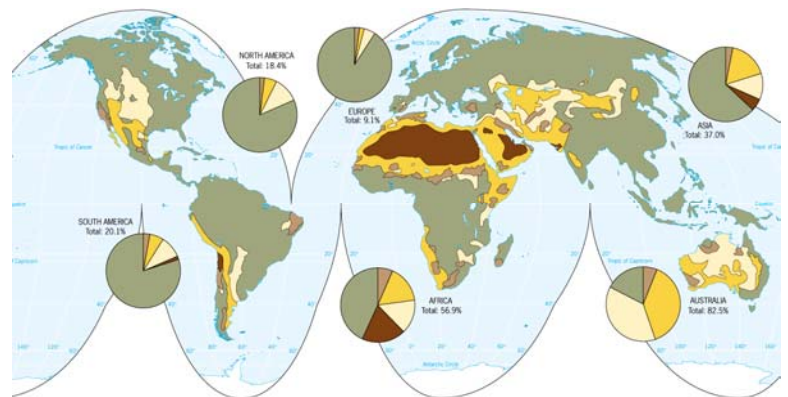
- The atmosphere is a largely _____ resource.
- Global _____ could be around 3.5°F – 5.5°F over the next 50 years; in March, 2002, a _____ - sized chunk broke off Antarctica!
- _____ gases are increasing at a rate of 2% per decade (CO₂, methane, nitrous oxides,...)
- _____ rain is caused by the burning of fossil fuels (coal, oil, natural gas); emitted by cars, industries,...; it can be _____ enough to do great damage over time; e.g. acidification of lakes, stunting of forests, loss of crops & fish,...

The Land

- _____ is cyclic; the Sahara alone has lost 270,000 sq. mi. of non-desert land over the past 50 yrs.; accelerated by overgrazing, woodcutting, soil exhaustion,...
- In the 1980s, the Food & Agriculture Organization (FAO – part of the UN) studied the effects of _____; determined that 44% of global tropical rainforests are already affected by cutting.



Soil Erosion in Mexico



- 1% logged is every year; at this rate the entire equatorial forest would be gone in less than ____ yrs.
- Forests convert CO₂ to _____; counteract oxygen loss & greatly affect the oxygen cycle.
- _____ has been a “quiet crisis;” _____ pressure has been a major cause – as agricultural land use intensifies, water & wind _____ increases.
- Soil is a _____ resource, but >25 billion tons of it is lost per year.

Waste Disposal

- The U.S. is the largest producer of _____ waste (3.7 lbs. per person per day); containers, packaging, etc...
- _____ regions (US, EU, Japan) export solid waste to the periphery.
- _____ landfills: prepared areas for waste disposal (includes a floor of materials to treat seeping liquids).
- Poorer countries: have open garbage dumps, decomposition sends methane into air (acid rain), contaminants seep into the _____.



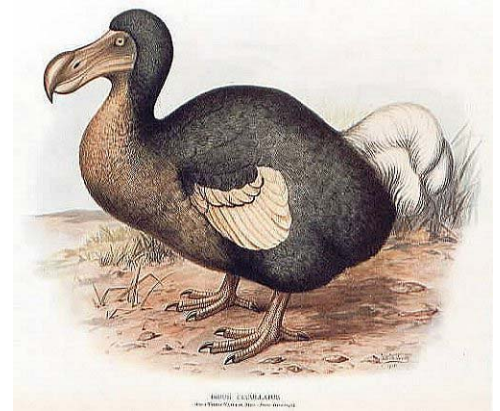
Hazardous Materials



- _____ waste: danger is caused by chemicals, infectious materials, ...
- Radioactive waste:
 - _____-level: give off small amounts of radiation – hospitals, research facilities, nuclear power plants are the main sources of these minor contaminants.
 - _____-level: nuclear power plants & nuclear weapons facilities; may cause massive pollution _____ and contamination.
- There is no satisfactory means of disposing _____-level radioactive waste (e.g. salt effectively blocks some radiation).

Biodiversity

- There are between ____ - ____ million species in the world today.
- Only around _____ million species have been identified.
- _____ travel has introduced new species worldwide, and has threatened many species (e.g. Columbian exchange).
- The combination of human population pressure, technology & economic forces lead to _____ endangerment & extinction.
- Examples of mankind's affect on the animal kingdom:
 - _____ bird: hunted to extinction (1681) – Mauritius (in the Indian Ocean); destruction of the _____ (cut off the Dodo's food supply); cats, rats, and pigs destroyed Dodo _____.
 - The American _____ dominated the mid-west landscape; less than _____ of them remained in the U.S. and Canada by the turn of the century out of the millions that once lived there; through massive protection efforts – today about _____ exist in herd today.
 - _____ pigeon: the last captive one died in the Cincinnati Zoo (1914)

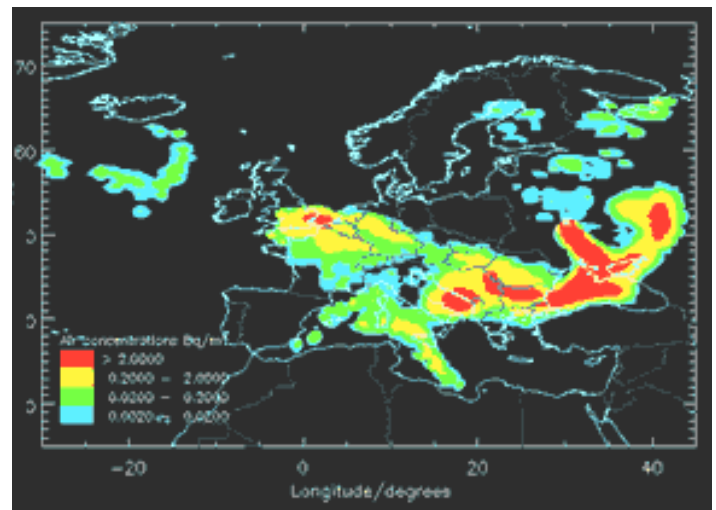


Trends in Human Consumption

*** As you can see in the table, the production of meat requires much more water than for crops.**

- Improvements in the technology of transportation over time have required more energy at each level:
 1. By _____ or _____,
 2. Domesticated _____,
 3. _____ boats
 4. _____ engine (invented toward the beginning of the industrial revolution)
 5. _____ engine (invented toward the end of the industrial revolution)
- Today's means of transportation causes more _____ (oil slicks) than ever before; moves species to new regions (e.g. Australian fir trees in West Palm Beach), diseases (SARS)
- Before the 1800s, humans relied on _____ energy, mostly through the consumption of plants & animals = wood & meat).
- Global energy production was ____% greater in 1999 than in 1971; and this rate has been steadily increasing.
- _____ power is largely reliable, but not 100% safe (e.g. Three Mile Island ('79), Chernobyl ('86)).

Crop	Liters/Kg Water
Potatoes	
Wheat	
Corn	
Rice	
Chicken	
Beef	



Environmental Policies in Response to Environmental Change

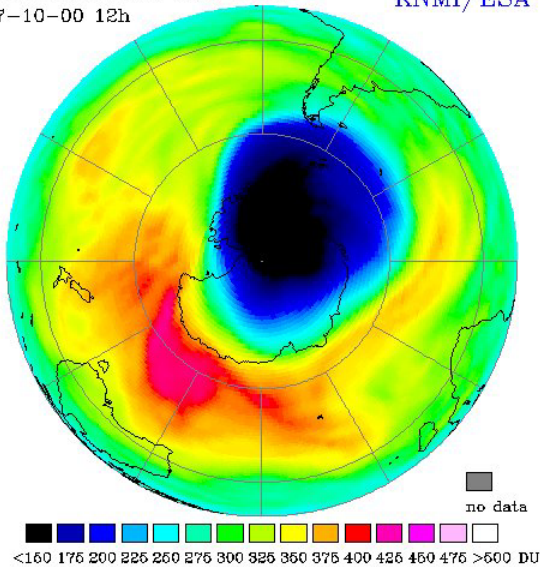
- Many environmental problems do not lie w/in a single _____, or state; often times these difficulties cross political boundaries.
- Many international agreements have been spear-headed by _____ (NGOs) that operate outside the formal political arena.
- One example of an NGO is the _____ (GEF) – a joint project of the United Nations and the World Bank; the GEF funds projects related to four issues (since 1992):
 1. Loss of _____ (plants & animals),
 2. Protection of the _____ layer,
 3. Global _____ change (temperatures have been rising), &
 4. Protection of international _____.
- Although the GEF has been charged with protecting key elements of the world environment – it still functions in a _____-based world.



Specific Policy Examples

- ~170 countries signed an agreement proposed by the UN Environment Programme dealing with _____ in 1993; the participating countries (168 today) work to establish a system to reduce activities that have a negative impact.
- It has been an ongoing struggle to find a balance between the need of _____ to promote local economic diversity & preserve biodiversity, which is the richest in the global economic _____; there has also been controversy over the _____ sharing the costs for conservation.

Assimilated GOME total ozone
17-10-00 12h
KNMI/ESA



- A naturally occurring _____ layer exists in the upper levels of the stratosphere (when O₃ is too plentiful in the troposphere (0-16 kilometer altitude), _____ can occur).
- The ozone layer protects the Earth from the Sun's harmful _____ rays; _____ (chlorofluorocarbons) found in refrigerants, fire extinguishers, and aerosol cans used since the 1950s were found to be harmful in the _____; the image to the left shows a "hole" in the ozone layer over _____.
- The _____ was signed in 1987 to deal w/ CFCs.
- The _____ was signed in 1997 by more than 80 countries; it laid out plans to reduce the emission of _____ gases; the _____ has decided to go its own course – and has actually abandoned it unilaterally under the current administration.

