Module: Physical Geography
Topic Content: Physical and Environmental Changes

Physical and Environmental Changes

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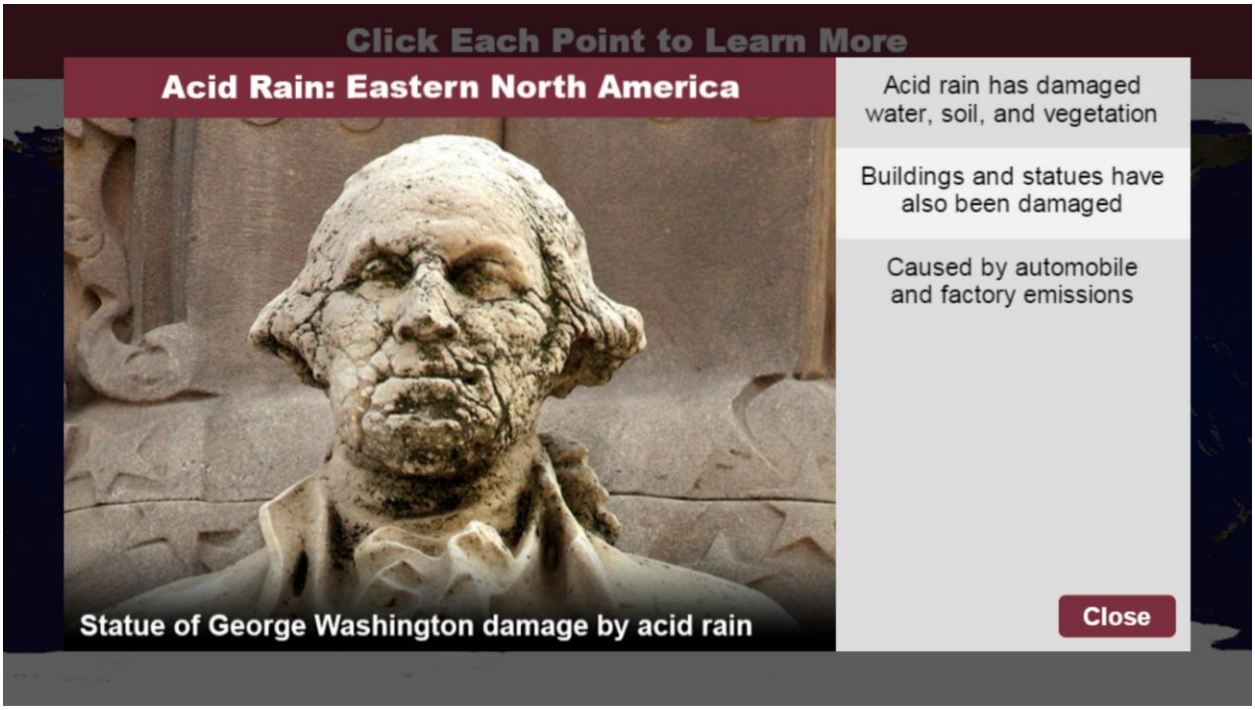
Click each of the points on the map to explore examples of how humans have changed the landscape and the environment.

Acid Rain: China

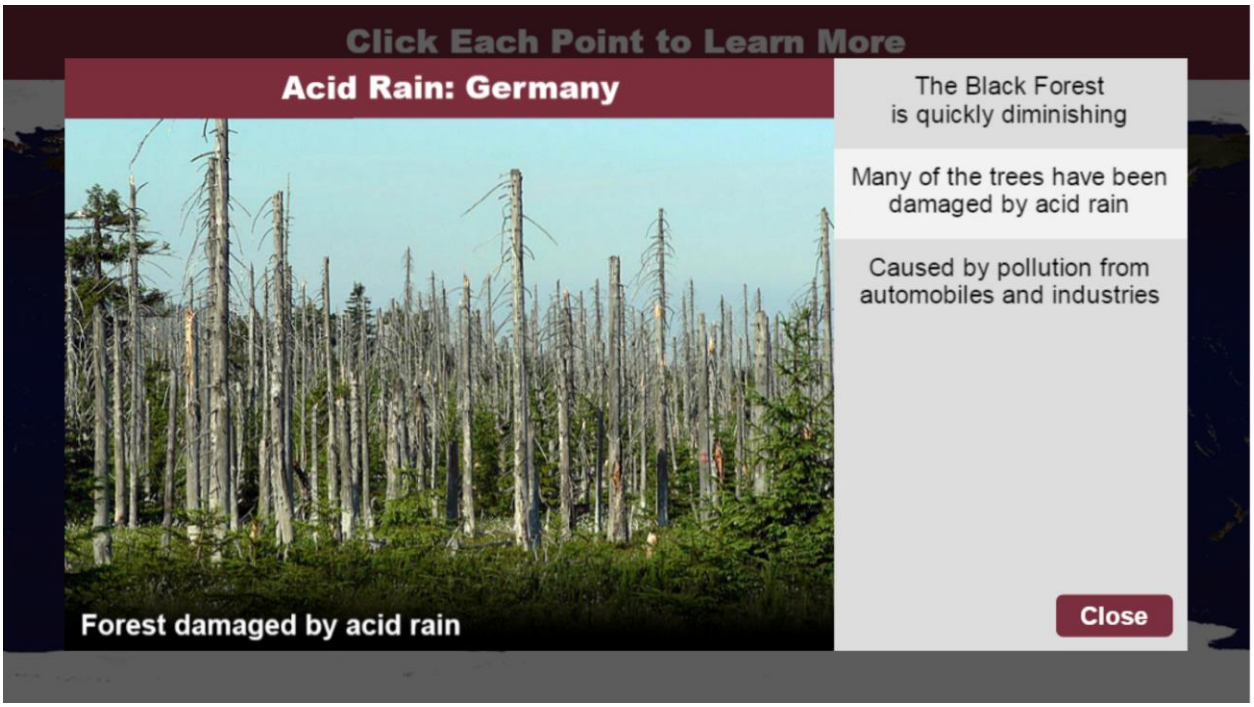
China burns massive amounts of coal in order to meet the nation’s growing energy demands. Burning coal produces sulfur dioxide, which causes acid rain when excessive amounts are in the atmosphere. Approximately one-third of the country currently experiences acid rain.

Acid Rain: Eastern North America



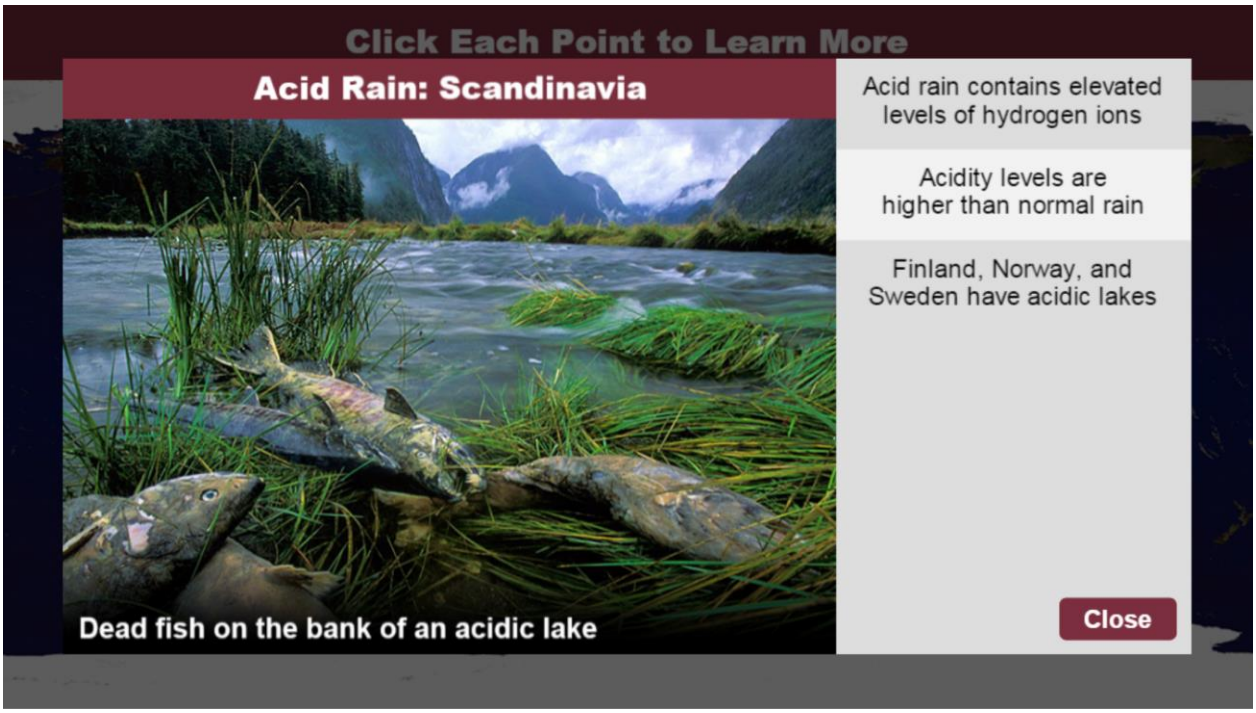
Acid rain has impacted the northeastern portion of North America, damaging water, soil, vegetation, buildings, and statues. The acid rain in this region is largely caused by the emissions from factories and automobiles.

Acid Rain: Germany



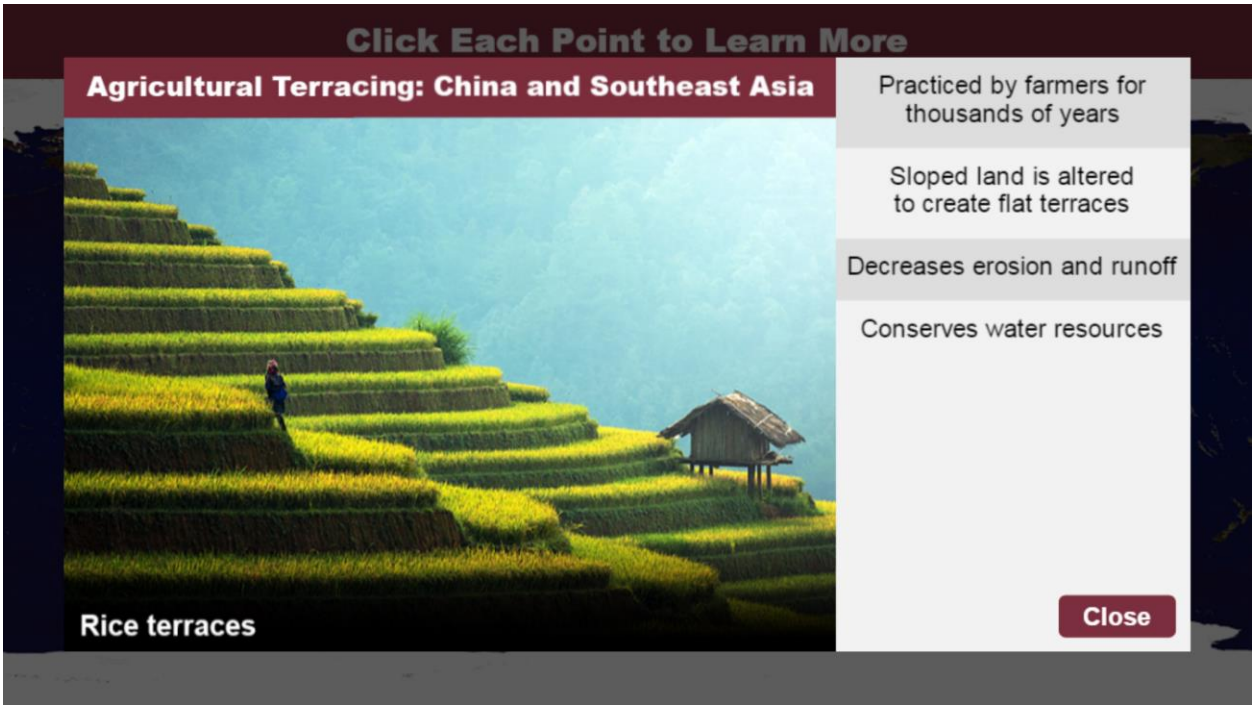
The wooded hills of the Black Forest in the southwestern part of Germany are quickly diminishing. Roughly 80% of the silver firs and almost 50% of the spruce trees have been damaged by acid rain. The acid rain is caused by the air pollution from surrounding industries and automobiles. Other forests in Germany and nearby countries are experiencing similar consequences.

Acid Rain: Scandinavia



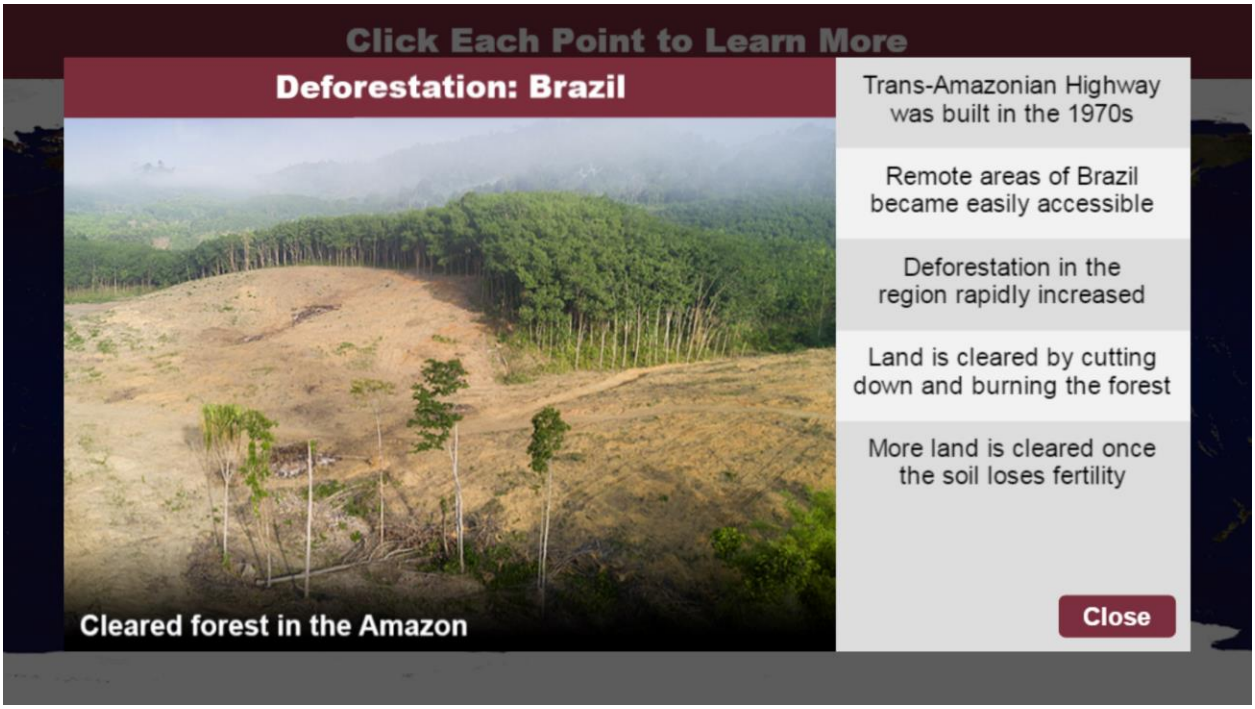
Acid rain is precipitation that contains elevated levels of hydrogen ions, resulting in a higher acidity than normal. In the Scandinavian countries of Finland, Norway, and Sweden, acid rain has caused many of the lakes to become so acidic that they cannot support life.

Agricultural Terracing: China and Southeast Asia



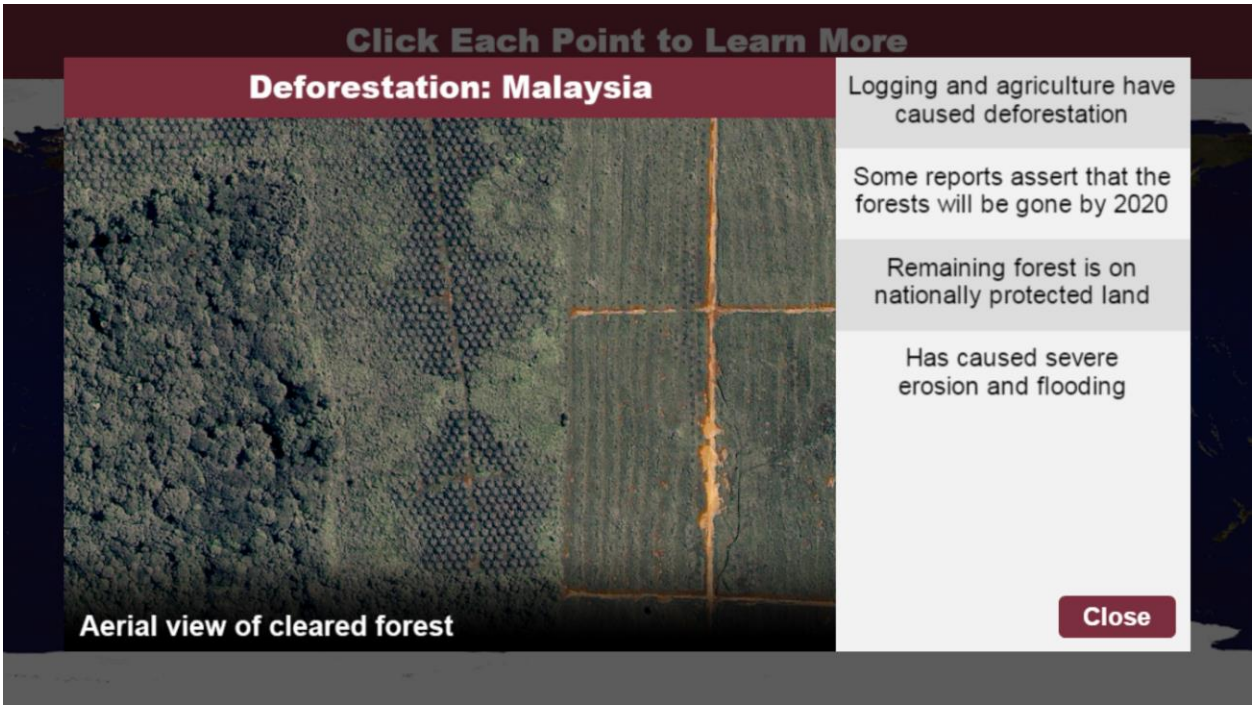
For thousands of years, farmers in China and Southeast Asia have been altering sloped land to create flat steps, or terraces, for agriculture. Agricultural terracing decreases erosion and runoff, while conserving water resources for crops.

Deforestation: Brazil



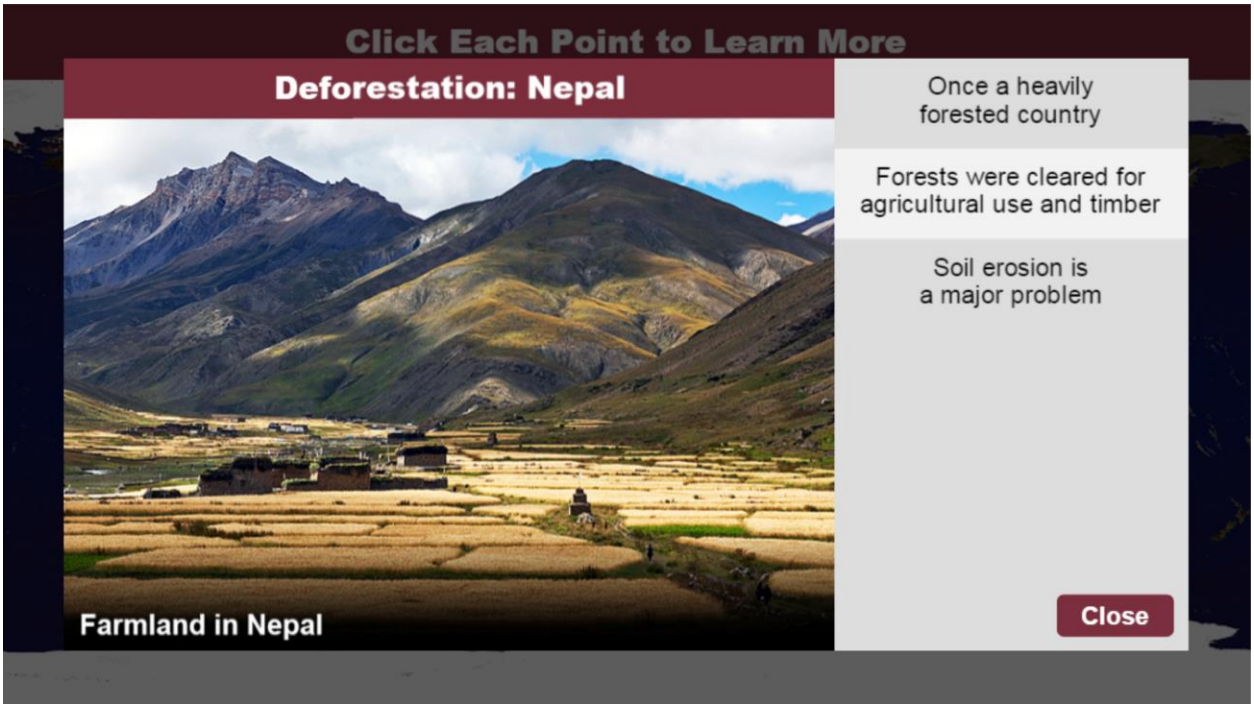
In the early 1970s, the Trans-Amazonian Highway was built. It traversed the nation of Brazil through the Amazon rainforest, making many parts of the country easily accessible for the first time in modern history. It also led to rapid deforestation in the region. People began to clear land for agriculture by cutting down and burning parts of the forest. The land loses its fertility quickly, causing farmers to move on to a new area of land, clearing as they go.

Deforestation: Malaysia



Logging and agriculture have caused major deforestation in Malaysia. In fact, several reports assert that the forests will be completely gone by the year 2020. Most of the forest that currently remains is on nationally protected lands. The deforestation has caused severe erosion and flooding.

Deforestation: Nepal

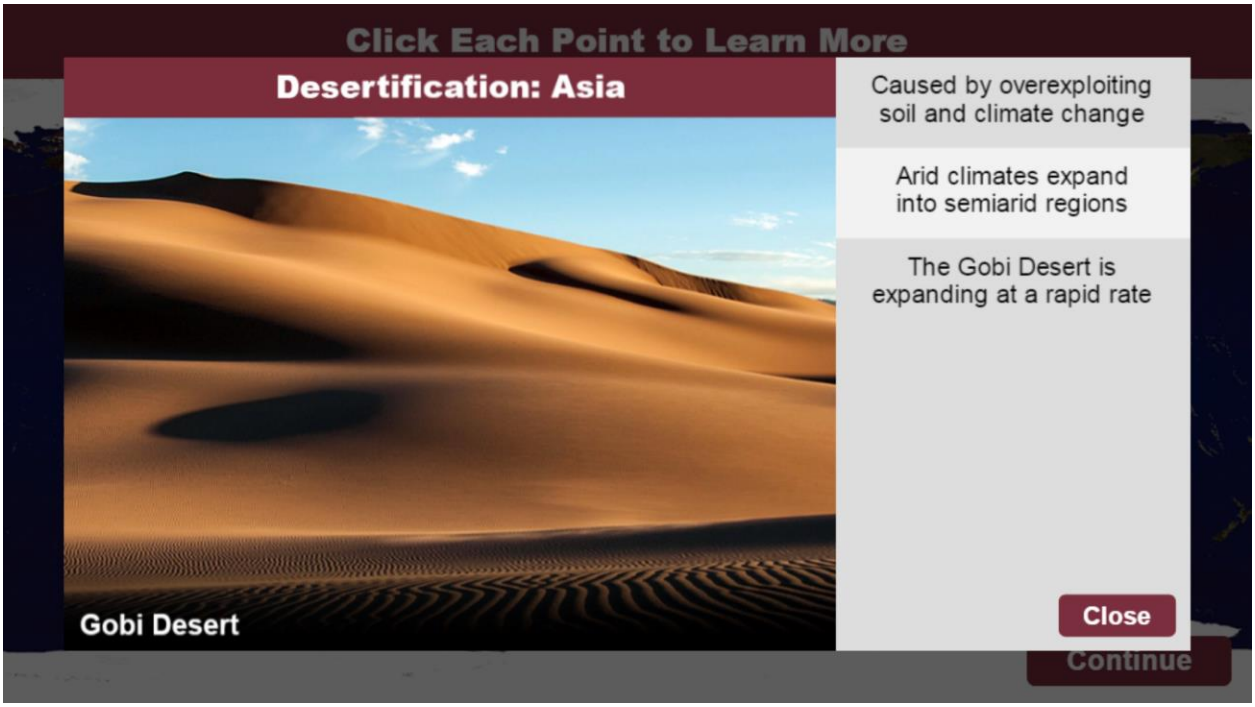


Although the country was once heavily forested, deforestation has become a serious issue in Nepal. Large areas of forest have been cleared for agricultural use and the extraction of timber. This has led to major problems with soil erosion.

Desertification: Africa

Desertification occurs when land that is already dry loses even more moisture, creating a desert. In areas around the Sahara, humans have tried to cultivate the land for crops and grazing animals. This depletes the nutrients in the soil, causing the Sahara to grow even larger, particularly in Algeria and Tunisia.

Desertification: Asia

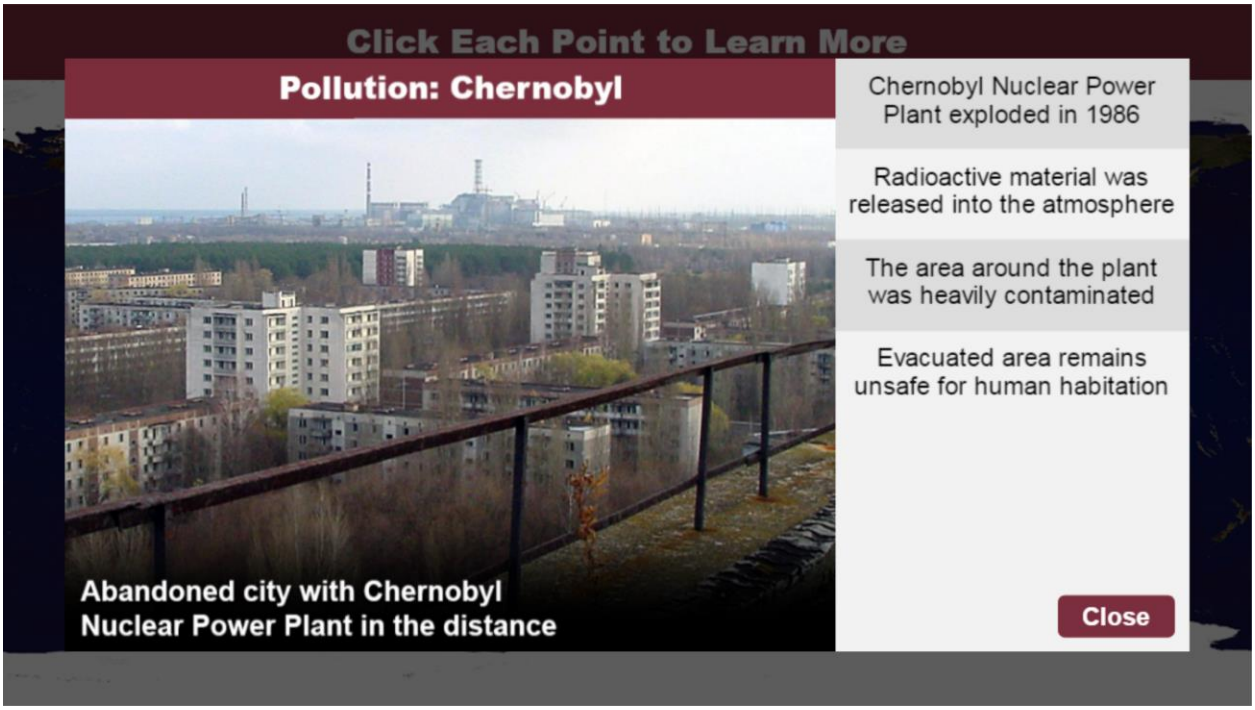


In addition to overexploiting the soil, desertification is also caused by climate change. Increased temperatures and decreased precipitation cause arid climates to expand into semiarid regions. The Gobi Desert in Asia is expanding at a rapid rate, due to a combination of overgrazing, deforestation, and climate change.

Polders: Netherlands

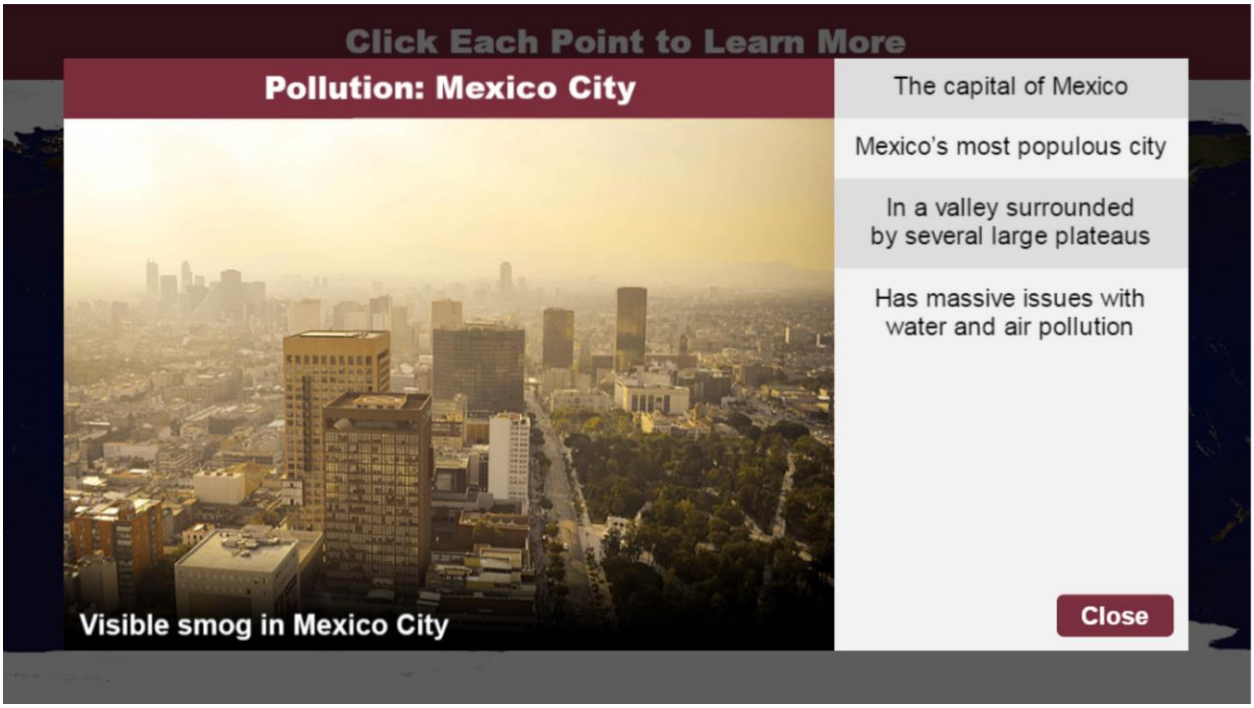
A polder is a piece of low-lying land that has been reclaimed from a body of water. To reclaim the land, the area is surrounded by flood-resistant barriers called dikes. Once the polder is enclosed, the water is drained using pumps or canals, making the land suitable for agriculture or habitation. Polders are usually associated with the Dutch, because a large part of the Netherlands is located at or below sea level.

Pollution: Chernobyl



In 1986, the Chernobyl Nuclear Power Plant in Ukraine suffered an explosion, and radioactive material was released into the atmosphere. This contaminated the air, which spread over various European countries. The immediate area around the power plant was heavily contaminated, killing animals and vegetation. The area around the plant was evacuated shortly after the accident, and remains unsafe for human habitation.

Pollution: Mexico City

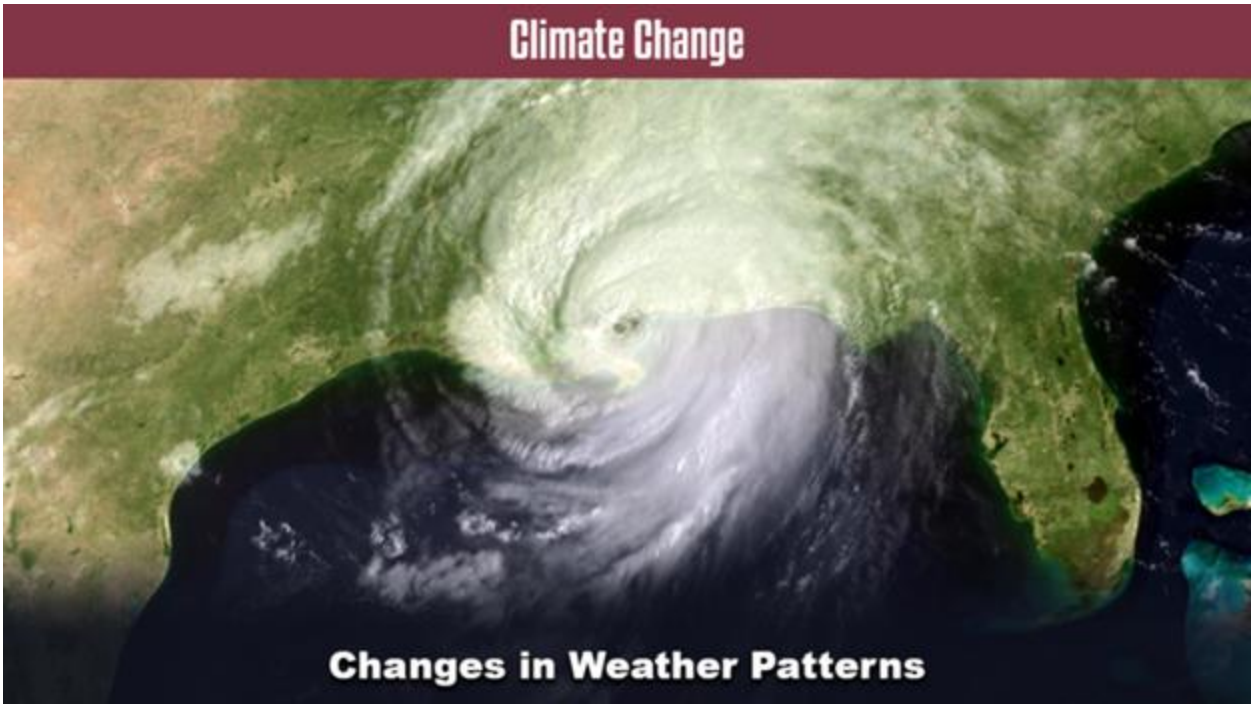


Mexico City is the capital of Mexico, and its most populated city. Mexico City is located in the Valley of Mexico, which is surrounded by several large plateaus. The physical location of the city, coupled with the large concentration of people, has caused massive issues with water pollution and air pollution from vehicles.

Pollution: Oil Spills

An oil spill is a form of pollution that involves the release of liquid petroleum into the environment, particularly in a marine ecosystem. In 2010, the Deepwater Horizon drilling rig experienced an explosion that released almost 5 million barrels of oil into the Gulf of Mexico. The water, wildlife, and people living in the surrounding area continue to suffer because of the water's contamination.

Climate Change



Scientists have been predicting climate change would occur for years. There is evidence that these changes are already effecting the environment, and will likely become worse over time. For example, because of human activities that produce greenhouse gases, global temperatures have slowly increased, and will likely continue to rise 2.5 to 10 degrees Fahrenheit over the next century. The increase in global temperature melts ice sheets and glaciers, causing the sea level to rise. Furthermore, weather patterns have started to change drastically. Precipitation has increased in many regions, droughts and heat waves occur more frequently, and hurricanes have become stronger.