Text 1
GEOGRAPHY OF AGRICULTURE

Around ten to twelve thousand years ago, humans began to domesticate plants and animals for food. Before this first agricultural revolution, people relied on hunting and gathering to obtain food supplies. While there are still groups of hunters and gatherers in the world, most societies have switched to agriculture. The beginnings of agriculture did not just occur in one place but appeared almost simultaneously around the world, possibly through trial and error with different plants and animals or by long-term experimentation. Between the first agricultural revolution thousands of years ago and the 17th century, agriculture remained pretty much the same.

The Second Agricultural Revolution

In the seventeenth century, a second agricultural revolution took place which increased the efficiency of production as well as distribution, which allowed more people to move to the cities as the industrial revolution got underway. The eighteenth century's European colonies became sources of raw agricultural and mineral products for the industrializing nations.

Now, many of the countries which were once colonies of Europe, especially those in Central America, are still heavily involved in the same types of agricultural production as they were hundreds of years ago. Farming in the twentieth century has become highly technological in more developed nations with geographical technologies like GIS, GPS, and remote sensing while less developed nations continue with practices which are similar to those developed after the first agricultural revolution, thousands of years ago.

Types of Agriculture

About 45% of the world's population makes their living through agriculture. The proportion of the population involved in agriculture ranges from about 2% in the United States to about 80% in some parts of Asia and Africa. There are two types of agriculture, subsistence, and commercial.

There are millions of subsistence farmers in the world, those who produce only enough crops to feed their families.

Many subsistence farmers use the slash and burn or swidden agricultural method. Swidden is a technique used by about 150 to 200 million people and is especially prevalent in Africa, Latin America, and Southeast Asia. A portion of land is cleared and burned to provide at least one and up to three years of good crops for that portion of land. Once the land can no longer be utilized, a new patch of ground is slashed and burnt for another round of crops. Swidden is not a neat or well-organized method of agricultural production by it is effective for farmers who don't know much about irrigation, soil, and fertilization.

The second type of agriculture is commercial agriculture, where the primary purpose is to sell one's product at market. This takes place throughout the world and includes major fruit plantations in Central America as well as huge agribusiness wheat farms in the Midwestern United States.

Text 2
THE HISTORY AND EVOLUTION OF SUBURBS

Suburbs are generally spread out over greater distances than other types of living environments. For instance, people may live in the suburb in order to avoid the density and untidiness of the city. Since people have to get around these vast stretches of land automobiles are common sights in suburbs. Transportation (including, to a limited extent, trains and buses) plays an important role in the life of a suburban resident who generally commutes to work.

People also like to decide for themselves how to live and what rules to live by. Suburbs offer them this independence. Local governance is common here in the form of community councils, forums, and elected officials. A good example of this is a Home Owners Association, a group common to many suburban neighborhoods that determines specific rules for the type, appearance, and size of homes in a community.

People living in the same suburb usually share similar backgrounds with regard to race, socioeconomic status, and age. Often, the houses that make up the area are similar in appearance, size, and blueprint, a layout design referred to as tract housing, or cookie-cutter housing.

History of Suburbs

Suburbs are not a modern concept, as this 539 BCE clay tablet letter from an early suburbanite to the king of Persia makes clear: "Our property seems to me the most beautiful in the world. It is so close to Babylon that we enjoy all the advantages of the city, and yet when we come home we stay away from all the noise and dust."

Other early examples of suburbs include areas created for lower class citizens outside of Rome, Italy during the 1920s, streetcar suburbs in Montreal, Canada created during the late 1800s, and the picturesque Llewellyn Park, New Jersey, created in 1853.

Henry Ford was a big reason why suburbs caught on the way they did. His innovative ideas for making cars cut manufacturing costs, reducing the retail price for customers. Now that an average family could afford a car, more people could go to and from home and work everyday. Additionally, the development of the Interstate Highway System further encouraged suburban growth.

The government was another player that encouraged movement out of the city. Federal legislation made it cheaper for someone to construct a new home outside of the city than to improve upon a preexisting structure in the city. Loans and subsidies were also provided to those willing to move to new planned suburbs (usually wealthier white families).

Rapid growth of suburbia characterized the post-World War II era for three chief reasons:

- The economic boom following World War II
- The need for housing returning veterans and baby boomers relatively cheaply
- Whites fleeing the desegregation of urban cities brought on by the civil rights movement (the "White Flight")

Current Trends

In other parts of the world suburbs do not resemble the affluence of their American counterparts. Due to extreme poverty, crime, and lack of infrastructure suburbs in developing parts of the world are characterized by higher density and lower standards of living.

One issue arising from suburban growth is the disorganized, reckless manner in which neighborhoods are built, called sprawl. Because of the desire for larger plots of land and the rural feel of the countryside, new developments are infringing upon more and more of the natural, uninhabited land. The unprecedented growth of population in the past century will continue to fuel the expansion of suburbs in the coming years.

Text 3
THE ROLE OF COLORS ON MAPS

Cartographers use color on maps to represent certain features. Color use is always consistent on a single map and often consistent across different types of maps made by different cartographers and publishers.

Many colors used on maps have a relationship to an object or feature on the ground. For example, blue is almost always the color chosen for water.

Political Maps

Political maps, or those that show government boundaries, usually use more map colors than physical maps, which represent the landscape often without regard for human modification, such as country or state borders.

Political maps often use four or more colors to represent different countries or internal divisions of countries, such as states or provinces. Blue often represents water and black and/or red is frequently used for cities, roads, and railways. Black also shows boundaries, with differing types of dashes and/or dots used to represent the type of boundary: international, state, county, or other political subdivision.

Physical Maps

Physical maps use color most dramatically to show changes in elevation. A palette of greens often displays elevations. Dark green usually represents low-lying land, with lighter shades of green used for higher elevations. In the next higher elevations, physical maps often use a palette of light brown to dark brown. Such maps commonly use reds, white, or purples to represent the highest elevations shown on the map.

It is important to remember that on maps that use shades of greens, browns, and the like, color does not represent ground cover. For example, showing the Mojave Desert in green due to low elevation doesn't mean that the desert is lush with green crops. Likewise, showing mountain peaks in white does not indicate that the mountains are capped with ice and snow all year long.

On physical maps, blues are used for water, with darker blues representing the deepest water. Green-gray, red, blue-gray, or some other color is used for elevations below sea level.

General-Interest Maps

Road maps and other general-use maps are often a jumble of color, with some of the following schemes:

- **Blue:** lakes, rivers, streams, oceans, reservoirs, highways, and local borders
- **Red:** major highways, roads, urban areas, airports, special-interest sites, military sites, place names, buildings, and borders
- **Yellow:** built-up or urban areas
- **Green:** parks, golf courses, reservations, forest, orchards, and highways
- **Brown:** deserts, historical sites, national parks, military reservations or bases, and contour (elevation) lines
- **Black:** roads, railroads, highways, bridges, place names, buildings, and borders

Choropleth Maps

Special maps called choropleth maps use color to represent statistical data for a given area. Typically, choropleth maps represent each county, state, or country with a color based on the data for that area. For example, a common choropleth map of the United States shows a state-by-state breakdown of which states voted Republican (red) and Democratic (blue).

Choropleth maps can also be used to show population, educational attainment, ethnicity, density, life expectancy, the prevalence of a certain disease, and much more. When mapping certain percentages, cartographers who design choropleth maps often use different shades of the same color, producing a nice visual effect. For example, a map of county-by-county per capita income in a state could use a range of green from light green for the lowest per-capita income to dark green for the highest per-capita income.

Text 4
ARE GEORGIA, ARMENIA, AND AZERBAIJAN IN ASIA OR EUROPE?

Geographically speaking, the nations of Georgia, Armenia, and Azerbaijan lie between the Black Sea to the west and the Caspian Sea to the east. But is this part of the world in Europe or in Asia? The answer to that question depends on who you ask.

Why Are Europe and Asia Different Continents?

Although most people are taught that Europe and Asia are separate continents, this definition isn't entirely correct. A continent is generally defined as a large mass of land occupying most or all of a single tectonic plate, surrounded by water. By that definition, Europe and Asia aren't separate continents at all. Instead, they share the same large landmass that stretches from the Atlantic Ocean in the east to the Pacific in the west. Geographers call this supercontinent Eurasia.

The boundary between what is considered Europe and what is considered Asia is a largely arbitrary one, determined by a coincidental mix of geography, politics, and human ambition. Although there are divisions between Europe and Asia dating back as far as ancient Greece, the modern Europe-Asia border was first established in 1725 by a German explorer named Philip Johan von Strahlenberg. Von Strahlenberg chose the Ural Mountains in western Russia as the hypothetical dividing line between the continents. This mountain range stretches from the Arctic Ocean in the north to the Caspian Sea in the south.

Politics Versus Geography

The precise definition of where Europe and Asia were located was debated well into the 19th century, as the Russian and Iranian empires battled repeatedly for political supremacy of the southern Caucasus Mountains where Georgia, Azerbaijan, and Armenia lie. But by the time of the Russian Revolution, when the U.S.S.R. consolidated its borders, the issue had become moot. The Urals lay well within the Soviet Union's borders, as did territories on its periphery, such as Georgia, Azerbaijan, and Armenia.

With the fall of the U.S.S.R. in 1991, these and other former Soviet republics achieved independence, if not political stability. Geographically speaking, their re-emergence on the international stage renewed debate over whether Georgia, Azerbaijan, and Armenia lie within Europe or Asia.

If you use the invisible line of the Ural Mountains and continue it south into the Caspian Sea, then the nations of the southern Caucasus lie within Europe. It might be better to argue that Georgia, Azerbaijan, and Armenia are instead the gateway to southwestern Asia. Over the centuries, this region has been ruled by the Russians, the Iranians, Ottoman, and Mongol powers.

Text 5
THE GLOBAL IMPACTS OF THE BLACK DEATH

The Black Death was one of the worst pandemics in human history. In the 14th century, at least 75 million people on three continents perished due to the painful, highly contagious disease. Originating from fleas on rodents in China, the "Great Pestilence" spread westward and spared few regions. In Europe's cities, hundreds died daily and their bodies were usually thrown into mass graves. The plague devastated towns, rural communities, families, and religious institutions. Following centuries of a rise in population, the world's population experienced a catastrophic reduction and would not be replenished for more than one hundred years.

Origins and Path of the Black Death

The Black Death originated in China or Central Asia and was spread to Europe by fleas and rats that resided on ships and along the Silk Road. The Black Death killed millions in China, India, Persia (Iran), the Middle East, the Caucasus, and North Africa. To harm the citizens during a siege in 1346, Mongol armies may have thrown infected corpses over the city wall of Caffa, on the Crimean peninsula of the Black Sea. Italian traders from Genoa were also infected and returned home in 1347, introducing the Black Death into Europe. From Italy, the disease spread to France, Spain, Portugal, England, Germany, Russia, and Scandinavia.

Science of the Black Death

The three plagues associated with the Black Death are now known to be caused by bacteria called Yersinia Pestis, which is carried and spread by fleas on rats.

When the rat died after continual bites and replication of the bacteria, the flea survived and moved to other animals or humans. Although some scientists believe that the Black Death was caused by other diseases like anthrax or the Ebola virus, recent research which extracted DNA from the skeletons of victims suggests that Yersinia Pestis was the microscopic culprit of this global pandemic.

Types and Symptoms of the Plague

The first half of the 14th century was marred by war and famine. Global temperatures dropped slightly, decreasing agricultural production and causing food shortages, hunger, malnutrition, and weakened immune systems. The human body became very vulnerable to the Black Death, which was caused by three forms of the plague.

Bubonic plague, caused by flea bites, was the most common form. The infected would suffer from fever, headaches, nausea, and vomiting. Swelling called buboes and dark rashes appeared on the groin, legs, armpits, and neck. The pneumonic plague, which affected the lungs, spread through the air by coughs and sneezes. The most severe form of the plague was the septicemic plague. The bacteria entered the bloodstream and killed every person affected within hours. All three forms of the plague spread quickly due to overpopulated, unsanitary cities. Proper treatment was unknown, so most people died within a week after infection with the Black Death.

Death Toll Estimates of the Black Death

Due to poor or non-existent record-keeping, it has been difficult for historians and scientists to determine the true number of people that died of the Black Death. In Europe alone, it is likely that from 1347-1352, the plague killed at least twenty million people, or one-third of Europe’s population.

The populations of Paris, London, Florence, and other great European cities were shattered. It would take approximately 150 years-into the 1500s- for Europe’s population to equal pre-plague levels. Initial plague infections and recurrences of the plague caused the world’s population to drop by at least 75 million people in the 14th century.

Unexpected Economic Benefit of the Black Death

The Black Death finally lapsed in approximately 1350, and profound economic changes took place. Worldwide trade declined, and wars in Europe paused during the Black Death. People had abandoned farms and villages during the plague. Serfs were no longer tied to their previous plot of land. Due to a severe labor shortage, serf survivors were able to demand higher wages and better working conditions from their new landlords. This may have contributed to the rise of capitalism. Many serfs moved to cities and contributed to the rise in urbanization and industrialization.

Cultural and Social Beliefs and Changes of the Black Death

Medieval society did not know what caused the plague or how it spread. Most blamed the suffering as a punishment from God or astrological misfortune. Thousands of Jewish people were murdered when Christians claimed that they caused the plague by poisoning wells. Lepers and beggars were also accused and harmed. Art, music, and literature during this era were gruesome and gloomy. The Catholic Church suffered a credibility loss when it could not explain the disease. This contributed to the development of Protestantism.

Scourge Spread Across the World

The Black Death of the 14th century was a tremendous interrupter of worldwide population growth. The bubonic plague still exists, although it can now be treated with antibiotics. Fleas and their unknowing human carriers traveled across a hemisphere and infected one person after another. Survivors of this swift menace seized the opportunities that arose from altered social and economic structures. Although humanity will never know the exact death toll, researchers will continue to study the epidemiology and history of the plague to ensure that this horror never happens again.

Text 6
SUEZ CANAL HISTORY AND OVERVIEW

The Suez Canal, a major shipping lane through Egypt, connects the Mediterranean Sea with the Gulf of Suez, a northern branch of the Red Sea. It officially opened in November 1869.

Construction History

In 1858, the Universal Suez Ship Canal Company was formed and given the right to begin construction of the canal and operate it for 99 years, when the Egyptian government would take over control. At its founding, the Universal Suez Ship Canal Company was owned by French and Egyptian interests.

Construction of the Suez Canal officially began on April 25, 1859. Low-paid forced Egyptian labors using picks and shovels did the initial digging which was extremely slow and painstaking. This was eventually abandoned for steam- and coal-powered machines that quickly finished the work.

It opened 10 years later on November 17, 1869, at a cost of $100 million.

Significant Impact on World Trade

Almost immediately, the Suez Canal had a significant impact on world trade as goods were moved around the world in record time.

Its initial size was 25 feet (7.6 meters) deep, 72 feet (22 meters) wide at the bottom and between 200 feet and 300 feet (61-91 meters) wide at the top.

In 1875, debt forced Egypt to sell its shares in ownership of the Suez Canal to the United Kingdom. However, an international convention in 1888 made the canal available for all ships from any nation to use.

Conflicts Over Use and Control

A few conflicts have arisen over the use and control of the Suez Canal:

- **1936:** The United Kingdom was given the right to maintain military forces in the Suez Canal Zone and control entry points.
- **1954:** Egypt and the United Kingdom signed a seven-year contract that resulted in the withdrawal of British forces from the canal area and allowed Egypt to take control of the former British installations.
- **1948:** With the creation of Israel, the Egyptian government prohibited the use of the canal by ships coming and going from the country.

The Suez Crisis

In July 1956, Egyptian President Gamal Abdel Nasser, announced the country was nationalizing the canal to help finance the Aswan High Dam after the United States and the United Kingdom withdrew support from funding.

On October 29 of that same year, Israel invaded Egypt and two days later Britain and France followed on grounds that passage through the canal was to be free. In retaliation, Egypt blocked the canal by intentionally sinking 40 ships.

The Soviet Union offers to back Egypt militarily, and eventually, the Suez Crisis is ended with a United Nations-negotiated cease fire.

A Truce and Later Egypt Takes Control

In November 1956, the Suez Crisis ended when the United Nations arranged a truce between the four nations. The Suez Canal then reopened in March 1957 when the sunken ships were removed.

Throughout the 1960s and 1970s, the Suez Canal was closed several more times because of conflicts between Egypt and Israel. Following the Six-Day War in 1967, 14 ships that were in passage in the canal became trapped and could not leave until 1975 because both ends of the canal were blocked by sunken boats on either side of the canal. They became known as the "Yellow Fleet" for the desert sand that accumulated on them over the years.

In 1962, Egypt made its final payments for the canal to its original owners (the Universal Suez Ship Canal Company) and the nation took full control of the Suez Canal.

101 Miles Long and 984 Feet Wide

Today, the Suez Canal is operated by the Suez Canal Authority. The canal itself is 101 miles (163 kilometers) long and 984 feet (300 meters) wide.

It begins at the Mediterranean Sea at Point Said, flows through Ismailia in Egypt, and ends at Suez on the Gulf of Suez. It also has a railroad running its entire length parallel to its west bank.

The Suez Canal can accommodate ships with a vertical height (draft) of 62 feet (19 meters) or 210,000 deadweight tons.

Most of the Suez Canal is not wide enough for two ships to pass side by side. To accommodate this, there is one shipping lane and several passing bays where ships can wait for others to pass.

The Significance of the Suez Canal

In addition to dramatically reducing transit time for trade worldwide, the Suez Canal is one of the world's most significant waterways as it supports 8% of the world's shipping traffic. Almost 50 ships pass through the canal daily.

Because of its narrow width, the canal is also considered a significant geographic chokepoint as it could easily be blocked and disrupt this flow of trade.

Future plans for the Suez Canal include a project to widen and deepen the canal to accommodate the passage of larger and more ships at one time.

Text 7
THE LINK BETWEEN BIOMES AND CLIMATE

Geography is interested in how people and cultures relate to the physical environment. The largest environment of which we are part is the biosphere. The biosphere is the part of the earth's surface and its atmosphere where organisms exist. It has also been described as the life-supporting layer that surrounds the Earth.

The biosphere we live in is made up of biomes. A biome is a large geographical region where certain types of plants and animals thrive. Each biome has a unique set of environmental conditions and plants and animals that have adapted to those conditions. The major land biomes have names like tropical rainforest, grasslands, desert, temperate deciduous forest, taiga (also called coniferous or boreal forest), and tundra.

Climate and Biomes

The differences in these biomes can be traced to differences in climate and where they are located in relation to the Equator. Global temperatures vary with the angle at which the sun's rays strike the different parts of the Earth's curved surface. Because the sun's rays hit the Earth at different angles at different latitudes, not all places on Earth receive the same amount of sunlight. These differences in the amount of sunlight cause differences in temperature.

Biomes located in the high latitudes (60° to 90°) farthest from the Equator (taiga and tundra) receive the least amount of sunlight and have lower temperatures. Biomes located at middle latitudes (30° to 60°) between the poles and the Equator (temperate deciduous forest, temperate grasslands, and cold deserts) receive more sunlight and have moderate temperatures. At the low latitudes (0° to 23°) of the Tropics, the sun's rays strike the Earth most directly. As a result, the biomes located there (tropical rainforest, tropical grassland, and the warm desert) receive the most sunlight and have the highest temperatures.

Another notable difference between biomes is the amount of precipitation. In the low latitudes, the air is warm, due to the amount of direct sunlight, and moist, due to evaporation from warm sea waters and ocean currents. Storms produce so much rain that the tropical rain forest receives 200+ inches per year, while the tundra, located at a much higher latitude, is much colder and dryer, and receives just ten inches.

Soil moisture, soil nutrients, and length of growing season also affect what kinds of plants can grow in a place and what kinds of organisms the biome can sustain. Along with temperature and precipitation, these are factors that distinguish one biome from another and influence the dominant types of vegetation and animals that have adapted to a biome's unique characteristics.

As a result, different biomes have different kinds and quantities of plants and animals, which scientists refer to as biodiversity. Biomes with greater kinds or quantities of plants and animals are said to have high biodiversity. Biomes like the temperate deciduous forest and grasslands have better conditions for plant growth. Ideal conditions for biodiversity include moderate to abundant precipitation, sunlight, warmth, nutrient-rich soil, and a long growing season. Because of the greater warmth, sunlight, and precipitation in the low latitudes, the tropical rainforest has greater numbers and kinds of plants and animals than any other biome.

Low Biodiversity Biomes

Biomes with low precipitation, extreme temperatures, short growing seasons, and poor soil have low biodiversity -- fewer kinds or amounts of plants and animals -- due to less than ideal growing conditions and harsh, extreme environments. Because desert biomes are inhospitable to most life, plant growth is slow and animal life is limited. Plants there are short and the burrowing, nocturnal animals are small in size. Of the three forest biomes, the taiga has the lowest biodiversity. Cold year-round with harsh winters, the taiga has low animal diversity.

In the tundra, the growing season lasts a mere six to eight weeks, and plants there are few and small. Trees can't grow due to permafrost, where only the top few inches of the ground thaw during the short summer. The grasslands biomes are considered to have more biodiversity, but only grasses, wildflowers, and a few trees have adapted to its strong winds, seasonal droughts, and annual fires. While biomes with low biodiversity tend to be inhospitable to most life, the biome with the highest biodiversity is inhospitable to most human settlement.

A particular biome and its biodiversity have both potential and limitations for human settlement and meeting human needs. Many of the important issues facing modern society are the consequences of the way humans, past and present, use and change biomes and how that has affected the biodiversity in them.

Text 8
OCEAN WAVES: ENERGY, MOVEMENT, AND THE COAST

Waves are the forward movement of the ocean's water due to the oscillation of water particles by the frictional drag of wind over the water's surface.

Size of a Wave

Waves have crests (the peak of the wave) and troughs (the lowest point on the wave). The wavelength, or horizontal size of the wave, is determined by the horizontal distance between two crests or two troughs. The vertical size of the wave is determined by the vertical distance between the two. Waves travel in groups called wave trains.

Different Kinds of Waves

Waves can vary in size and strength based on wind speed and friction on the water's surface or outside factors such as boats. The small wave trains created by a boat's movement on the water are called wake. By contrast, high winds and storms can generate large groups of wave trains with enormous energy.

In addition, undersea earthquakes or other sharp motions in the seafloor can sometimes generate enormous waves, called tsunamis (inappropriately known as tidal waves) that can devastate entire coastlines.

Finally, regular patterns of smooth, rounded waves in the open ocean are called swells. Swells are defined as mature undulations of water in the open ocean after wave energy has left the wave generating region. Like other waves, swells can range in size from small ripples to large, flat-crested waves.

Wave Energy and Movement

When studying waves, it is important to note that while it appears the water is moving forward, only a small amount of water is actually moving. Instead, it is the wave's energy that is moving and since water is a flexible medium for energy transfer, it looks like the water itself is moving.

In the open ocean, the friction moving the waves generates energy within the water. This energy is then passed between water molecules in ripples called waves of transition. When the water molecules receive the energy, they move forward slightly and form a circular pattern.

As the water's energy moves forward toward the shore and the depth decreases, the diameter of these circular patterns also decreases. When the diameter decreases, the patterns become elliptical and the entire wave's speed slows. Because waves move in groups, they continue arriving behind the first and all of the waves are forced closer together since they are now moving slower. They then grow in height and steepness. When the waves become too high relative to the water's depth, the wave's stability is undermined and the entire wave topples onto the beach forming a breaker.

Breakers come in different types -- all of which are determined by the slope of the shoreline. Plunging breakers are caused by a steep bottom; and spilling breakers signify that the shoreline has a gentle, gradual slope.

The exchange of energy between water molecules also makes the ocean crisscrossed with waves traveling in all directions. At times, these waves meet and their interaction is called interference, of which there are two types. The first occurs when the crests and troughs between two waves align and they combine. This causes a dramatic increase in wave height. Waves can also cancel each other out though when a crest meets a trough or vice-versa. Eventually, these waves do reach the beach and the differing size of breakers hitting the beach is caused by interference farther out in the ocean.

Ocean Waves and the Coast

Since ocean waves are one of the most powerful natural phenomena on Earth, they have a significant impact on the shape of the Earth's coastlines. Generally, they straighten coastlines. Sometimes though, headlands composed of rocks resistant to erosion jut into the ocean and force waves to bend around them. When this happens, the wave's energy is spread out over multiple areas and different sections of the coastline receive different amounts of energy and are thus shaped differently by waves.

One of the most famous examples of ocean waves impacting the coastline is that of the longshore or littoral current. These are ocean currents created by waves that are refracted as they reach the shoreline. They are generated in the surf zone when the front end of the wave is pushed onshore and slows. The back of the wave, which is still in deeper water moves faster and flows parallel to the coast. As more water arrives, a new portion of the current is pushed onshore, creating a zigzag pattern in the direction of the waves coming in.

Longshore currents are important to the shape of the coastline because they exist in the surf zone and work with waves hitting the shore. As such, they receive large amounts of sand and other sediment and transport it down the shore as they flow. This material is called longshore drift and is essential to the building up of many of the world's beaches.

The movement of sand, gravel, and sediment with longshore drift is known as deposition. This is just one type of deposition affecting the world's coasts though, and have features formed entirely through this process. Depositional coastlines are found along areas with gentle relief and a lot of available sediment.

Coastal landforms caused by deposition include barrier spits, bay barriers, lagoons, tombolos and even beaches themselves. A barrier spit is a landform made up of material deposited in a long ridge extending away from the coast. These partially block the mouth of a bay, but if they continue to grow and cut off the bay from the ocean, it becomes a bay barrier. A lagoon is the water body that is cut off from the ocean by the barrier. A tombolo is the landform created when deposition connects the shoreline with islands or other features.

In addition to deposition, erosion also creates many of the coastal features found today. Some of these include cliffs, wave-cut platforms, sea caves, and arches. Erosion can also act in removing sand and sediment from beaches, especially on those that have heavy wave action.

Text 9
GEOGRAPHY OF THE MEDITERRANEAN SEA

The Mediterranean Sea is a large sea or body of water that is located between Europe, northern Africa, and southwestern Asia. Its total area is 970,000 square miles (2,500,000 sq km) and its greatest depth is located off the coast of Greece at around 16,800 feet (5,121 m) deep. The average depth of the sea, however, is about 4,900 feet (1,500 m). The Mediterranean Sea is connected to the Atlantic Ocean via the narrow Strait of Gibraltar between Spain and Morocco. This area is only about 14 miles (22 km) wide.

The Mediterranean Sea is known for being an important historic trade path and a strong factor in the development of the region around it.

History of the Mediterranean Sea

The region around the Mediterranean Sea has a long history that dates back to ancient times. For example, Stone Age tools have been discovered by archeologists along its shores and it is believed that the Egyptians began sailing on it by 3000 B.C.E. Early people of the region used the Mediterranean as a trade route and as a way to move to and colonize other regions. As a result, the sea was controlled by several different ancient civilizations. These include the Minoan, Phoenician, Greek, and later the Roman civilizations.

In the 5th century C.E. however, Rome fell and the Mediterranean Sea and the region around it became controlled by the Byzantines, Arabs and Ottoman Turks. By the 12th-century trade in the region was growing as Europeans began exploration expeditions. In the late 1400s though, trade traffic in the region decreased when European traders discovered new, all water trade routes to India and the Far East. In 1869, however, the Suez Canal opened and trade traffic again increased.

In addition, the opening of the Suez Canal the Mediterranean Sea also became an important strategic location for many European nations and as a result, the United Kingdom and France began building colonies and naval bases along its shores. Today the Mediterranean is one of the busiest seas in the world. Trade and shipping traffic is prominent and there is also a significant amount of fishing activity in its waters. In addition, tourism is also a large part of the region's economy because of its climate, beaches, cities, and historic sites.

Geography of the Mediterranean Sea

The Mediterranean Sea is a very large sea that is bounded by Europe, Africa, and Asia and stretches from the Strait of Gibraltar on the west to the Dardanelles and the Suez Canal on the east. It is almost completely enclosed aside from these narrow locations. Because it is almost landlocked, the Mediterranean has very limited tides and it is warmer and saltier than the Atlantic Ocean. This is because evaporation exceeds precipitation and runoff and circulation of the sea's waters does not occur as easily as it would if were more connected to the ocean, however enough water flows into the sea from the Atlantic Ocean that is water level does not fluctuate much.

Geographically, the Mediterranean Sea is divided into two different basins—the Western Basin and the Eastern Basin. The Western Basin extends from the Cape of Trafalgar in Spain and the Cape of Spartel in Africa in the west to Tunisia's Cape Bon in the east. The Eastern Basin stretches from the eastern boundary of the Western Basin to the coasts of Syria and Palestine.

In total, the Mediterranean Sea borders 21 different nations as well as several different territories. Some of the nations with borders along the Mediterranean include Spain, France, Monaco, Malta, Turkey, Lebanon, Israel, Egypt, Libya, Tunisia, and Morocco. It also borders several smaller seas and is home to over 3,000 islands. The largest of these islands are Sicily, Sardinia, Corsica, Cyprus, and Crete.

The topography of the land surrounding the Mediterranean Sea is varied and there is an extremely rugged coastline in is northern areas. High mountains and steep, rocky cliffs are common here, though in other areas the coastline is flatter and dominated by desert. The temperature of the Mediterranean's water also varies but in general, it is between 50 F and 80 F (10 C and 27 C).

Ecology of and Threats to the Mediterranean Sea

The Mediterranean Sea has a large number of different fish and mammal species that are mainly derived from the Atlantic Ocean. However, because the Mediterranean is warmer and saltier than the Atlantic, these species have had to adapt. Harbor porpoises, Bottlenose Dolphins, and Loggerhead Sea Turtles are common in the sea.

There are a number of threats to the biodiversity of the Mediterranean Sea, though. Invasive species are one of the most common threats as ships from other regions often bring in non-native species and Red Sea water and species enter the Mediterranean at the Suez Canal. Pollution is also a problem as cities on the coasts of the Mediterranean have dumped chemicals and waste into the sea in recent years. Overfishing is another threat to the Mediterranean Sea's biodiversity and ecology as is tourism because both are putting strains on the natural environment.

Text 10
LAYERS OF THE ATMOSPHERE

Earth is surrounded by its atmosphere, which is the body of air or gases that protects the planet and enables life. Most of our atmosphere is located close to Earth's surface, where it is most dense. It has five distinct layers. Let's look at each, from closest to farthest from the Earth.

Troposphere

The layer of the atmosphere closest to the Earth is the troposphere. It begins at the surface of the Earth and extends out to about 4 to 12 miles (6 to 20 km). This layer is known as the lower atmosphere. It's where weather happens and contains the air humans breathe. The air of our planet is 79 percent nitrogen and just under 21 percent oxygen; the small amount remaining is composed of carbon dioxide and other gases. The temperature of the troposphere decreases with height.

Stratosphere

Above the troposphere is the stratosphere, which extends to about 31 miles (50 km) above the Earth's surface. This layer is where the ozone layer exists and scientists send weather balloons. Jets fly in the lower stratosphere to avoid turbulence in the troposphere. Temperature rises within the stratosphere but still remains well below freezing.

Mesosphere

From about 31 to 53 miles (50 to 85 km) above the surface of the Earth lies the mesosphere, where the air is especially thin and molecules are great distances apart. Temperatures in the mesosphere reach a low of -130 degrees Fahrenheit (-90 C). This layer is difficult to study directly; weather balloons can't reach it, and weather satellites orbit above it. The stratosphere and the mesosphere are known as the middle atmospheres.

Thermosphere

The thermosphere rises several hundred miles above the Earth's surface, from 56 miles (90 km) up to between 311 and 621 miles (500–1,000 km). Temperature is very much affected by the sun here; it can be 360 degrees Fahrenheit hotter (500 C) during the day than at night. Temperature increases with height and can rise to as high as 3,600 degrees Fahrenheit (2000 C). Nonetheless, the air would feel cold because the hot molecules are so far apart. This layer is known as the upper atmosphere, and it is where the auroras occur (northern and southern lights).

Exosphere

Extending from the top of the thermosphere to 6,200 miles (10,000 km) above Earth is the exosphere, where weather satellites are. This layer has very few atmospheric molecules, which can escape into space. Some scientists disagree that the exosphere is a part of the atmosphere and instead classify it actually as a part of outer space. There is no clear upper boundary, as in other layers.

Pauses

Between each layer of the atmosphere is a boundary. Above the troposphere is the tropopause, above the stratosphere is the stratopause, above the mesosphere is the mesopause, and above the thermosphere is the thermopause. At these "pauses", maximum change between the "spheres" occur.

Ionosphere

The ionosphere isn't actually a layer of the atmosphere but regions in the layers where there are ionized particles (electrically charged ions and free electrons), especially located in the mesosphere and thermosphere. The altitude of the ionosphere's layers changes during the day and from one season to another.

Text 11
SALT FLATS

Salt flats, also called salt pans, are large and flat areas of land that were once lake beds. Salt flats are covered with salt and other minerals and they oftentimes look white because of the salt presence. These areas of land generally form in deserts and other arid places where large bodies of water have dried up over thousands of years and the salt and other minerals are the remnants. There are salt flats found around the world but some of the largest examples include the Salar de Uyuni in Bolivia, the Bonneville Salt Flats in the state of Utah and those found in California's Death Valley National Park.

Formation of Salt Flats

There are three basic things that are needed for salt flats to form. These are a source of salts, an enclosed drainage basin so the salts do not wash out and an arid climate where evaporation is greater than precipitation so the salts can get left behind when the water dries up.

An arid climate is the most important component of salt flat formation. In arid places, rivers with large, meandering stream networks are rare because of a lack of water. As a result, many lakes, if they exist at all, do not have natural outlets such as streams. Enclosed drainage basins are important because they hinder the formation of water outlets. In the western United States, for instance, there is the basin and range region in the states of Nevada and Utah. The topography of these basins consist of deep, flat bowls where the drainage is enclosed because water draining out of the region cannot climb up the mountain ranges surrounding the basins (Alden). Finally, the arid climate comes into play because evaporation must exceed precipitation in the water in the basins for the salt flats to eventually form.

In addition to enclosed drainage basins and arid climates, there must also be an actual presence of salt and other minerals in the lakes for salt flats to form. All water bodies contain a variety of dissolved minerals and as lakes dry up through thousands of years of evaporation the minerals become solids and are dropped where the lakes once were. Calcite and gypsum are among some of the minerals found in water but salts, mostly halite, are found in large concentrations in some bodies of water (Alden). It is in places where halite and other salts are found in abundance that salt flats eventually form.

Salar de Uyuni

Large salt flats are found around the world in places such as the United States, South America, and Africa. The largest salt flat in the world is the Salar de Uyuni, located in the Potosi and Oruro, Bolivia. It covers 4,086 square miles (10,852 sq km) and is located at an elevation of 11,995 feet (3,656 m).

The Salar de Uyuni is a part of the Altiplano plateau that formed as the Andes Mountains were uplifted. The plateau is home to many lakes and the salt flats formed after several prehistoric lakes evaporated over thousands of years. Scientists believe that the area was an extremely large lake called Lake Minchin around 30,000 to 42,000 years ago. As Lake Minchin began to dry up due to a lack of precipitation and no outlet (the region is surrounded by the Andes Mountains) it became a series of smaller lakes and dry areas. Eventually, the Poopó and Uru Uru lakes and the Salar de Uyuni and Salar de Coipasa salt flats were all that remained.

The Salar de Uyuni is significant not only because of its very large size but also because it is a large breeding ground for pink flamingoes, it serves as a transportation route across the Altiplano and it is a rich area for the mining of valuable minerals such as sodium, potassium, lithium and magnesium.

Bonneville Salt Flats

The Bonneville Salt Flats are located in the U.S. state of Utah between the border with Nevada and the Great Salt Lake. They cover about 45 square miles (116.5 sq km) and are managed by the United States Bureau of Land Management as an Area of Critical Environmental Concern and a Special Recreation Management Area. They are part of the United States' Basin and Range system.

The Bonneville Salt Flats are a remnant of the very large Lake Bonneville that existed in the area about 17,000 years ago. At its peak, the lake was 1,000 feet (304 m) deep. According to the Bureau of Land Management, evidence for the lake's depth can be seen on the surrounding Silver Island Mountains. The salt flats began to form as precipitation decreased with a changing climate and the water in Lake Bonneville began to evaporate and recede. As the water evaporated, minerals such as potash and halite were deposited on the remaining soils. Eventually, these minerals built up and were compacted to form a hard, flat, and salty surface.

Today the Bonneville Salt Flats are about 5 feet (1.5 m) thick at their center and just are just a few inches thick at the edges. The Bonneville Salt Flats are about 90% salt and consists of about 147 million tons of salt.

Death Valley

The Badwater Basin salt flats located in California's Death Valley National Park cover about 200 square miles (518 sq km). It is believed that the salt flats are the remnants of the ancient Lake Manly that filled Death Valley about 10,000 to 11,000 years ago as well as more active weather processes today.

The main sources of Badwater Basin's salt are what was evaporated from that lake but also from Death Valley's nearly 9,000-square mile (23,310 sq km) drainage system that extends to the peaks surrounding the basin. During the wet season precipitation falls on these mountains and then runs off into the very low elevation Death Valley (Badwater Basin is, in fact, the lowest point in North America at -282 feet (-86 m)). In wet years, temporary lakes form and during the very hot, dry summers this water evaporates and minerals such as sodium chloride are left behind. After thousands of years, a salt crust has formed, creating salt flats.

Activities on Salt Flats

Because of the large presence of salts and other minerals, salt flats are often places that are mined for their resources. In addition, there are many other human activities and development that have taken place on them because of their very large, flat nature.

Text 12
MASS WASTING AND LANDSLIDES

Mass wasting, sometimes called mass movement, is the downward movement by gravity of rock, regolith (loose, weathered rock) and/or soil on the sloped top layers of the Earth's surface. It is a significant part of the process of erosion because it moves material from high elevations to lower elevations. It can be triggered by natural events like earthquakes, volcanic eruptions and flooding, but gravity is its driving force.

Although gravity is the driving force of mass wasting, it is impacted mainly by the slope material's strength and cohesiveness as well as the amount of friction acting on the material. If friction, cohesion, and strength (collectively known as the resisting forces) are high in a given area, mass wasting is less likely to occur because the gravitational force does not exceed the resisting force.

The angle of repose also plays a role in whether a slope will fail or not. This is the maximum angle at which loose material becomes stable, usually 25°-40°, and is caused by a balance between gravity and the resisting force. If, for example, a slope is extremely steep and the gravitational force is greater than that of the resisting force, the angle of repose has not been met and the slope is likely to fail. The point at which mass movement does occur is called the shear-failure point.

Types of Mass Wasting

Once the force of gravity on a mass of rock or soil reaches the shear-failure point, it can fall, slide, flow or creep down a slope. These are the four types of mass wasting and are determined by the speed of the material's movement downslope as well as the amount of moisture found in the material.

Falls and Avalanches

The first type of mass wasting is a rockfall or avalanche. A rockfall is a large amount of rock that falls independently from a slope or cliff and forms an irregular pile of rock, called a talus slope, at the base of the slope. Rockfalls are fast moving, dry types of mass movements. An avalanche, also called a debris avalanche, is a mass of falling rock, but also includes soil and other debris. Like a rockfall, an avalanche moves quickly but because of the presence of soil and debris, they are sometimes moister than a rockfall.

Landslides

Landslides are another type of mass wasting. They are sudden, fast movements of a cohesive mass of soil, rock or regolith. Landslides occur in two types- the first of which is a translational slide. These involve movement along a flat surface parallel to the angle of the slope in a stepped-liked pattern, with no rotation. The second type of landslide is called a rotational slide and is the movement of surface material along a concave surface. Both types of landslides can be moist, but they are not normally saturated with water.

Flow

Flows, like rockfalls and landslides, are fast-moving types of mass wasting. They are different however because the material within them is normally saturated with moisture. Mudflows, for example, are a type of flow that can occur quickly after heavy precipitation saturates a surface. Earthflows are another type of flow that occur in this category, but unlike mudflows, they are not usually saturated with moisture and move somewhat slower.

Creep

The final and slowest moving type of mass wasting is called soil creep. These are gradual but persistent movements of dry surface soil. In this type of movement, soil particles are lifted and moved by cycles of moistness and dryness, temperature variations and grazing livestock. Freeze and thaw cycles in soil moisture also contribute to creep through frost heaving. When soil moisture freezes, it causes soil particles to expand out. When it melts though, the soil particles move back down vertically, causing the slope to become unstable.

Mass Wasting and Permafrost

In addition to falls, landslides, flows and creep, mass wasting processes also contribute to the erosion of landscapes in areas prone to permafrost. Because drainage is often poor in these areas, moisture collects in soil. During the winter, this moisture freezes, causing ground ice to develop. In the summer, the ground ice thaws and saturates the soil. Once saturated, the layer of soil then flows as a mass from higher elevations to lower elevations, through a mass wasting process called solifluction.

Humans and Mass Wasting

Although most mass wasting processes occur via natural phenomena like earthquakes, human activities like surface mining or the building of a highway or shopping malls can also contribute to mass wasting. Human-induced mass wasting is called scarification and can have the same impacts on a landscape as natural occurrences.

Whether human-induced or natural though, mass wasting plays a significant role in the erosion landscapes all over the world and different mass wasting events have caused damage in cities as well. On March 27, 1964, for example, an earthquake measuring a magnitude of 9.2 near Anchorage, Alaska caused almost 100 mass wasting events like landslides and debris avalanches throughout the state that impacted cities as well as more remote, rural regions.

Today, scientists use their knowledge of local geology and provide extensive monitoring of ground movement to better plan cities and aid in reducing the impacts of mass wasting in populated areas.

Text 13
LATITUDE OR LONGITUDE

Lines of longitude and latitude are part of the grid system that helps us navigate the Earth, but it can be difficult to remember which is which. There is an easy memory trick that anyone can use to keep the two geography terms straight.

Just Remember the Ladder

Next time you are trying to remember the difference between degrees of latitude and longitude, just think of a ladder. The latitude lines are the rungs and the longitude lines are the "long" lines that hold those rungs together.

Latitude lines run east and west. Just like rungs on a ladder, they remain parallel as they run across the earth's surface. In this way, you can easily remember that latitude is just like "ladder"-tude.

In the same manner, you can remember that lines of longitude run north to south because they are "long." If you are looking up a ladder, the vertical lines appear to meet at the top. The same can be said for longitude lines, which converge as they stretch from the North Pole to the South Pole.

How to Remember Latitude and Longitude in Coordinates

Coordinates are often expressed as two sets of numbers. The first number is always the latitude and the second is the longitude. It easy to remember which is which if you think of the two coordinates in alphabetical terms: latitude comes before longitude in the dictionary.

For example, the Empire State Building lies at 40.748440°, -73.984559°. This means that it is approximately 40° north of the equator and 74° west of the prime meridian.

When reading coordinates, you will also come across negative and positive numbers.

- The equator is 0° latitude. Points north of the equator are expressed with positive numbers and points to the south are expressed as negative numbers. There are 90 degrees in either direction.
- The prime meridian is 0° longitude. Points to the east are expressed as positive numbers and points to the west are expressed as negative numbers. There are 180 degrees in either direction.

If positive and negative numbers are not used, the coordinates may include the letter for the direction instead. That same location for the Empire State Building may be formatted like this: N40° 44.9064', W073° 59.0735'.

But wait, where did that extra set of numbers come from? This last example of coordinates is commonly used when reading a GPS and the second numbers (44.9061' and 59.0735') indicate the minutes, which helps us pinpoint the *exact* latitude and longitude of a location.

How Does Time Factor Into Latitude and Longitude?

Let's take a look at latitude because it is the easier of the two examples.

For each 'minute' that you travel north of the equator, you will travel 1/60th of a degree or about 1 mile. That is because there are approximately 69 miles between degrees of latitude (rounded down to 60 to make the examples easier).
In order to get from 40.748440 degrees to an exact 'minute' north of the equator, we need to express those minutes. That is where that second number comes into play.
N40° 44.9064' can be translated as 40 degrees and 44.9064 minutes north of the equator
3 Common Formats of Coordinates
We have reviewed two formats that coordinates can be given in, but there are actually three. Let's review all of them using the Empire State Building example.

- Degrees Alone (DDD.DDDDDD°): 40.748440° (positive number, so this indicates degrees north or east)
- Degrees and Minutes (DDD° MM.MMMM'): N40° 44.9064' (direction with degrees and minutes)
- Degrees, Minutes, and Seconds (DDD° MM.MMMM' SS.S"): N40° 44' 54.384" (direction with degrees, minutes, and seconds)

Text 14
GEOLOGIC FAULTS WHAT IS IT? WHAT ARE THE DIFFERENT KINDS?

A fault is a fracture in rock where there has been movement and displacement. When talking about earthquakes being along fault lines, a fault lies at the major boundaries between Earth's tectonic plates, in the crust, and the earthquakes result from the plates' movements. Plates can slowly and continuously move against each other or can build up stress and suddenly jerk. Most earthquakes are caused by the sudden movements after the stress buildup.

Types of faults include dip-slip faults, reverse dip-slip faults, strike-slip faults, and oblique-slip faults, named for their angle and their displacement. They can be inches long or extend for hundreds of miles. Where the plates crash together and move underground is the fault plane.

Dip-Slip Faults

With normal dip-slip faults, the rock masses compress on each other vertically, and the rock that moves heads downward. They are caused by Earth's crust lengthening. When they're steep, they're called high-angle faults, and when they're relatively flat, they're low-angle or detachment faults.

Dip-slip faults are common in mountain ranges and rift valleys, which are valleys formed by plate movement rather than erosion or glaciers.

In April 2018 in Kenya a 50-foot-wide crack opened up in the earth after periods of heavy rain and seismic activity, running for several miles. It was caused by the two plates that Africa sits upon moving apart.

Reverse Dip-Slip

Reverse dip-slip faults are created from horizontal compression or contracting of Earth's crust. Movement is upward instead of downward. The Sierra Madre fault zone in California contains an example of reverse dip-slip movement, as the San Gabriel Mountains move up and over the rocks in the San Fernando and San Gabriel valleys.

Strike-Slip

Strike-slip faults are also called lateral faults because they happen along a horizontal plane, parallel with the fault line, as the plates slip by each other side by side. These faults are also caused by horizontal compression. The San Andreas Fault is the world's most famous; it splits California between the Pacific Plate and the North American Plate and moved 20 feet (6 m) in the 1906 San Francisco earthquake. These types of faults are common where land and ocean plates meet.

Nature vs. Models

Of course, in nature, things don't always happen in perfect black-or-white alignment with the models to explain the different types of faults, and many may have more than one type of motion. However, the action along faults may fall predominantly into one category. Ninety-five percent of the motion along the San Andreas fault is of the strike-slip variety, according to the United States Geological Survey.

Oblique-Slip

When there's more than one type of motion simultaneously (shearing *and* up or down motion—strike *and* dip) and both types of motion are significant and measurable, that is the location of an oblique-slip fault. Oblique-slip faults can even have rotation of the rock formations relative to each other. They're caused both by shearing forces and tension along the fault line.

The fault in the Los Angeles, California, area, the Raymond fault, was thought to have been a reverse dip-slip fault. After the 1988 Pasadena earthquake, though, it was found to be an oblique-slip because of the high ratio of the lateral movement to the vertical dip-slip.

Text 15
ASWAN HIGH DAM CONTROLS THE NILE RIVER

Just north of the border between Egypt and Sudan lies the Aswan High Dam, a huge rockfill dam which captures the world's longest river, the Nile River, in the world's third-largest reservoir, Lake Nasser. The dam, known as Saad el Aali in Arabic, was completed in 1970 after ten years of work.

Egypt has always depended on the water of the Nile River. The two main tributaries of the Nile River are the White Nile and the Blue Nile. The sources of the White Nile are the Sobat River and Bahr al-Jabal (the "Mountain Nile"), and the Blue Nile begins in the Ethiopian Highlands. The two tributaries converge in Khartoum, the capital of Sudan, where they form the Nile River. The Nile River has a total length of 4,160 miles (6,695 kilometers) from source to sea.

Nile Flooding

Before the building of a dam at Aswan, Egypt experienced annual floods from the Nile River that deposited four million tons of nutrient-rich sediment which enabled agricultural production. This process began millions of years before Egyptian civilization began in the Nile River valley and continued until the first dam at Aswan was built in 1889. This dam was insufficient to hold back the water of the Nile and was subsequently raised in 1912 and 1933. In 1946, the true danger was revealed when the water in the reservoir peaked near the top of the dam.

In 1952, the interim Revolutionary Council government of Egypt decided to build a High Dam at Aswan, about four miles upstream of the old dam. In 1954, Egypt requested loans from the World Bank to help pay for the cost of the dam (which eventually added up to one billion dollars). Initially, the United States agreed to loan Egypt money but then withdrew their offer for unknown reasons. Some speculate that it may have been due to Egyptian and Israeli conflict. The United Kingdom, France, and Israel had invaded Egypt in 1956, soon after Egypt nationalized the Suez Canal to help pay for the dam.

The Soviet Union offered to help and Egypt accepted. The Soviet Union's support was not unconditional, however. Along with the money, they also sent military advisers and other workers to help enhance Egyptian-Soviet ties and relations.

Building of the Aswan Dam

In order to build the Aswan Dam, both people and artifacts had to be moved. Over 90,000 Nubians had to be relocated. Those who had been living in Egypt were moved about 28 miles (45 km) away, but the Sudanese Nubians were relocated 370 miles (600 km) from their homes. The government was also forced to develop one of the largest Abu Simel temples and dig for artifacts before the future lake would drown the land of the Nubians.

After years of construction (the material in the dam is the equivalent to 17 of the great pyramids at Giza), the resulting reservoir was named after the former president of Egypt, Gamal Abdel Nasser, who died in 1970. The lake holds 137 million acre-feet of water (169 billion cubic meters). About 17 percent of the lake is in Sudan and the two countries have an agreement for distribution of the water.

Aswan Dam Benefits and Problems

The Aswan Dam benefits Egypt by controlling the annual floods on the Nile River and prevents the damage which used to occur along the floodplain. The Aswan High Dam provides about half of Egypt's power supply and has improved navigation along the river by keeping the water flow consistent.

There are several problems associated with the dam as well. Seepage and evaporation account for a loss of about 12-14% of the annual input into the reservoir. The sediments of the Nile River, as with all river and dam systems, has been filling the reservoir and thus decreasing its storage capacity. This has also resulted in problems downstream.

Farmers have been forced to use about a million tons of artificial fertilizer as a substitute for the nutrients which no longer fill the floodplain. Further downstream, the Nile delta is having problems due to the lack of sediment as well since there is no additional agglomeration of sediment to keep erosion of the delta at bay, so it slowly shrinks. Even the shrimp catch in the Mediterranean Sea has decreased due to the change in water flow.

Poor drainage of the newly irrigated lands has led to saturation and increased salinity. Over one-half of Egypt's farmland in now rated medium to poor soils.

The parasitic disease schistosomiasis has been associated with the stagnant water of the fields and the reservoir. Some studies indicate that the number of individuals affected has increased since the opening of the Aswan Dam.

The Nile River and now the Aswan High Dam are Egypt's lifeline. About 95% of Egypt's population live within twelve miles from the river. Were it not for the river and its sediment, the grand civilization of ancient Egypt probably would have never existed.