Glacial Deposits.

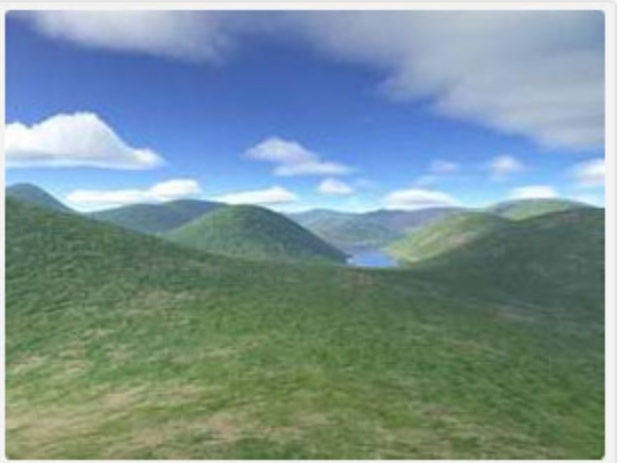
Glaciers are fields of ice that form from **snow** that doesn't totally melt each year, and therefore accumulates over time. The weight of the additional **snow** that is added each year compresses the material below and turns it into ice. Pressure can make the ice move.

Lateral Moraines

When **glaciers** move, they push boulders, rocks, and other debris as they advance forward. Glaciers usually move very slowly due to their huge weight and the force of **gravity**. However, sometimes they move very quickly. The land and rocks remain as deposits when the **glacier** melts and leaves the area. When the edge of a moving **glacier** get to the sea, large chunks can break off and fall into the water forming Icebergs. These huge bodies of floating ice are beautiful but dangerous to ships. The land and rocks remain as deposits when the **glacier** melts and leaves the area. Two kinds of landforms result from glaciers: moraines (mə-rān) and drumlins. **Moraines** are hills or large mounds of debris. They range in size from little more than a hundred yards high to hundreds of miles long. Perhaps the best example of moraines comes from Long Island, NY. Long Island has two moraines that run the entire length of the island, the Harbor Hill **moraine** and the Ronkonkoma **moraine**. **Drumlins** are rounded or elliptical hills of land deposits that occur in groups, not singly. These are much smaller than moraines and range in size from ½ mile long up to 150 feet high. Little is known about *how* these form, though several theories are popular.

b. Erosional Mountains

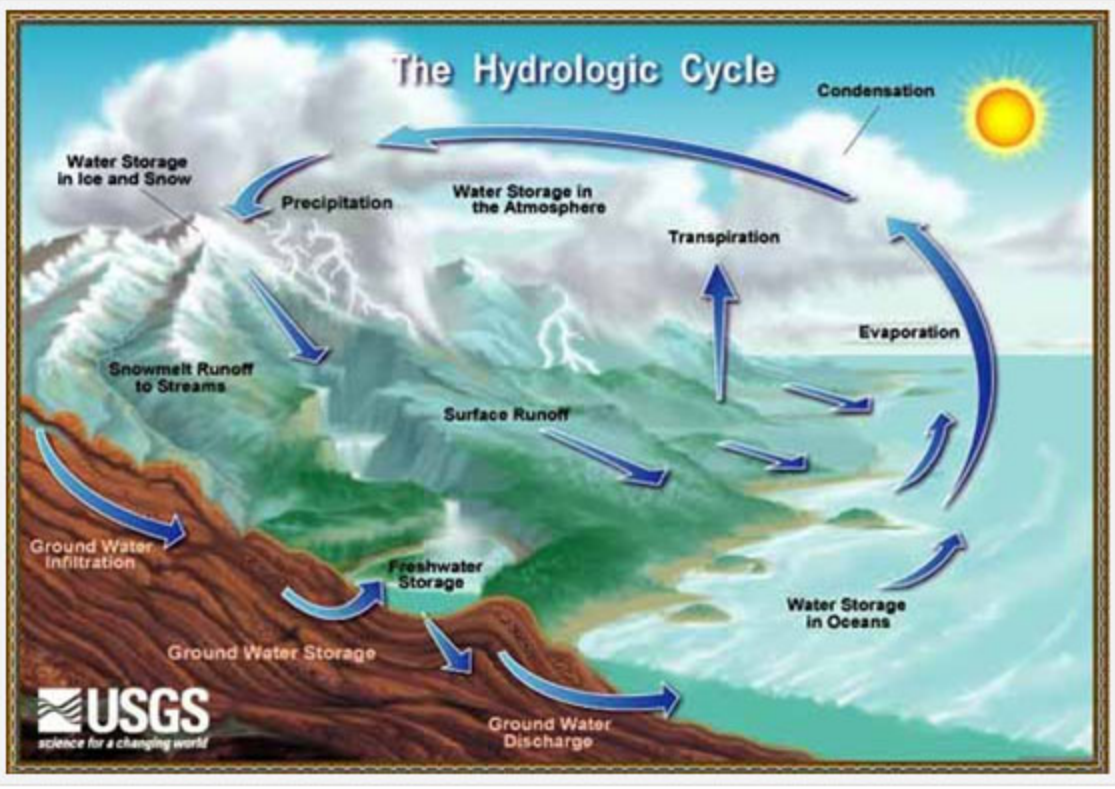
Erosional mountains are mountains that usually were carved from **plateaus** by **wind**, water or the movement of glaciers. **Plateaus** are regions of mostly flat **sedimentary** rock that are found at high elevations. Examples of erosional mountains are **mesas** and **buttes**. Sometimes **plateaus** have very high, steep slopes. **Erosion** from **wind** and sand removes sections of a plateau and leaves behind intact formations on the landscape. These *broad*, flat-topped hills are known as **mesas** and the *narrower*, flat-topped hills are called **buttes**. As a general rule, **mesas** have tops that are wider than their height, while the tops of **buttes** are narrower than their height. Both **mesas** and **buttes** have steep vertical walls.



Drumlins

5. Upwelling

Upwelling is another type of **density current** that is found along the coastlines of the continents. The **wind** stirs up the currents, causing the denser and cooler water to move towards the surface of the ocean, which cooler water replaces the warmer and less dense surface water. The cooler water is rich in minerals and nutrients. Once these nutrients appear, it triggers and encourages the growth of photosynthetic organisms known as phytoplankton, which are very tiny microscopic plant organisms. In turn, the phytoplankton becomes the base of a food chain for fish and other ocean creatures, which eventually supports some of the *largest fisheries providing food* for people throughout the world. Scientists estimate that about one-fourth of the world's fish catches come from five upwellings or density currents that occur in only 5% of the entire ocean area!



Section Review 6.5

1. The weather of the continental United States is affected by two main surface currents: the _____ and the _____.
2. What is a countercurrent?
3. What is a density current?

Answer Key

1.1. Introduction

The purpose of this Earth Science book is to help us all to see and to understand all the things God has made on planet Earth. God made this planet for the one and only purpose of providing for the survival and good health, and even the pleasure of the people whom He creates. God loves the people He creates with such great love that we can never begin to understand it. However, studying all the details about Earth and how it works, about what is inside Earth, on the surface of Earth, and above Earth, can make us gain a deep appreciation for God's concern for our welfare and happiness while we live here.

While we can come to appreciate all that God has done, down to every last detail to make us happy on Earth, we also can come to some recognition that while we each live only a short time on Earth, how much more beautiful must be Heaven, where we will live eternally, forever and ever, in great comfort and happiness.

Another lesson we can learn from the study of Earth is the almost endless details and almost endless abundance and variety of gifts on Earth. From this, we must reason that eternity in Heaven will be filled with even more abundance for the purpose of our eternal happiness with God.

Let's pray that as we study the Earthly gifts given to us out of the endless love of God for us, we come to love Him even more and even more deeply. The evidence of His love is all around us on this planet Earth which we call home. Let us not waste any time by offending Him ever, but rather constantly remind ourselves that we owe Him our love and gratitude. Out of our love and gratitude must come our good actions to show Him that we love His gifts, but even more we love others He has placed on Earth, especially the poor and those "least brethren" who share Earth with us.

A. The Importance of the Study of Earth