

Section 2

Stream and River Deposits

Key Concept Rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.

What You Will Learn

- Three types of stream deposits are deltas, alluvial fans, and floodplains.
- Rivers and streams flood their banks in natural and recurring patterns, and these floods affect humans and wildlife habitats.

Why It Matters

The cycle of deposition and flooding can bring nutrients to farmland but can also lead to destruction of property and loss of life.

If your job were to carry millions of tons of rock and soil across the United States, how would you do it? You might use a bulldozer or a dump truck, but your job would still take a long time. Did you know that rivers do this job every day?

Rivers and streams carry large amounts of material, such as soil and rock. Acting as liquid conveyor belts, rivers may carry fertile soil to farmland and wetlands. Although erosion is a big problem, rivers also renew soils and form new land. As you will see in this section, rivers make many different landforms on Earth's surface.

Stream Deposits

You have learned how flowing water erodes Earth's surface. After rivers erode rock and soil, they drop, or *deposit*, their load downstream.

Deposition is the process in which material is laid down or dropped. Rock and soil that are deposited by streams are called *sediment*. Rivers and streams deposit sediment where the speed of the water decreases.

Figure 1 shows how deposition happens as a river meanders.

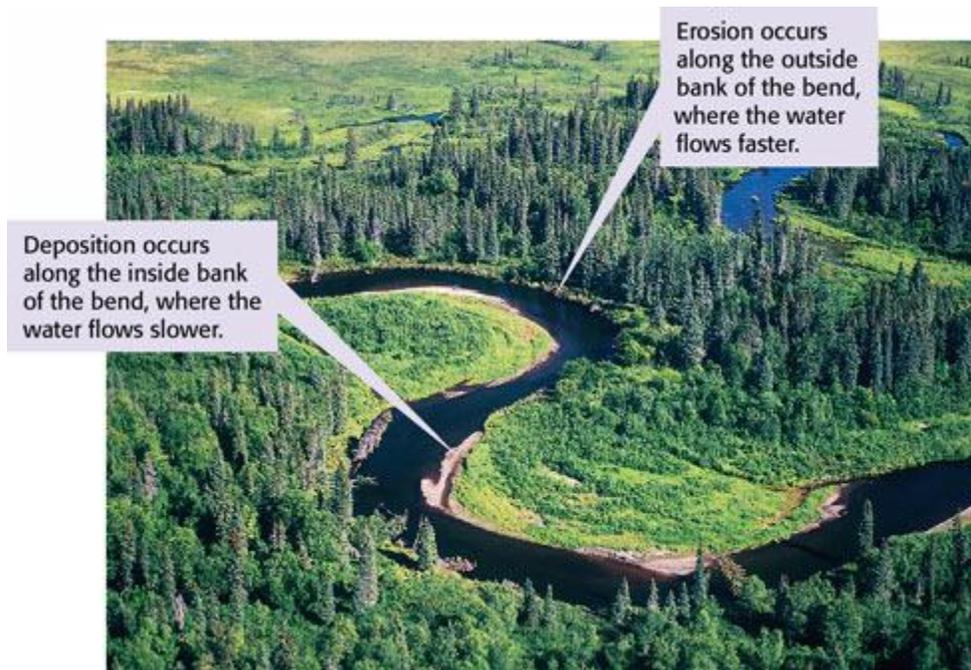


Figure 1 Erosion and deposition occur at a bend, or meander, in this Alaskan river.

Deltas

A river's current slows when a river empties into a large body of water, such as a lake or an ocean. As its current slows, a river may deposit its load in a fan-shaped pattern called a **delta**. In **Figure 2**, you can see an astronaut's view of the Nile Delta in Africa. A delta forms on a flat surface and is made mostly of mud. These mud deposits form new land and cause the coastline to grow. The world's deltas are home to a rich diversity of plant and animal life.

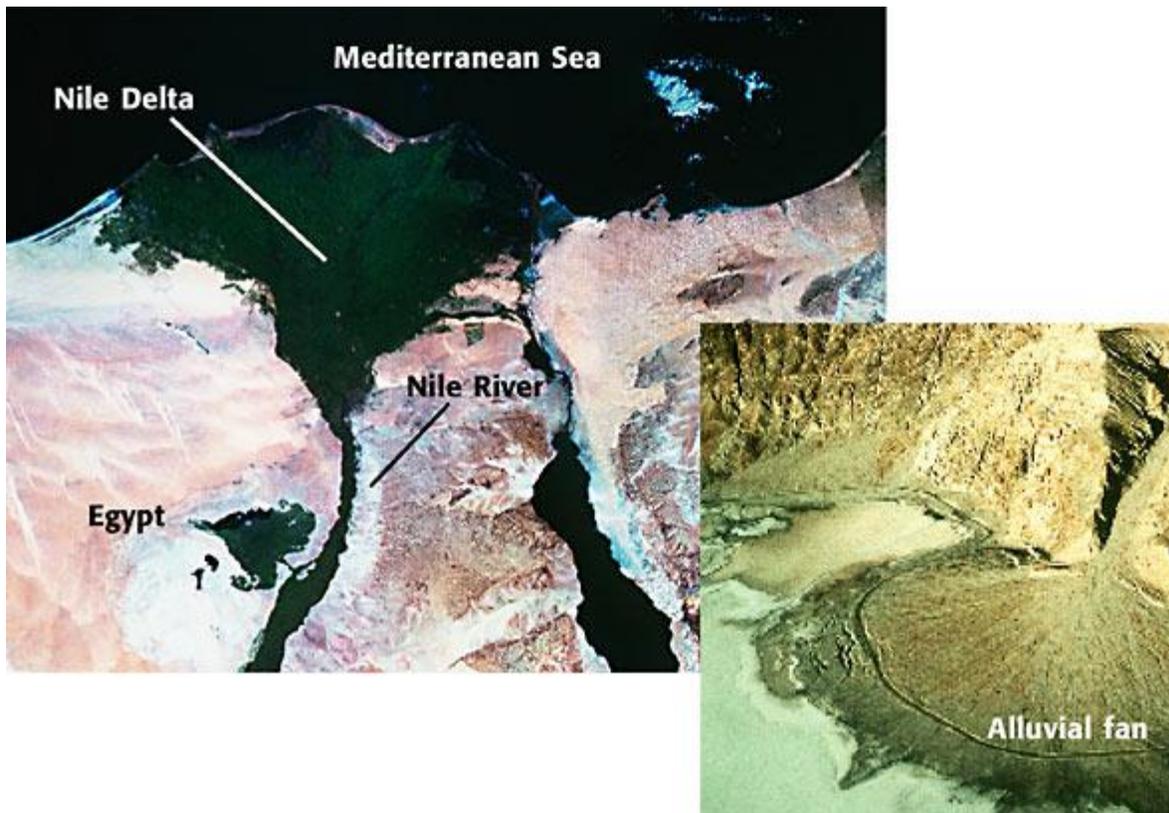


Figure 2 In the figure to the left, sediment deposited at the mouth of the Nile River in Egypt forms a delta. The alluvial fan in the photo below is located in Death Valley in California.

In the United States, the Mississippi Delta has formed where the Mississippi River flows into the Gulf of Mexico. Each of the fine mud particles in the delta began its journey far upstream. Parts of Louisiana are made up of particles that came from places as far away as Montana, Minnesota, Ohio, and Illinois!

Alluvial Fans

When a fast-moving mountain stream flows onto a flat plain, the stream slows down quickly. As the stream slows down, it deposits sediment. The sediment forms an alluvial fan, such as the one shown in **Figure 2**. **Alluvial fans** are fanshaped deposits of material, that unlike deltas, form on dry land. Alluvial fans can be found in some desert regions of California.

Standards Check How are deltas and alluvial fans examples of ways in which rivers and streams change Earth's landscape?

□

Floods

The amount of water in a stream usually varies seasonally. During periods of high rain or rapid snowmelt, the amount of water in a stream increases. As a result, the stream may overflow its banks in a *flood*.

Figure 3 shows an area that flooded in 1993. Flooding can cause a stream to change its path. During a flood, a stream's bank may collapse and may change the water's course. This process commonly forms oxbow lakes.

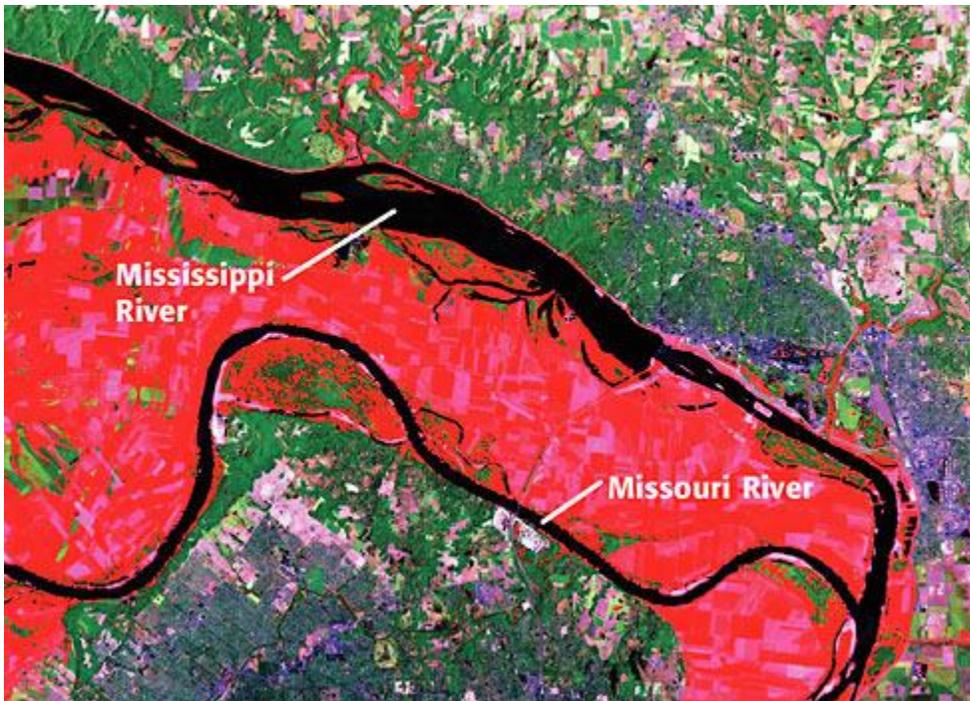


Figure 3 The normal flow of the Mississippi River and the Missouri River is shown in black. The area that was flooded when both rivers overflowed their banks in 1993 is shaded red.

When a stream floods, a layer of sediment is deposited on the land that is flooded. The area along a river that forms from sediment deposited when a river overflows its banks is called a **floodplain**. Floodplains are

rich farming areas because periodic flooding brings new soil to the land.

Effects of Floods

Floods are natural events that happen in recurring patterns. These natural events can cause a great deal of damage. Wildlife habitats can be buried or washed away. Human property may be damaged. The flooding of the Mississippi River in 1993 caused damage in nine states. Farms were destroyed, and whole towns were evacuated. Many people have lost their lives to floods. As **Figure 4** shows, flash flooding, which can happen unexpectedly after a severe storm, can take a driver by surprise.



Figure 4 Cars driven on flooded roads can easily be carried down to deeper, more dangerous water.

Barriers can help to control floods. One type of barrier is called a *dam*. A dam is a barrier that can redirect and hold a portion of the floodwater in a reservoir. Another type of barrier that can help control flooding is a *levee*. A levee is the buildup of sediment deposited along the channel of a river. This buildup helps keep the river inside its banks. Sandbags can be used to build artificial levees to control water during flooding.

Standards Check List two ways in which floods affect people.



Section Summary

- Sediment forms several types of deposits, such as deltas, alluvial fans, and floodplains.
- A delta is a fan-shaped deposit of sediment that forms where a river meets a large body of water.
- Alluvial fans can form when a river deposits sediment on land.
- Flooding brings rich soil to farmland and may cause a stream to change course.
- Flooding can also lead to property damage and death.

