

## The Mississippi Delta

The Mississippi River is one of the longest rivers in America. Rain and melting snow from 31 states run off the land. This water goes into creeks and rivers. The water ultimately flows into the Mississippi River. Nearly half the land in the United States has creeks and rivers that flow into the Mississippi River. The water flows all the way to the Gulf of Mexico. It takes 3 months for a drop of water to flow from the start of the river to the gulf! The map shows the parts of the United States that have water that flows into the Mississippi River.



The Mississippi delta is the place where the river meets the ocean. The delta spans almost 3 million acres. It is the largest coastal wetlands in the United States. The delta wetlands are about 10% of the whole state of Louisiana! It is home to hundreds of kinds of birds, reptiles, mammals, and plants.



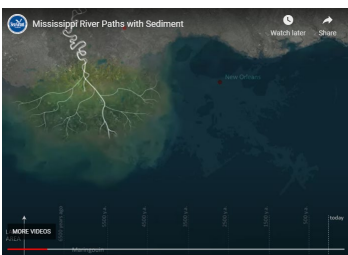
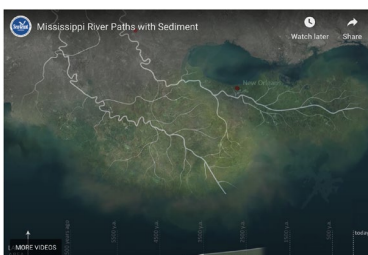
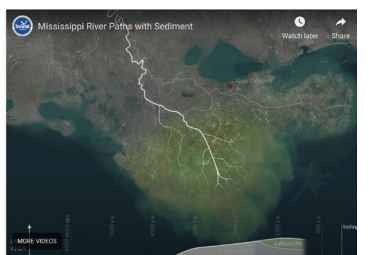

Mississippi River Path screen shot courtesy of Watch Delta <https://www.watchthedeltagrow.com/mississippi-river-paths>

Images of the Mississippi delta from space and flying over it.



## How does land change to form a delta?

**PART A:** Make observations and jot down wonderings while you watch the satellite-imagery animation from outer space showing the Mississippi delta forming over thousands of years.

View from outer space				
Date	5,000 years ago	3,000 years ago	1,000 years ago	Today
Your noticings and wonderings				

*Mississippi River Path screen shot courtesy of Watch Delta <https://www.watchthedeltagrow.com/mississippi-river-pathsGrow>*

**PART B:** Look at the map of the delta from 2,000 years ago and today. Consider these questions:

- How did this happen?
- Where did the new land come from?



2,000 YEARS AGO



TODAY

Using words and pictures, draw your thinking about the questions above.

# “Earth’s Changing Surface”

## Lesson 2 Analogy Chart

Lesson Focus Question: *What causes deltas to form?*

Part of model		Part of real world	They are alike because ...
Sand, soil, and rocks	... is/are like ...		
Water as it runs out of the jug			
Water at the bottom of the stream table			



# Speeding Up or Slowing Down Erosion and Deposition

**Part 1:** List ideas for what might speed up or slow down erosion and deposition.

Idea for the class to test using stream tables	Why this idea is important to test

**Part 2:** Test one condition and record observations to share with the class.

What condition are you testing? \_\_\_\_\_

Describe the condition. What does it represent in the real world? How did you model the condition with the stream table?	Record your observations	Does it speed up erosion of upstream materials and increase deposition in the delta or slow it down? Why do you think so?

**Part 3:** Record notes across all the other 4 conditions.

Conditions	_____	_____	_____	_____
Describe the condition. What does it represent in the real world?				
Record detailed observations.				
Does it speed up erosion and deposition or slow it down? Why do you think so?				



**Part 4:** Construct an explanation for how water can speed up or slow down erosion and deposition. Include additional factors that can speed up or slow it down as well.

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How does speeding up or slowing down erosion and deposition change the delta?

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## The Changing Delta

*In the previous lesson, we learned about what causes a delta to form at the end of a river and grow bigger. In this lesson we are focused on what causes a delta to shrink or disappear. Read this short story and study the images closely.*

Today the Mississippi River is important for shipping goods in the United States. Large boats travel up and down the river, carrying goods to different ports. The river has many towns and cities along the banks. But it hasn't always been this way.

In the 1700s and 1800s, many settlers moved west across North America. They began to build towns along the Mississippi River and use the river to ship goods. It was faster to use ships than wagons over the land.

The Mississippi River can flood and disrupt the flow of ship traffic or flood the towns along the river. Starting in 1869, people built a series of dams and levees to control flooding on the river. Levees are built along the riverbed to prevent overflow. Dams are solid structures built across rivers. They control how much water flows downstream. People can release water from dams to produce hydroelectric power.

**Stop and think:** What benefits do dams have?

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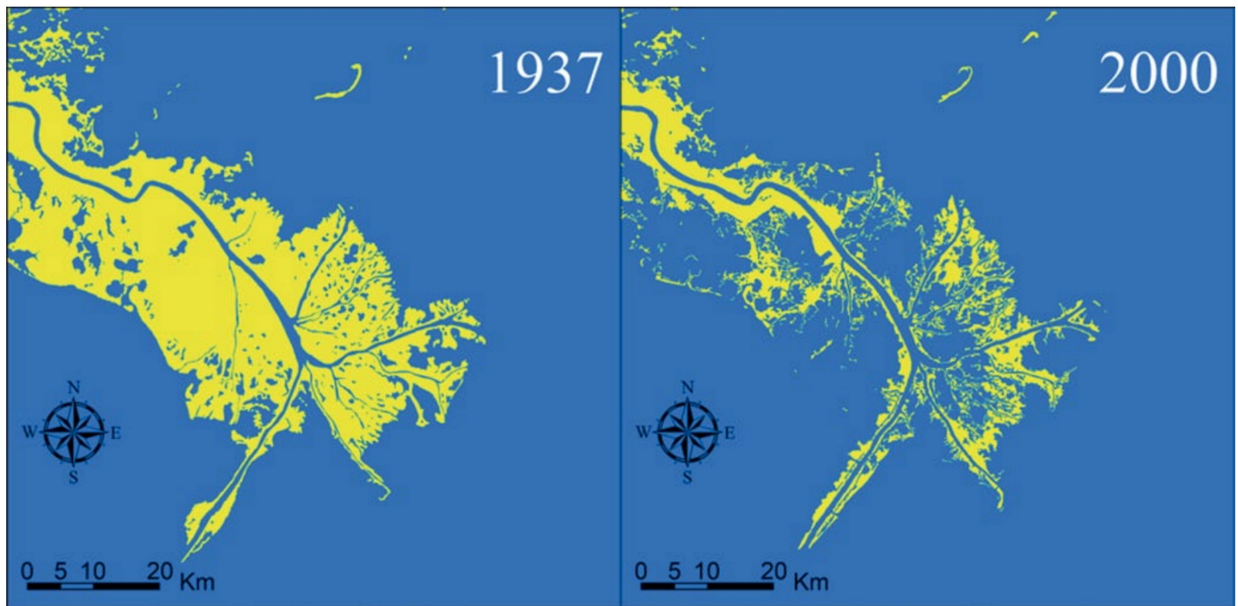
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In recent decades, the Mississippi delta has started to shrink. It is estimated that the Louisiana coast loses about one football field of delta land per hour! Study the following maps:



Data from Couvillion et al. (2011), after Kemp et al. (2014).

**Stop and think:** What might cause the delta to shrink?

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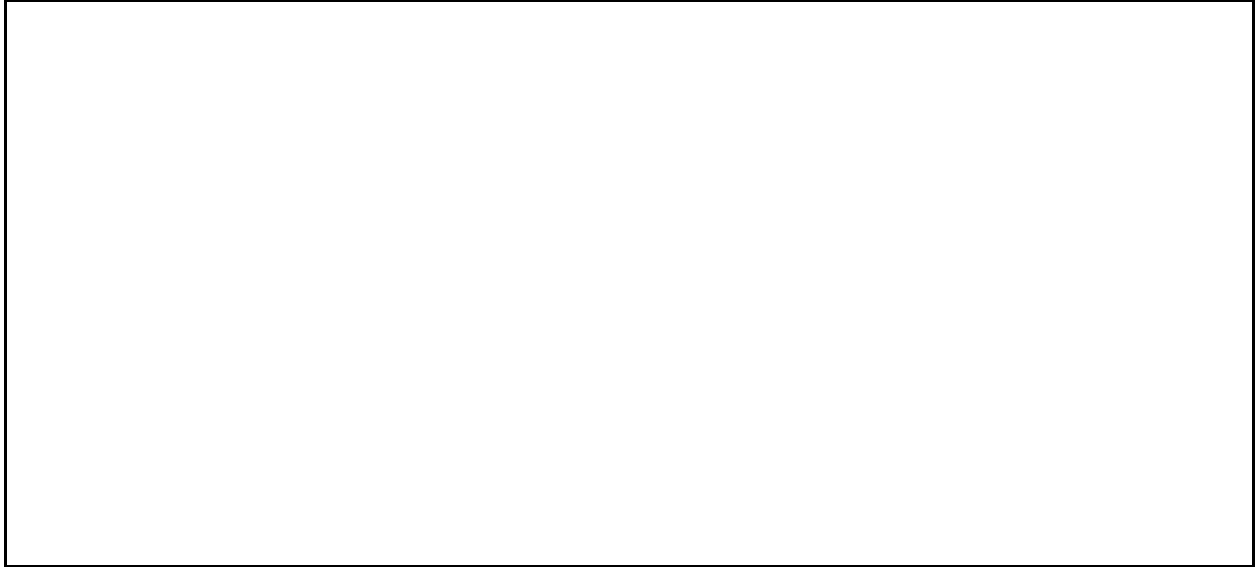
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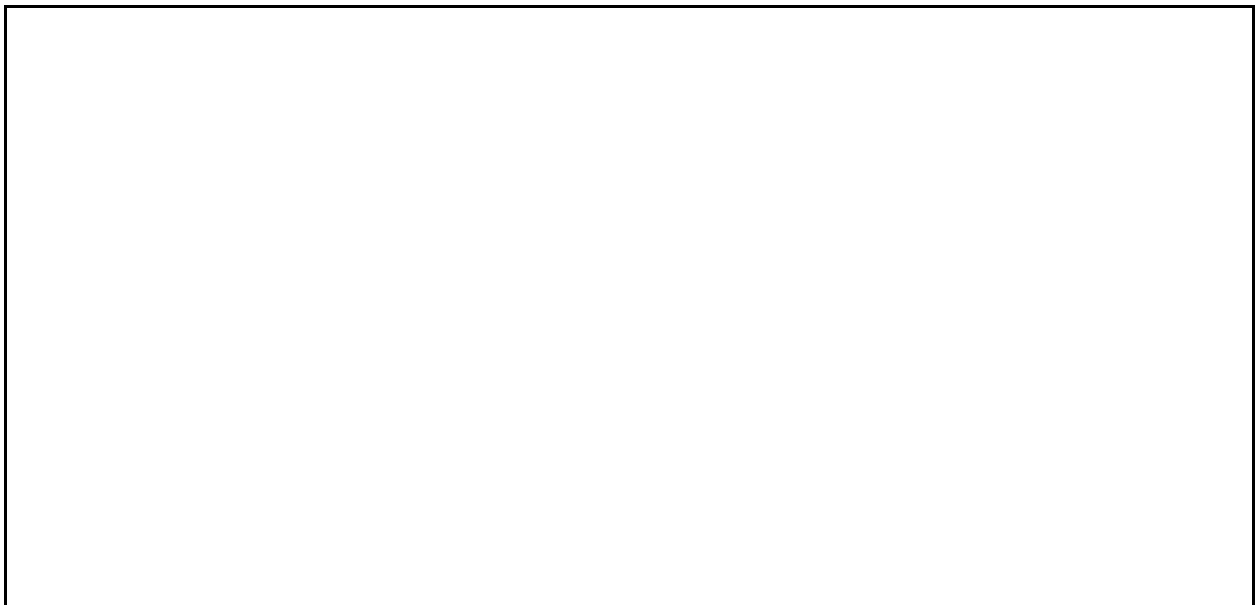
## Dams and Rivers

Using a stream table, let's test what happens when a dam is built on a river.

1. **Prediction:** If we build a dam on our stream table, what do you think will happen to the flow of water and sediment? You can draw your thinking in words and pictures in the box below.



2. **Observations:** Study closely what is happening with the flow of water and sediment on the stream table. Use words and pictures to draw your observations.



3. How might dams be related to a delta getting smaller?

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4. **Positive and Negative Effects:** What are the positive effects (benefits) of dams being built on rivers? What are the negative effects (disadvantages)?

Positive effects	Negative effects

**“Earth’s Changing Surface”**

**Lesson 5 Analogy Chart**

**Lesson Focus Questions:** *Where does the soil and rock in a delta come from, and where does it go? Does the rock and soil ever change?*

Part of model	... is/are like ...	Part of real world	Process:
Soda can			
Soda in the can			
Frozen soda in the can			
<p align="center"><b>Pictures of a tree root growing in a crack in a rock</b></p>			