# Coastal Erosion, Preservation, and Restoration

## Science Grade-Level Expectations

This instructional task addresses content related to the following science grade-level expectation:

ESS-M-A8 Describe how humans' actions and natural processes have modified coastal regions in Louisiana and other locations (GLE 20)

## Contents

Teachers may choose to use or modify the task as part of an instructional lesson or as a formative or summative assessment.

| | Objectives |
|---|---|
| **Task** | - Analyze the processes of land formation and loss<br>- Evaluate land formation and restoration processes<br>- Compare land conservation practices in different parts of the world |
| Sample Exemplar Student Response | |

**Task**

**Part A** - Access and view the Louisiana *Wetlands Loss: Coastal Erosion* animation produced by New Orleans Times Picayune.

Describe how the process that built the land in south Louisiana could be used to restore wetlands?

**Part B** - Access and read the New York Times' article *How to Save a Sinking Coast? Katrina Created a Laboratory* and *The Netherland's Impressive Storm Surge Barriers | Amusing Planet*.

Compare efforts to protect the coastline in Louisiana with that of the Netherlands.

**Exemplar Response**

**A.** As rivers flow, the force of the water picks up sediment along the banks. When the force of the flow of water is slowed down by the river hitting a larger body of water, this sediment settles at the bottom of the riverbed. Sediments deposited when the Mississippi River hits the Gulf of Mexico formed the land in South Louisiana. To use this process to rebuilt Louisiana's vanishing coastline, material dredged from the Mississippi River and other navigation channels could be used to create marsh and rebuild wetlands through constructing sediment diversion pipelines. This human designed process imitates to the original land building process, deposition of sediments.

**B.** Coastline Protection Efforts by Louisiana and the Netherlands

| Similarities | Differences |
|---|---|
| Sluice gates and flood gates to control the flow of storm surge | **Netherlands** |
| Levees | Storm surge barriers around the river delta |
| Storm surge barriers erected (such as building up the headlands) | System of dikes (embankments) |
| | **Louisiana** |
| | Building up barrier islands off the coast through relocation of sand by barge and sediment diversion |
| | Wetlands restoration through sediment diversion |
| | Replenishing sea grass in coastal areas |