



# Coastal Geology

*A Views of the National Parks Knowledge Center*



**S**horelines are dynamic environments where wave action and tides work continuously to shape and reshape the coastlines. An understanding of the geologic processes that are active in these areas leads to a deeper appreciation of the breathtaking features that can be found on coasts.

The Coastal Geology knowledge center contains information on topics such as the uniqueness of coastal environments, the variety of coastal sediments, human modifications to shorelines, and hazards associated with coastlines.

Also in the knowledge center are many interactive opportunities to explore the coasts and shores of nearly 100 national parks. Through extensive imagery and detailed case studies of national parks, many of the landscape features associated with coastlines are described and explained. The knowledge center also attempts to provide an explanation of the processes at work on coastlines and how they produce prominent features at different national parks.

With such a wide variety of national parks located on coasts, lakeshores, and rivers, there is a wealth of information available in this knowledge center.

## Features

Through the Coastal Geology knowledge center, users can access information on a variety of coastal processes and landforms. Here is a list of some of the different features:

- Coastal Geology Basics  
Learn about the importance of coasts to ecology, commerce and recreation. Also, see the wide diversity of coastal environments in our national parks. Click on park units on a map and view case studies about each park's unique resources.
- Coastal Sediments  
Why are some shores sandy and others rocky? Why are there so many colors of sand? Answers to these questions and more can be found in this section.
- Coastal Environments  
Explore several coastal environments including rocky coasts, sandy beaches, estuaries, marshes, deltas, and tropical coasts.

**Waves breaking on the coastline of Point Reyes National Seashore. Point Reyes is located in California about 35 miles north of San Francisco on the west coast of the United States. (NPS Photo)**

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*“To protect and preserve our national coastal parks, we must have an understanding of how the coastal zone functions.”*

— Coastal Geology  
Knowledge Center

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Learn about the landscapes, features and geologic processes that create coastal systems. *Views* uses text, clickable diagrams, and vivid imagery to convey information.

**Rocky Coasts** Coastal Environments

Introduction Sediments **Environments** Hazards Modifications Unique Glossary Challenge

**Features**

Rocky coastlines have many spectacular features. Waves cut arches and sea stacks out of rock jutting out into the water. Bluffs, cliffs, and terraces form as rock is eroded. Fjords are made when glacial valleys are filled with water when sea levels rise.

Explore these features by selecting them from the diagram to the right or the images at the bottom.

[Show Diagram](#)

[Back to Views](#)

*“97 coastal parks within the National Park Service include more than 7,300 miles of shoreline, and contain a wide diversity of geological, biological and cultural resources.”*

— Coastal Geology Knowledge Center

- **Coastal Hazards**  
Natural hazards such as storms, hurricanes, and tsunamis are important for coastal processes and landforms. Learn how these work, and how they affect coastal communities.
- **Human Modifications**  
People change coastlines for a variety of reasons such as housing development and commerce. See some examples of these changes and learn how they affect natural shoreline processes.
- **Unique Resources**  
The national park system protects natural and cultural resources in many areas of the country. *Views* offers many possibilities for discovering unique park resources such as glowing underwater life and old pirate caves!
- **Challenge your understanding**  
This section is designed to test a user’s knowledge of coastal geology. Also found here are teaching standards, classroom exercises, and ideas for bringing coastal geology into the classroom.

**Teaching Standards**

- Science Standard D: Earth and Space Science  
Students learn about one of the components in the earth system: coasts.
- Science Standard E: Science and Technology  
Students use an interactive computer program to access information on coastal geology.
- Science Standard F: Science in Personal and Social Perspectives  
Students learn about the importance of coasts for recreational and commerce purposes, as

well as the many different ways humans can be affected by coastal change.

Social Studies Standard 3: People, Places and Environments

Students can explore how people interact with the coastal environment.

**Partners**

This knowledge center was developed with the help of the Geologic Resources Division (GRD) of the National Park Service. The Natural Resource Information Division (NRID) and GRD would like to express special thanks to Katie KellerLynn for her dedication to working on this knowledge center.

**Contact us**

Geologic Resources Division  
Rebecca Beavers - Coastal Geologist  
rebecca\_beavers@nps.gov  
(303) 987 - 6945

**Views Project**

Bruce Nash - Project Manager  
bruce\_nash@nps.gov  
(303) 987 - 6697  
Erika Matteo - Project Lead  
erika\_matteo@nps.gov  
(303) 969 - 2684  
Dave Krueger - Project Lead  
david\_krueger@nps.gov  
(303) 969 - 2033

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[www2.nature.nps.gov/geology](http://www2.nature.nps.gov/geology)