Shores and Coastal Processes

Introduction

Coastlines are dynamic features, changing shape continually and confounding human efforts to tame them. Why are coastal areas so moody? Why does each passing storm leave its imprint (erosion, deposition, or both) on a coastline that has existed for millennia? The answers to these questions lie in the nature of coastal processes, the ways in which waves affect the coast, the source of the sediment, and human interference in the whole scheme. This module will help you explore these processes and see how society's interactions can interrupt or...
Sediment transport by wind
Formation of Cross-bedding
Types of dunes

Click on any area of the illustration to view an example of the type of dune described.
Ripples and Cross Bed Formation
Ocean Currents

- North Pacific
- California
- Gulf Stream
- North Atlantic
- Canary
- South Equatorial
- South Pacific
- Antarctica Circumpolar
- Kuroshio
- Equatorial Countercurrent
- East Australia
- Peru
- Brazil
- Benguela
- South Atlantic
- Madagascar
- West Australia
- South India
Click "Wave Refraction" for Headland and Seastack discussion.

- Waves with constant wavelength
- Waves touch bottom (wavelength shortens)
- Surf zone (breakers form)

- Wavelength
- Wave height

Wave base = One-half wavelength

Velocity decreases (wave height increases)
Short wavelength, high energy waves

Sandbar

Sand

Winter beach
Parke D. Snavely, Jr., USGS
1890