Chapter 20
Shorelines & Tsunamis
The Coastline

- Offshore
- Nearshore
- Foreshore
- Backshore
- Shore
- Coastline
- Dunes
- Beach face
- Low-tide shoreline
- Shoreline
- High-tide shoreline
- Berm

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Breaking Waves

Wave movement

Open ocean – waves with constant wavelength

Approaching shore – waves touch bottom (wavelength decreases)

Surf (breakers form)

Depth is $>\frac{1}{2}$ wavelength

Velocity decreases (wave height increases)

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Longshore Currents

Net movement of sand grains

Path of sand particles

Longshore current
Erosion & Transport

- Wave-cut cliff
- Spit
- Beach deposits
- Baymouth bar
- Longshore current

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The Solar and Lunar Tides

A. Spring tide

Full moon

New moon

To Sun

Solar tide
Lunar tide

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High vs Low Tides

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Spits
Stabilizing-Jetties

New Jersey Coast Line
Other Features

Sea Arch

Stacks

Wave-cut platform

Marine terrace
Estuaries

Drowned River Valley
Hurricanes
Katrina--2005, New Orleans
Tsunamis-Harbor Wave
Chilean Earthquake-1995

July 30, 1995 Chilean tsunami
Sri Lanka--2004

Before and After Kalutara, Sri Lanka,

Courtesy DigitalGlobe.com
Causes??

- Plate slides down...
- ...forcing other plate up
- Caroline plate
- Australian plate
Sumatra--12/26/2004

- 9.0 Earthquake in Indian Ocean

The earthquake off of Sumatra shifted the seafloor vertically approximately 32 feet. This displaced a large volume of water, which generated a massive tsunami, or sea surge. The wave spread out across the Indian Ocean at enormous speed.
Other Potential Areas

Other Causes...

- Meteorites
Other Causes..

- UFO’s???