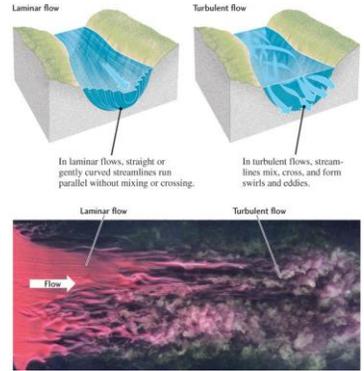


SHAPING EARTH'S SURFACE:
STREAMS, COASTLINES,
AND WIND

Streams

Laminar flow is _____

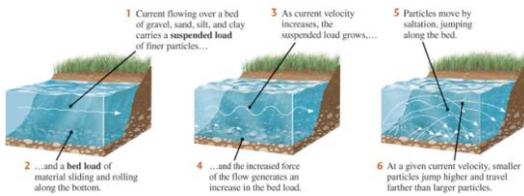
Turbulent flow is _____



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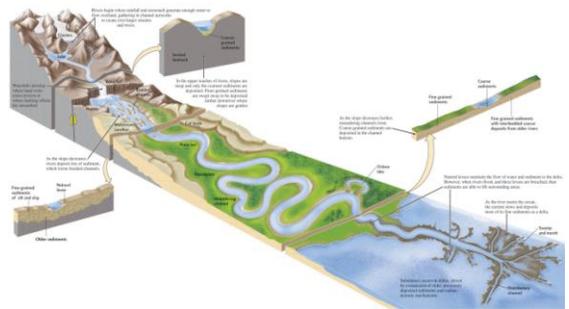
Streams transport sediment

- 1) Bedload transports _____ grain size; suspended load transports _____ grain size
- 2) Higher velocity streams transport (more/less) sediment

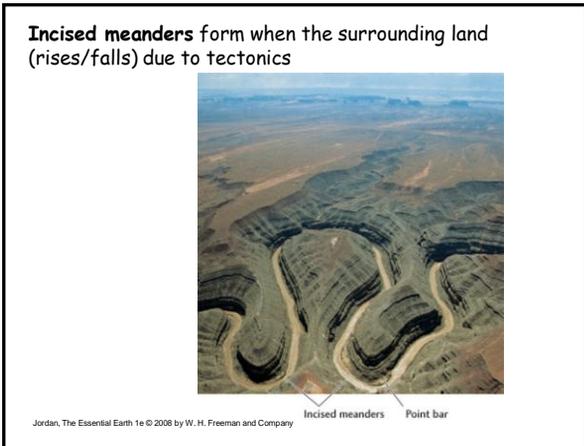
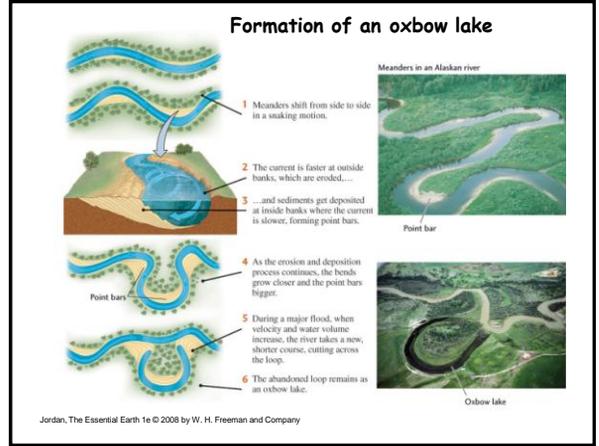


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Profile of a stream: notice how the channel form changes downstream



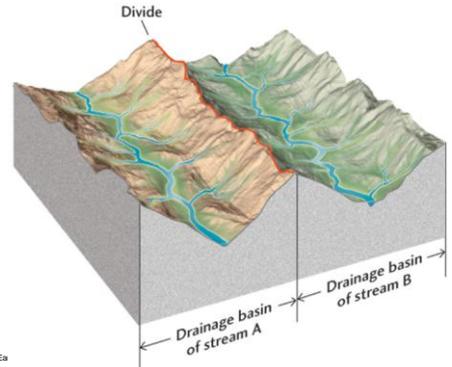
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Alluvial Fans



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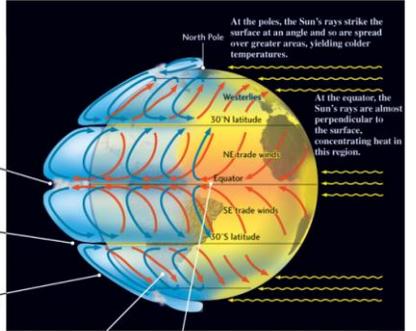
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Atmospheric circulation produces winds

- 1 There is little surface wind at the equator, and the air rises, forming clouds and rain as it cools.
- 2 At 30°N and 30°S latitudes, the cooled air sinks, warms up, absorbs moisture, and yields clear skies.
- 3 These two motions set up the horizontal circulation between the equator and the North and South Poles.



- 4 In temperate zones, the prevailing wind belts come from the west.
- 5 In the tropics, the prevailing wind belts blow from the east.

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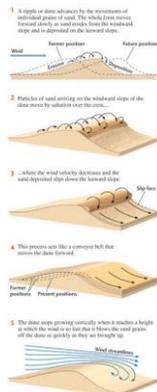
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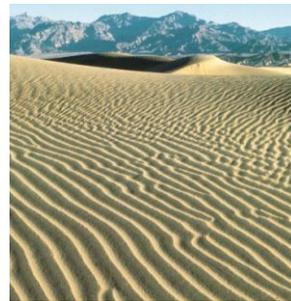
How a dune forms

-sand moves by saltation which is the ____ of a particle



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Ripples are small scale dunes



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Volcanoes are landforms produced by processes (inside/outside) Earth



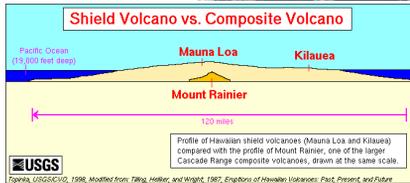
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Volcanic landforms: Shield volcano, Strato volcano, cinder cone, lava dome, caldera



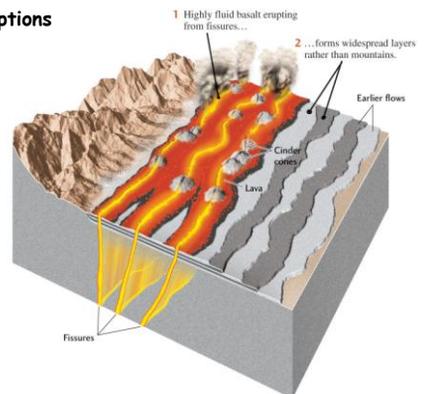
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Mauna Loa, Hawaii is a shield volcano

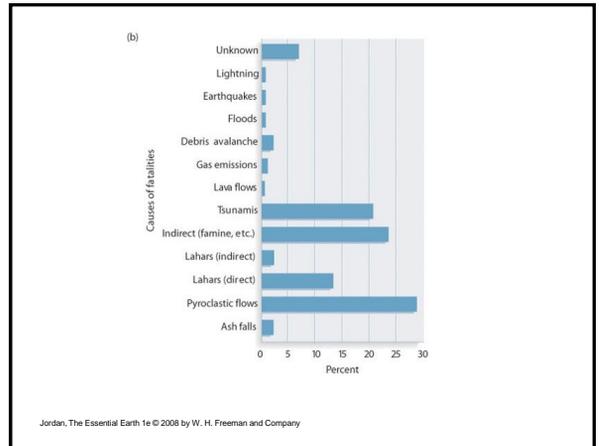
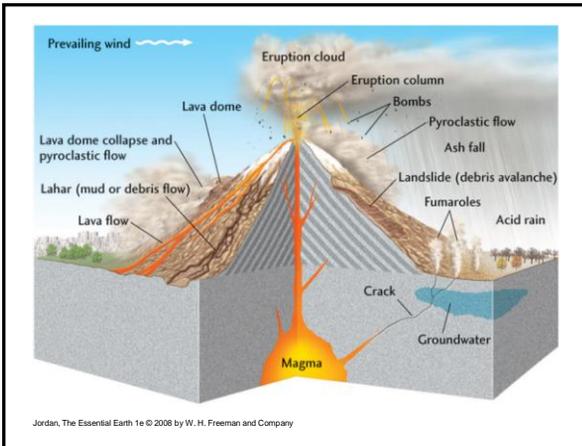
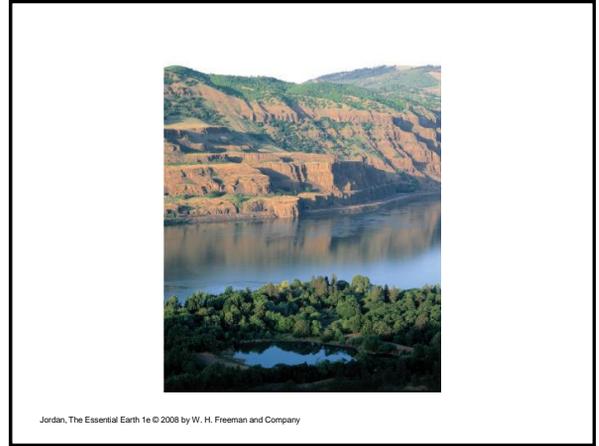
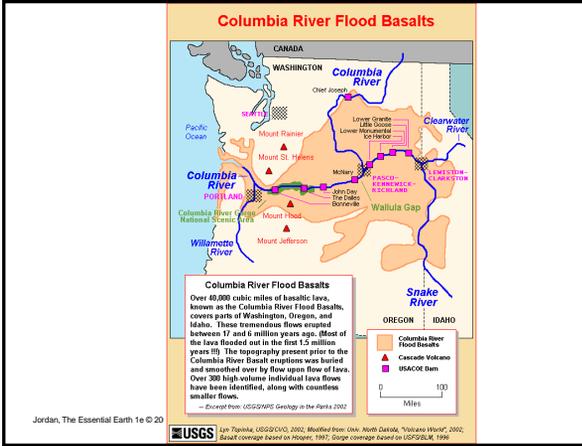


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Fissure eruptions



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Volcanoes in the Pacific NW... Why?

CONTINENTAL UNITED STATES and CANADA

- Silverthorne
- Bridge River
- Meagher Mountain
- Mount Cayley
- Mount Garibaldi
- Mount Baker
- Glacier Peak
- Mount Rainier
- Mount St. Helens
- Mount Adams
- Mount Hood
- Yellowstone Caldera
- Mount Jefferson
- Three Sisters
- Newberry volcano
- Crater Lake (Mount Mazama)
- Mount McLoughlin
- Medicine Lake
- Mount Shasta
- Lassen Peak
- Clear Lake volcanoes
- Mono-Inyo Craters
- San Francisco Peak
- Long Valley Caldera
- Socorro
- Casus volcanoes

Juan de Fuca Ridge - Cascade Range

Juan de Fuca Ridge

The boundary between the Pacific and Juan de Fuca Plates is marked by a broad submarine mountain chain about 500 kilometers long (300 miles), known as the Juan de Fuca Ridge. Young volcanoes, lava flows, and hot springs were discovered in a dozen places along the 800-kilometer-wide (500-mile) length of the ridge in the 1970s. The ocean floor is spreading apart and forming new oceanic crust along the ridge at 100 mm (4 in.) per year. Magma from the Earth's interior is injected into the ridge and erupted at its top.

Cascade Range

In the Pacific Northwest, the Juan de Fuca Plate plunges beneath the North American Plate. As the oceanic plate of seawater crust is thrust deep into the Earth's interior beneath the continental plate, a process known as "subduction", it encounters high temperatures and pressures that partially melt solid rock. Some of this newly melted magma rises toward the Earth's surface to erupt, forming a chain of volcanoes above the subduction zone.

USGS

Public domain. USGS, Weather Foto, Seattle, 1984, Volcanoes of the United States, USGS General Interest Publication 375-56

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Mt. Rainier (left), Mt. Hood (right) are stratovolcanoes

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Mt. St. Helens

3-27-1980

4-27-1980

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Mt. St. Helens 5-18-1980

<http://www.youtube.com/watch?v=BgRnVhRlKQ>

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Mount St. Helens May 18, 1980 Eruption Sequence

Summit dome
Goat Rocks dome
Cryptodome
Landslide blocks
Initial explosions
Vertical eruption column

within 15 minutes the eruption column reached an altitude of 12 miles

At 9:32 a.m. May 18, 1980, a 5.1 earthquake shook the north flank of Mount St. Helens, resulting in the largest known landslide in historic time. Removal of more than half a cubic mile of material released pressure and triggered a devastating lateral blast and ash-laden eruptive column.

USGS Photos by A. Post (left) and D. Swanson (right)

USGS Topographic Information, 1986, modified from Zwebny and Tomita, 1984, Earthquake Information Bulletin v. 16, no. 2

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Impact Craters

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Tunguska event June 30, 1908

770 square miles of forest flattened and burned due to an airburst

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Chixilub Crater, Mexico (65 Million Years Ago)

Tektite

Tertiary
Iridium layer
Cretaceous

Tektites

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