

Lesson – Erosion by Mass Movement, Wind, & Waves

THE FOLLOWING VIDEO HAS BEEN APPROVED FOR ALL AUDIENCES BY THE EARTH SCIENCE TEACHERS ASSOCIATION OF AMERICA, INC. THE VIDEO HAS BEEN RATED

1	INTELLIGENT
	UNDER 15 REQUIRES TEACHER ASSISTANCE


STRONG EARTH SCIENCE LANGUAGE, DETAILED DIAGRAMS, AND SUPER ANSWERNESS

- I can describe erosion by gravity & features that are created.
- I can describe erosion by wind & features that are created.
- I can describe erosion by waves & features that are created.
- I can describe general characteristics of material deposited by the main types of erosion


### Gravity Erosion

**MASS MOVEMENTS**  
- Erosion & deposition done directly by GRAVITY


**EX:** Soil Creep  
Mudslides  
Avalanches  
Landslides



2 MAJOR FORCES:  
1) **DOWNWARD PULL** of GRAVITY  
2) **FRICTION**



Soil creep I saw while driving through the back roads of Ireland!

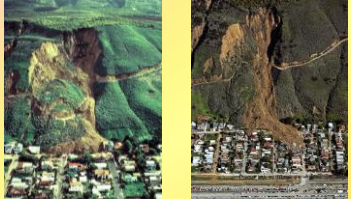


### LaConchita, CA Landslide

- Caused by a very wet season



**VIDEO CLIP!**




March 1995 - slower less damage, 9 homes damaged

Jan 2005 - faster (30 ft/sec), 10 people buried (died) - destroyed 13 homes and extremely damaged 23 other

### Deposition by Mass Movement

- Sediments are unsorted & angular



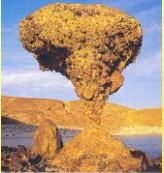
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### Wind Erosion

- Arid regions, such as deserts, & lake or ocean coastlines most common

1) **DEFLATION**  
- Lowering of landscape by removing sand & smaller sediments

2) **SANDBLASTING**  
- Winds blow sand or silt grains against rocks & other objects



- A sandstorm in NW African desert, pushes tons of dust over the Atlantic.
- Some of the dust could reach the Caribbean Islands & Eastern US
- Picture by NASA

### Deposition by Wind

**SAND DUNES**  
 - Pile, Hill, or Mound of sand deposited by wind  
 - **WIND** blows up the **GENTLE SLOPE**

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### WAVE & CURRENT EROSION

**Breaking WAVES (SURF)**  
 - Waves which become unstable & rush water toward the shore

Sea Bright, New Jersey  
 Waves breaking SEAWALL  
 5 to 6 meters high

-Waves usually arrive at an angle to the shore

• **REFRACTED** or **BENT** concentrating energy on parts of the shore that extend out into the water

Wave cut cliffs along the North Antrim Coast in N. Ireland.



**Longshore Current**  
 - Current that move **PARALLEL & CLOSE** to shore due to angled advance of waves


**Sandbar**  
 - A pile or low ridge of sand, often just above or just below water level

### Deposition by Water Waves & Currents

**BEACH**  
Narrow portion of the shore or coastline between the low & high tide lines




**BARRIER ISLAND**  
-Long narrow island, parallel to the shore



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### Sediment Characteristics

Stream/Beach -smooth & rounded




Glacial- Extremely unsorted & have scratches of various sizes & directions

Gravity - angular in shape



Wind-blown - frosted (pitted)




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### People & Erosion

Increase Erosion:

- 1) Construction projects
- 2) Road-buildings & Mining
- 3) Deforestation
- 4) Overgrazing, & Poor farming



Decrease Erosion:

- 1) Replant forests
- 2) Restore coastal vegetation
- 3) Set limits on grazing
- 4) Highways with gentler slopes

