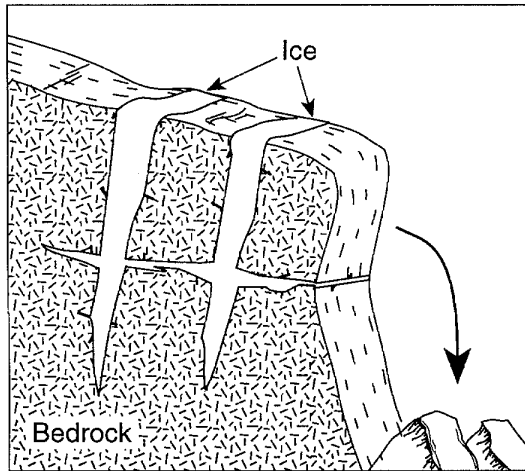


1. The diagram below shows a process called frost wedging.

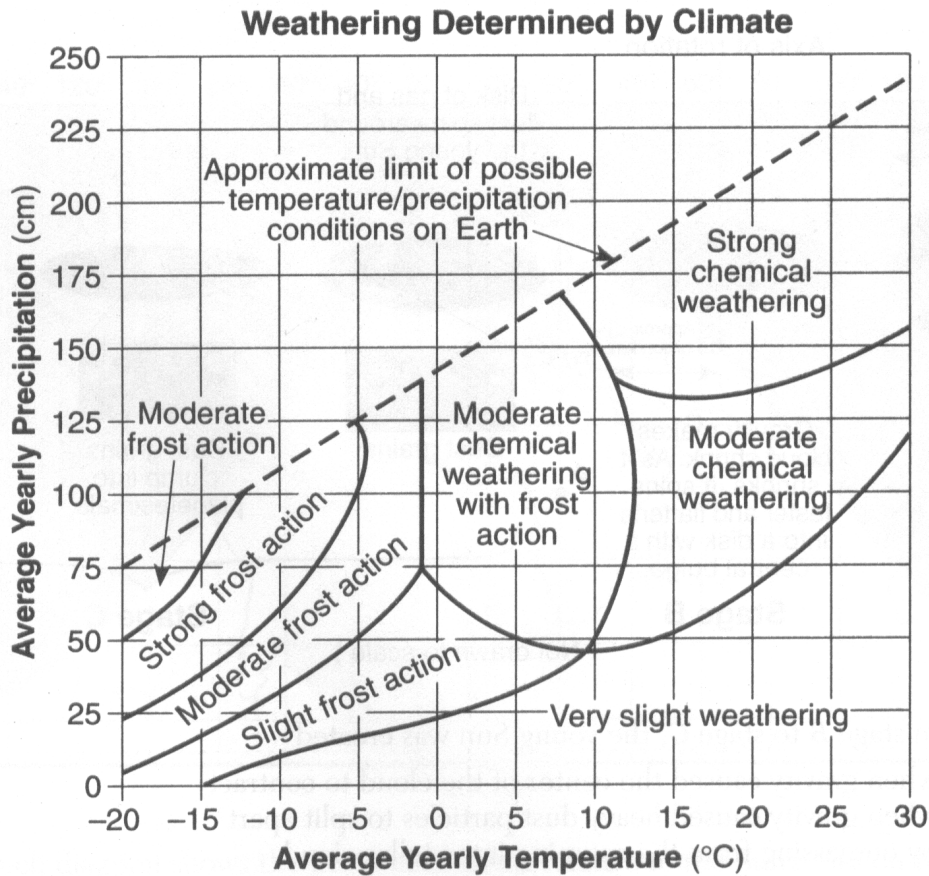


Frost wedging is an example of

- A) weathering                      B) cementing  
C) metamorphism                  D) deposition
2. Which agent of erosion is most likely responsible for the deposition of sandbars along ocean shorelines?
- A) glaciers                          B) mass movement  
C) wave action                      D) wind action
-

## Topic 9&10: Practice Test

3. Base your answer to the following question on the graph below, which shows the effect that average yearly precipitation and temperature have on the type of weathering that will occur in a particular region.



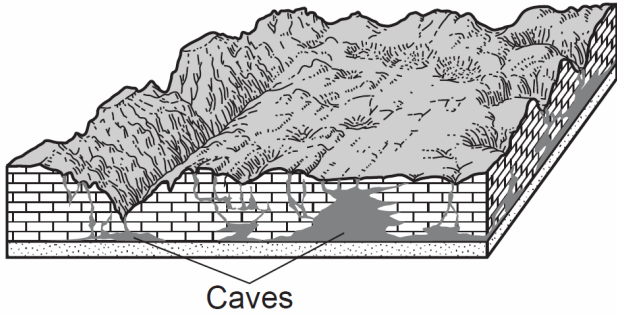
Which type of weathering is most common where the average yearly temperature is 5°C and the average yearly precipitation is 45 cm?

- A) moderate chemical weathering
- B) very slight weathering
- C) moderate chemical weathering with frost action
- D) slight frost action

## Topic 9&10: Practice Test

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4. The block diagram below represents caves that developed in a region over time.

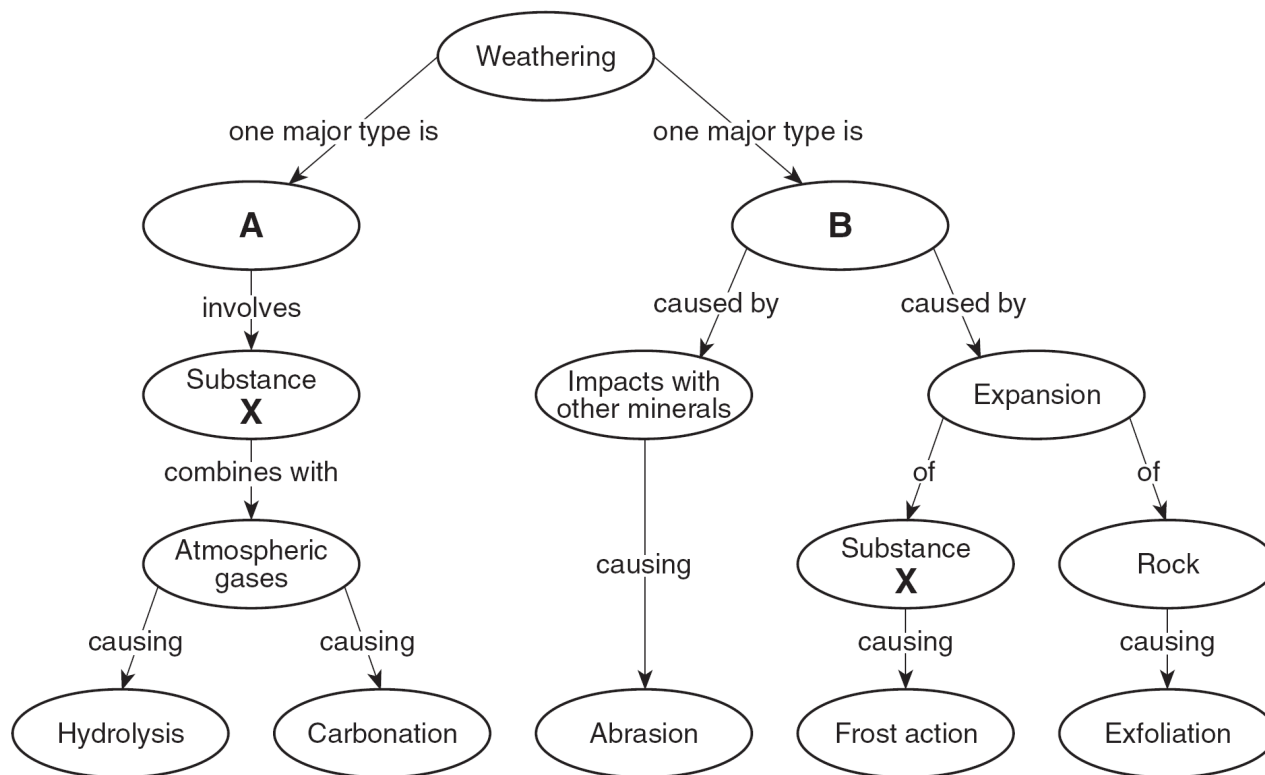


Which type of weathering was primarily responsible for the development of these caves?

- A) physical weathering of sandstone
- B) physical weathering of limestone
- C) chemical weathering of sandstone
- D) chemical weathering of limestone

## Topic 9&10: Practice Test

5. Base your answer to the following question on flowchart below, which shows a general overview of the processes and substances involved in the weathering of rocks at Earth's surface. Letter *X* represents an important substance involved in both major types of weathering, labeled *A* and *B* on the flowchart. Some weathering processes are defined below the flowchart.



| Definitions  |
|--|
| Frost action – the breakup of rocks caused by the expansion of substance <b>X</b>            |
| Abrasion – the wearing down of rocks or particles as they rub or bounce against other rocks  |
| Exfoliation – the peeling away of large sheets of loosened material at the surface of a rock |
| Hydrolysis – the change in a material caused by contact with substance <b>X</b>              |
| Carbonation – the change in a material caused by contact with carbonic acid                  |

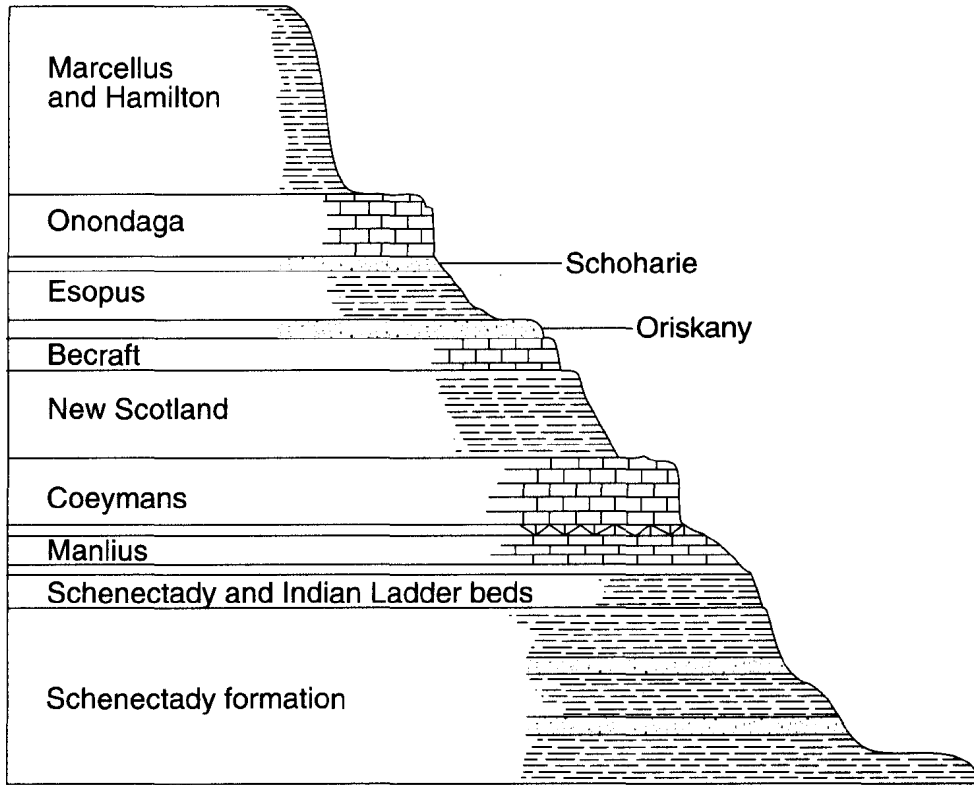
Which term best identifies the type of weathering represented by *A*?

- A) physical      B) biological      C) chemical      D) glacial
- 
6. Which change in climate would most likely cause the greatest increase in chemical weathering of local bedrock?

- A) lower temperature in winter  
 B) lower humidity in winter  
 C) higher atmospheric pressure in summer  
 D) greater precipitation in summer

## Topic 9&10: Practice Test

7. Base your answer to the following question on the cross section below, which shows the bedrock of a portion of the Helderberg Escarpment, located in Thacher State Park near Albany, New York. The rock formations are identified by name.

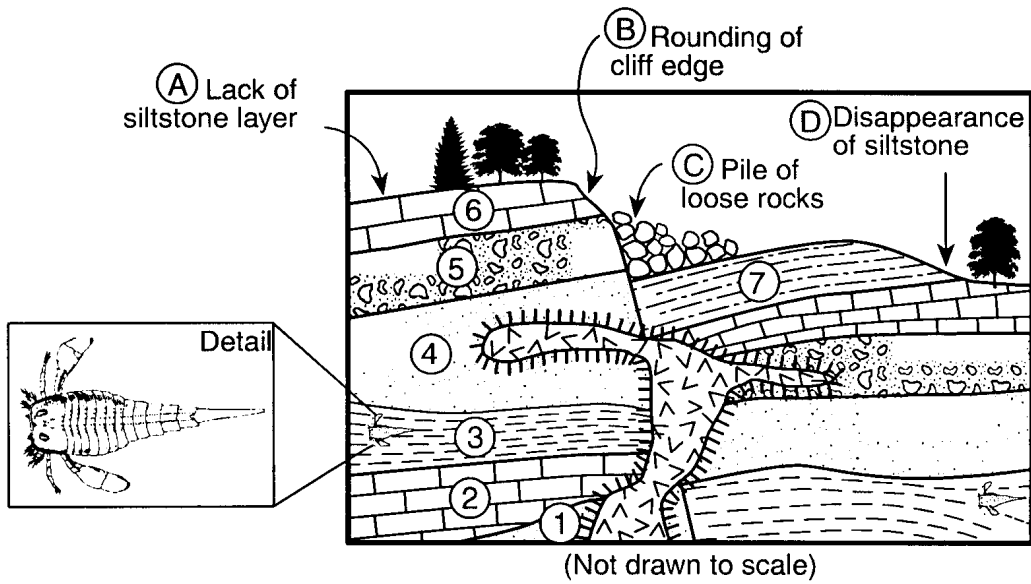


Which formations appear to be the most resistant to weathering?








- A) Esopus and Oriskany
- B) Onondaga and Coeymans
- C) Schoharie, and Marcellus and Hamilton
- D) New Scotland, and Schenectady and Indian Ladder beds

## Topic 9&10: Practice Test

8. Base your answer to the following question on the diagram below of a cross section of a portion of Earth's crust. Letters *A* through *D* represent landscape features, and numbers 1 through 7 represent rock layers. The detail shows a fossil found in layer 3.



### Key

|  |   |
|--|---|
|  Siltstone      |  Shale                  |
|  Limestone     |  Basalt                |
|  Conglomerate |  Contact metamorphism |
|  Sandstone    |   |

Which landscape features provide evidence that weathering and erosion were likely to have occurred?

- A) *A* and *D*, only  
 B) *B* and *C*, only  
 C) *A*, *C*, and *D*, only  
 D) *A*, *B*, *C*, and *D*

## Topic 9&10: Practice Test

9. Base your answer to the following question on on the photographs and news article below.

### Old Man's Loss Felt in New Hampshire

FRANCONIA, N.H. — Crowds of visitors were drawn to Franconia Notch on Sunday to mourn the loss of New Hampshire's well-known symbol — the Old Man of the Mountain granite profile.

The 700-ton natural formation was just a pile of rocks after breaking loose from its 1,200-foot-high mountainside perch. It was unclear when the outcropping fell because clouds had obscured the area Thursday and Friday; a state park trail crew discovered the collapse Saturday morning.

The famous mountain's history dates millions of years. Over time, nature carved out a 40-foot-tall profile resembling an old man's face, and it eventually became New Hampshire's most recognizable symbol.

The Buffalo News, May 5, 2003



Associated Press

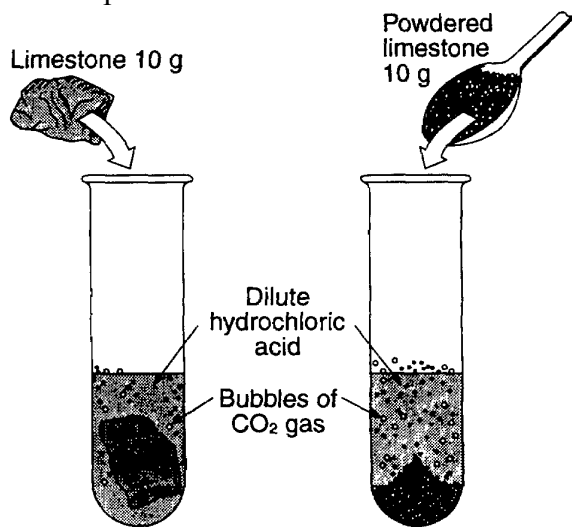
Granite profile of the Old Man of the Mountain is shown before the collapse, and after

What does granite bedrock found high on a mountaintop indicate?

- A) The crust has been sinking.
- B) Global temperatures have cooled.
- C) A large amount of erosion has occurred.
- D) Sea level has risen.

## Topic 9&10: Practice Test

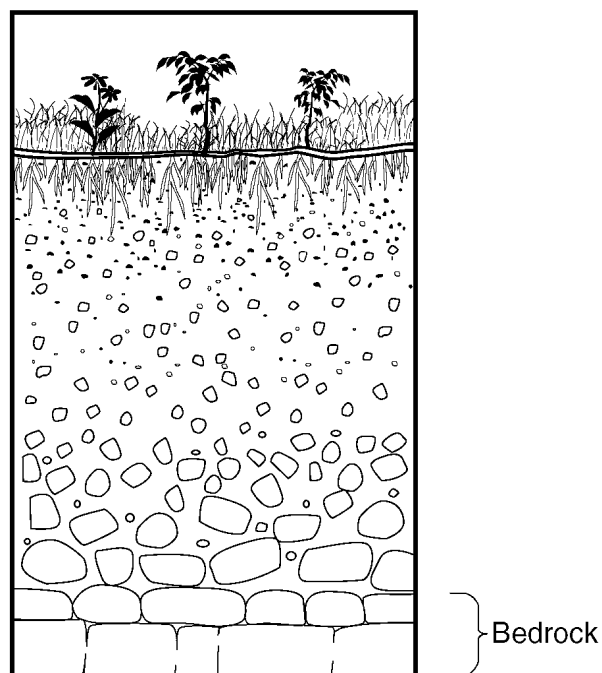
10. The demonstration shown in the diagram below indicates that powdered limestone reacts faster than a single large piece of limestone of equal mass when both are placed in acid.



The most likely reason powdered limestone reacts faster is that it has

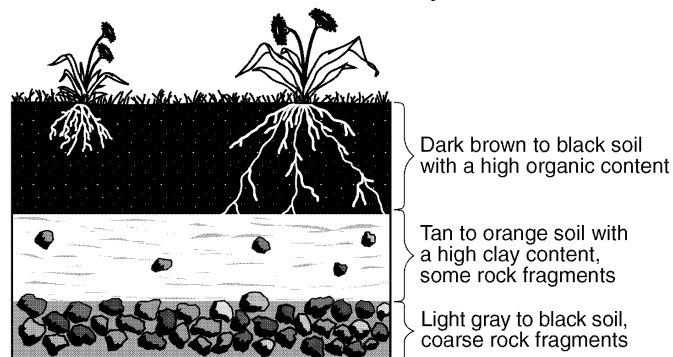
- A) less total volume
  - B) more chemical bonds
  - C) more total surface area
  - D) lower density
11. A large rock is broken into several smaller pieces. Compared to the rate of weathering of the large rock, the rate of weathering of the smaller pieces is
- A) less
  - B) greater
  - C) the same
12. As a particle of sediment in a stream breaks into several smaller pieces, the rate of weathering of the sediment will
- A) decrease due to a decrease in surface area
  - B) decrease due to an increase in surface area
  - C) increase due to a decrease in surface area
  - D) increase due to an increase in surface area

13. The cross section below shows a soil profile.



This soil was formed primarily by

- A) erosion by glaciers
  - B) erosion by running water
  - C) capillarity and human activity
  - D) weathering and biological activity
14. The cross section below shows layers of soil.



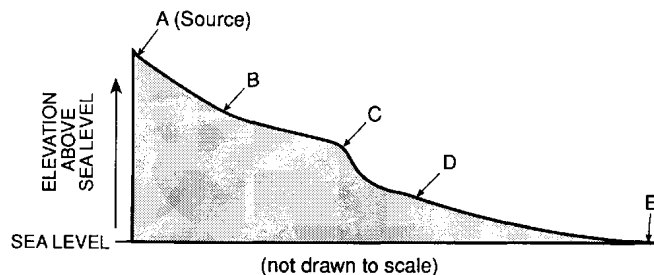
Which two processes produced the layer of dark brown to black soil?

- A) melting and solidification of magma
- B) erosion and uplifting
- C) weathering and biologic activity
- D) compaction and cementation



## Topic 9&10: Practice Test

15. Which factors most directly control the development of soils?
- A) soil particle sizes and method of deposition
  - B) bedrock composition and climate characteristics
  - C) direction of prevailing winds and storm tracks
  - D) earthquake intensity and volcanic activity
16. Sandstone, limestone, and conglomerate cobbles are found in a streambed in New York State where the surrounding bedrock is composed of shales and siltstones. The most likely explanation for the presence of these cobbles is that they were
- A) weathered from the surrounding bedrock
  - B) formed when shale and siltstone bedrock were eroded
  - C) transported to this area from another region
  - D) metamorphosed from shale and siltstone
17. The composition of sediments on the Earth's surface usually is quite different from the composition of the underlying bedrock. This observation suggests that most
- A) bedrock is formed from sediments
  - B) bedrock is resistant to weathering
  - C) sediments are residual
  - D) sediments are transported
18. Why are Precambrian gneiss cobbles and boulders commonly found on top of the surface bedrock in the Catskills?
- A) The surface bedrock of the Catskills is composed of Precambrian gneiss.
  - B) The surface bedrock of the Catskills has been overturned.
  - C) Many meteorites composed of gneiss have landed in the Catskills.
  - D) Glaciers transported these rocks from the Adirondacks to the Catskills.
19. Unsorted, angular, rough-surfaced cobbles and boulders are found at the base of a cliff. What most likely transported these cobbles and boulders?
- A) running water
  - B) wind
  - C) gravity
  - D) ocean currents
20. Pieces of bedrock material that are broken from a cliff and deposited by a landslide at the base of the cliff are best described as
- A) rounded and sorted
  - B) rounded and unsorted
  - C) angular and sorted
  - D) angular and unsorted
21. What change will a pebble usually undergo when it is transported a great distance by streams?
- A) It will become jagged and its mass will decrease.
  - B) It will become jagged and its volume will increase.
  - C) It will become rounded and its mass will increase.
  - D) It will become rounded and its volume will decrease.
22. Base your answer to the following question on the diagram below, which represents a profile of a stream. Points *A* through *E* are locations along the stream.



The primary force responsible for the flow of water in this stream is

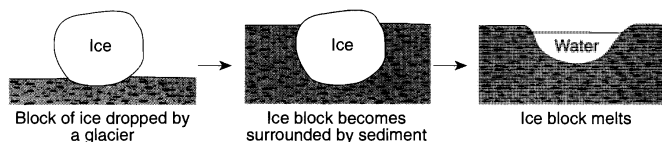
- A) solar energy
  - B) magnetic fields
  - C) wind
  - D) gravity
23. Which energy transformation occurs as a rock falls freely from the top of a vertical cliff?
- A) The rock's potential energy and kinetic energy decrease.
  - B) The rock's potential energy decreases and the rock's kinetic energy increases.
  - C) The rock's potential energy increases and the rock's kinetic energy decreases.
  - D) The rock's potential energy and kinetic energy increase.

## Topic 9&10: Practice Test

24. For which movement of earth materials is gravity *not* the main force?

- A) sediments flowing in a river
- B) boulders carried by a glacier
- C) snow tumbling in an avalanche
- D) moisture evaporating from an ocean

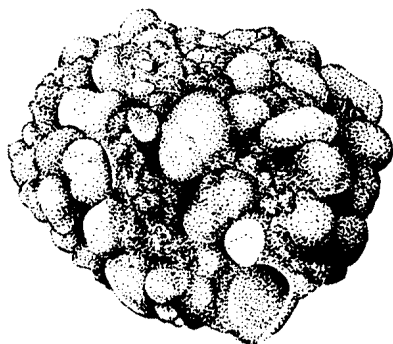
25. The diagram below shows a glacial landscape feature forming over time from a melting block of ice.



This glacial landscape feature is best identified as

- A) a kettle lake                      B) an outwash plain
- C) a finger lake                      D) a moraine

26. The diagram below shows a sedimentary rock sample.

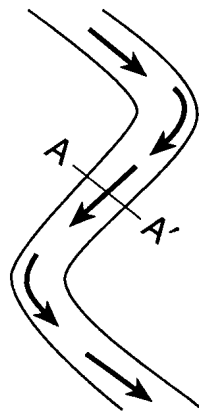


(Shown actual size)

Which agent of erosion was most likely responsible for shaping the particles forming this rock?

- A) mass movement                  B) wind
- C) glacial ice                          D) running water

27. The diagram below is a map view of a stream flowing through an area of loose sediments. Arrows show the location of the strongest current.



Which stream profile best represents the cross section from A to A'?

- A)
- B)
- C)
- D)

28. The diagram below shows a hand-sized rock sample with parallel sets of grooves. This rock sample was found in a gravel bank in central Vermont.

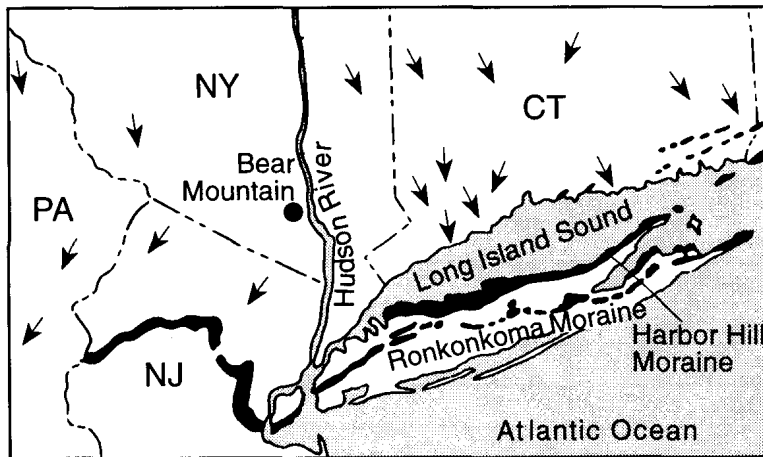


The grooves were most likely caused by

- A) stream erosion                      B) wind erosion
- C) a landslide                          D) glacial erosion

## Topic 9&10: Practice Test

Base your answers to questions 29 and 30 on the map below. Arrows on the map show the location and orientation of glacial striations on the surface bedrock. Dark shading shows the location of large moraines (glacial deposits).

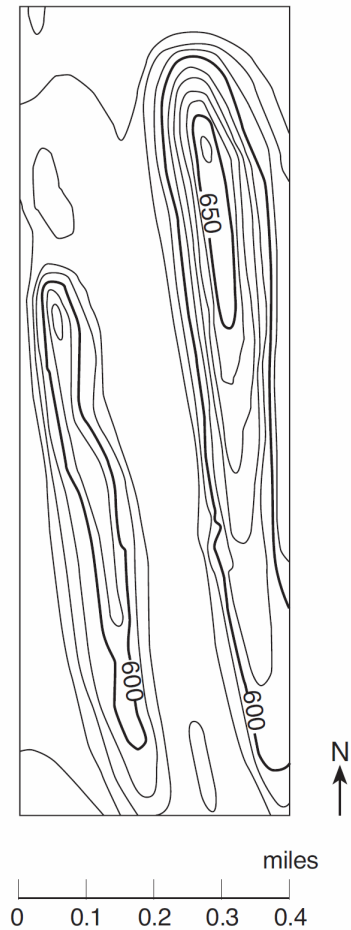


29. The moraines are recognized as glacial deposits because they are composed of rock materials that are
- A) uniform in size and layered
  - B) uniform in size and not layered
  - C) many different sizes and layered
  - D) many different sizes and not layered
30. Observations of which feature would be most useful in determining the thickness of the ice sheet?
- A) grooved bedrock near the top of Bear Mountain
  - B) glacial soils in southern Connecticut
  - C) glacial boulders at the bottom of Long Island Sound
  - D) scratches on loose rock at the mouth of the Hudson River

## Topic 9&10: Practice Test

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31. Base your answer to the following question on the topographic map below which shows two hills located in upstate New York.

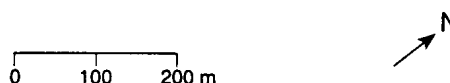
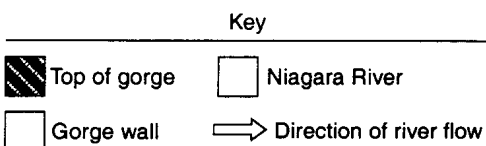
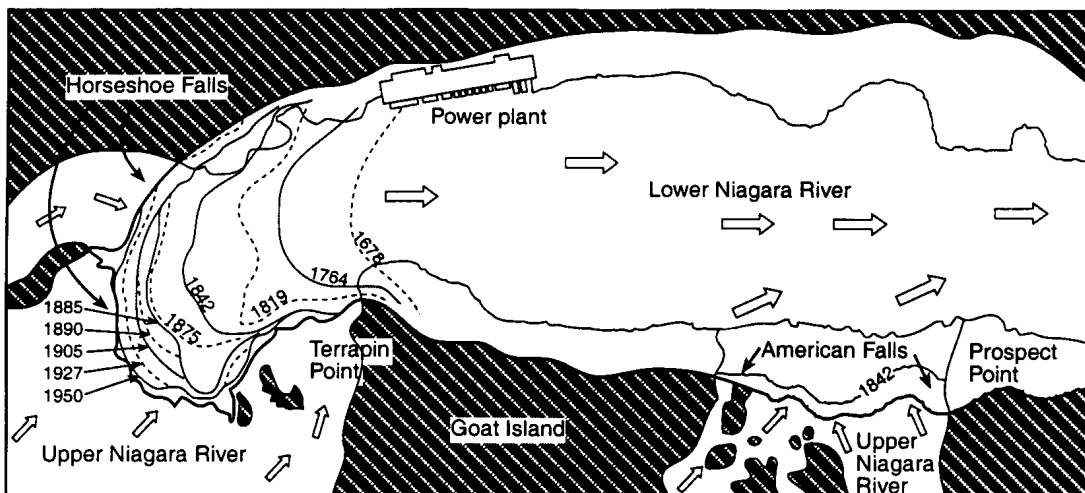


Which agent of erosion is most responsible for the shape of these hills?

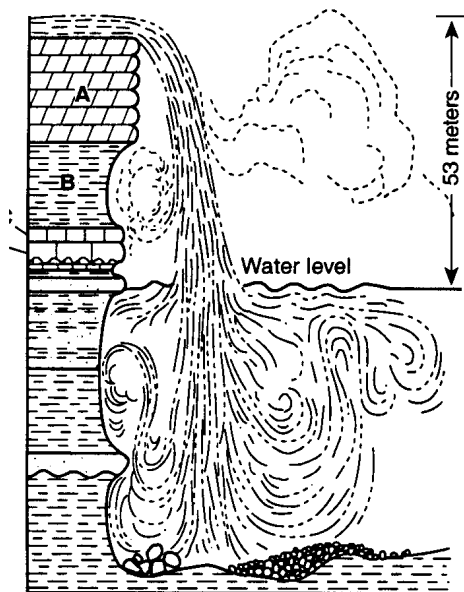
- A) wind
- B) gravity
- C) waves
- D) glaciers

## Topic 9&10: Practice Test

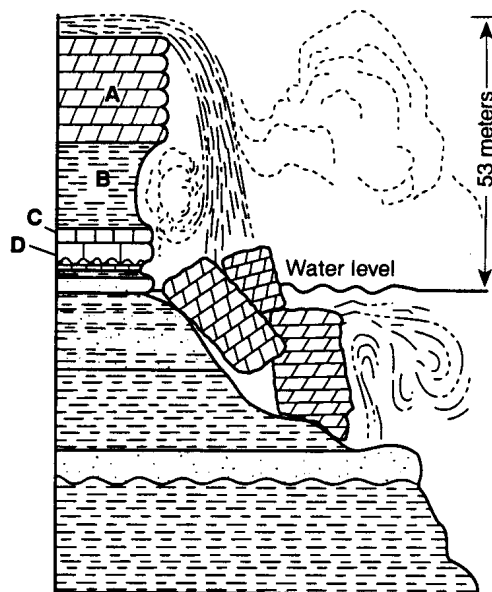
32. Base your answer to the following question on the map and cross sections below. The map shows measured changes in the position of Niagara Falls since 1678. The cross sections show the two parts of Niagara Falls: Horseshoe Falls and American Falls. Letters *A* through *D* represent the same rock layers at both locations.



**Horseshoe Falls**



**American Falls**

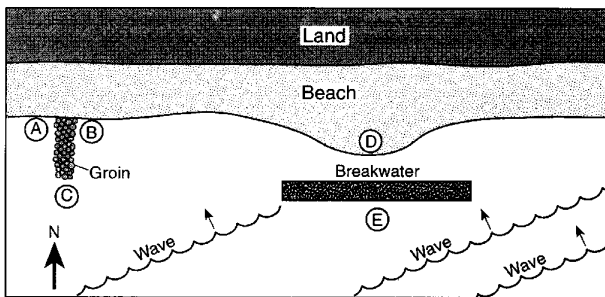


Which statement best explains why Horseshoe Falls has eroded back more than American Falls since 1842?

- A) Dolostone is the top rock layer at Horseshoe Falls.
- B) Dolostone is the top rock layer at American Falls.
- C) More water flows over Horseshoe Falls.
- D) More water flows over American Falls.

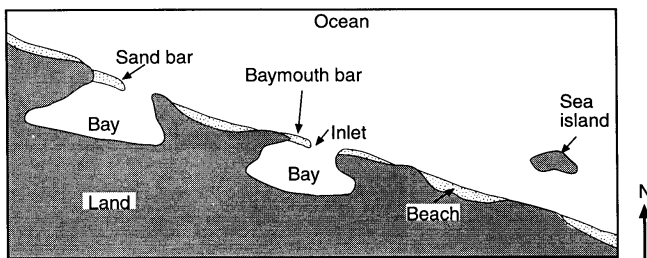
## Topic 9&10: Practice Test

33. Sharp-edged, irregularly shaped sediment particles found at the base of a rock cliff were probably transported by
- A) gravity                      B) wind  
C) ocean waves                D) running water
34. Base your answer to the following question on the diagram below, which shows ocean waves approaching a shoreline. A groin (a short wall of rocks perpendicular to the shoreline) and a breakwater (an offshore structure) have been constructed along the beach. Letters *A*, *B*, *C*, *D*, and *E* represent locations in the area.



At which location will the beach first begin to widen due to sand deposition?

- A) *A*    B) *B*    C) *C*    D) *E*
35. The map below shows some features along an ocean shoreline.



In which general direction is the sand being moved along this shoreline by ocean (long-shore) currents?

- A) northeast                      B) southeast  
C) northwest                      D) southwest
36. Which natural agent of erosion is mainly responsible for the formation of the barrier islands along the southern coast of Long Island, New York?
- A) mass movement    B) running water  
C) prevailing winds    D) ocean waves

## Topic 9&10: Practice Test

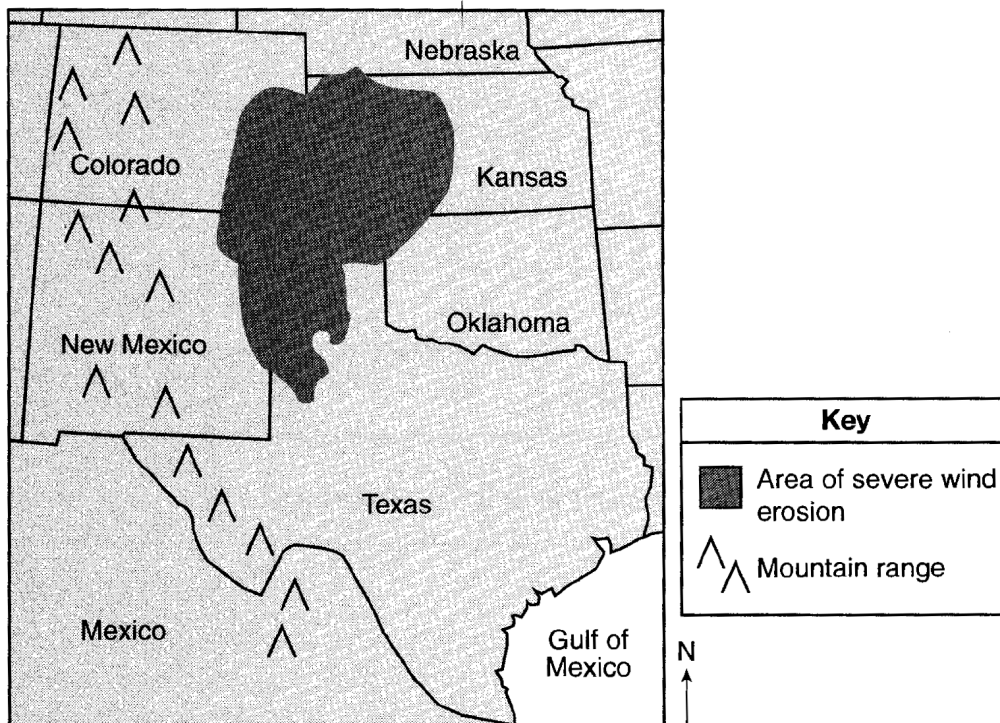
Base your answers to questions 37 and 38 on the passage and map below and on your knowledge of Earth science. The map shows a portion of the Dust Bowl in the southern Great Plains.

### The Dust Bowl

In the 1930s, several years of drought affected over 100 million acres in the Great Plains from North Dakota to Texas. For several decades before this drought, farmers had plowed the prairie and loosened the soil. When the soil became extremely dry from lack of rain, strong prairie winds easily removed huge amounts of soil from the farms, forming dust storms. This region was called the Dust Bowl.

In the spring of 1934, a windstorm lasting a day and a half created a dust cloud nearly 2000 kilometers long and caused "muddy rains" in New York State and "black snow" in Vermont. Months later, a Colorado storm carried dust approximately 3 kilometers up into the atmosphere and transported it 3000 kilometers, creating twilight conditions at midday in New York State.

**A Portion of the Dust Bowl  
in the Southern Great Plains**



37. Identify the name of the layer of the atmosphere in which the dust particles were transported by the Colorado storm to New York State.
38. Describe *one* change in the appearance of the sand particles that were abraded when transported by winds within the Dust Bowl region.

