

WEATHERING

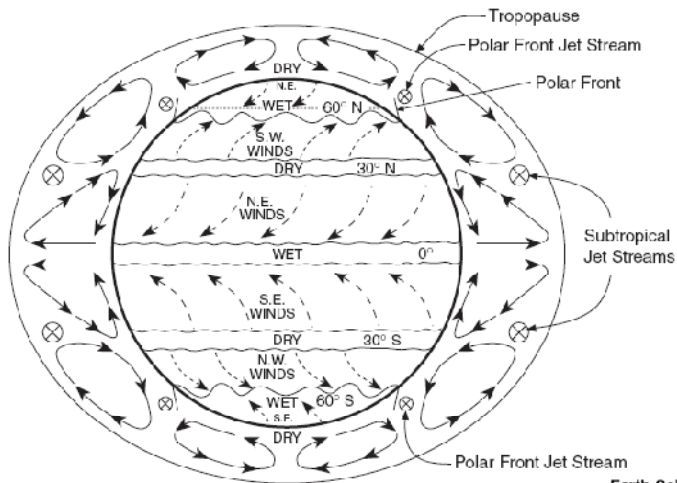
Aim 1: What is weathering?

HW from “Reviewing Earth Science, the Physical Setting”

- Read “How Do Rocks Weather” p81&82
- Do all questions on Part A&B-1 p82&83

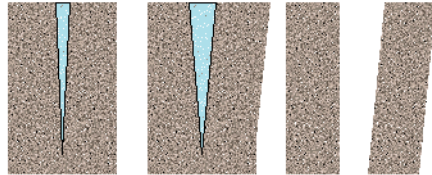
Weathering is the physical or chemical breaking down of rocks.

Physical weathering changes the size of a rock without changing its chemical composition. It is dominant in cold and dry climates. See RT page 14 for moisture belts.



Frost action is the action of frozen water in cracks. Liquid water enters cracks and as it freezes it expands pushing on the walls and the rock breaks.

Frost Wedging



Water-filled crack Freezes to ice Breaks Rock

Root action is the action of roots in cracks. Roots enter a crack and as they grow they push on the walls and the rock breaks.

Abrasion action is the action of water, ice, wind, and gravity on rock's surfaces.

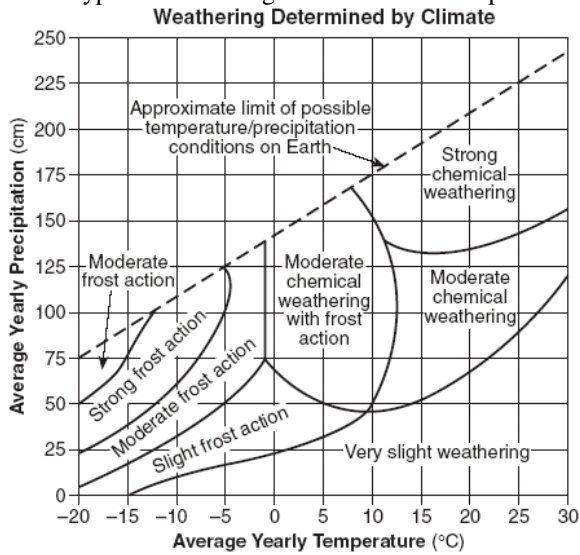
Chemical weathering changes the size of a rock by changing its chemical composition. It requires heat energy and water therefore it is dominant in warm and moist climates.

Acid rain is formed when carbon dioxide gas reacts with water vapor and forms carbonic acid. The acidic water breaks down the limestone, eventually creating crevices under ground. Over time the crevices enlarge to form caves.

Test your understanding

8/07

Base your answers to questions 40 and 41 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.



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

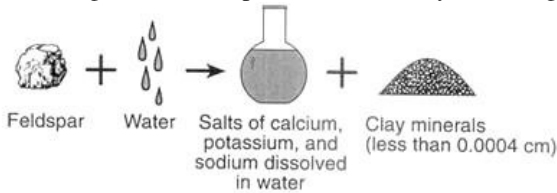
- (1) moderate chemical weathering (2) very slight weathering
 (3) moderate chemical weathering with frost action (4) slight frost action

41 The amount of chemical weathering will increase if

- (1) air temperature decreases and precipitation decreases (2) air temperature decreases and precipitation increases
 (3) air temperature increases and precipitation decreases (4) air temperature increases and precipitation increases

1/04

12 The diagram below represents a naturally occurring geologic process.

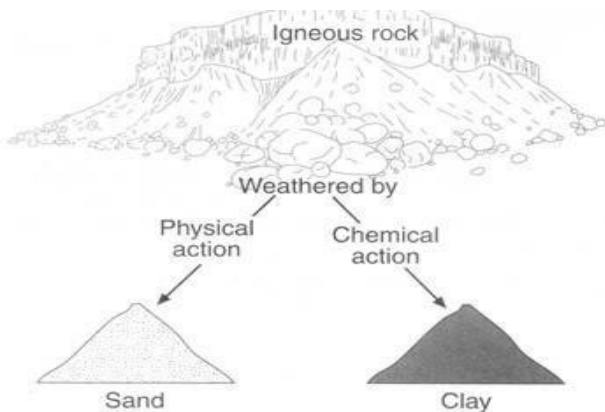


Which process is best illustrated by the diagram?

- (1) cementation (3) metamorphism (2) erosion (4) weathering

1/03

Base your answers to questions 61 through 63 on the diagram below, which shows igneous rock that has undergone mainly physical weathering into sand and mainly chemical weathering into clay.



61 Compare the particle size of the physically weathered fragments to the particle size of the chemically weathered fragments.

62 Describe the change in temperature and moisture conditions that would cause an increase in the rate of chemical weathering into clay.

63 If the igneous rock is a layer of vesicular andesite, identify three types of mineral grains that could be found in the sand.

6/03

23 Landscapes will undergo the most chemical weathering if the climate is
(1) cool and dry (2) cool and wet (3) warm and dry (4) warm and wet

8/03

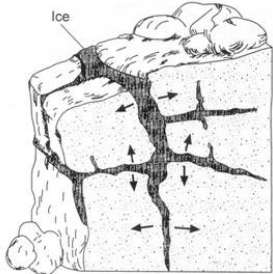
24 Which activity demonstrates chemical weathering?
(1) freezing of water in the cracks of a sandstone sidewalk (2) abrasion of a streambed by tumbling rocks
(3) grinding of talc into a powder (4) dissolving of limestone by acid rain

1/02

13 Which factor has the greatest influence on the weathering rate of Earth's surface bedrock?
(1) local air pressure (2) angle of insolation (3) age of the bedrock (4) regional climate

6/02

26 The diagram below shows granite bedrock with cracks. Water has seeped into the cracks and frozen. The arrows represent the directions in which the cracks have widened due to weathering.



Which statement best describes the physical weathering shown by the diagram?

- (1) Enlargement of the cracks occurs because water expands when it freezes.
- (2) This type of weathering occurs only in bedrock composed of granite.
- (3) The cracks become wider because of chemical reactions between water and the rock.
- (4) This type of weathering is common in regions of primarily warm and humid climates.

6/01

18 Which geologic feature is caused primarily by chemical weathering?
(1) large caves in limestone bedrock (2) a pattern of parallel cracks in a granite mountain
(3) blocks of basalt at the base of a steep slope (4) the smooth, polished surface of a rock in a dry, sandy area

8/01

12 In the cartoon below, Lucy gives Linus incorrect information about pebble,



If Lucy wanted to give Linus correct information about pebbles, which statement would be most accurate?

- (1) Pebbles can become cemented together to form a rock called gabbro.
- (2) Pebble is the name given to the smallest-size sediment.
- (3) Any large rock that weathers could become a pebble.
- (4) Magma is composed of pebbles.