

1. What does “morphology” mean?
2. What shapes (landforms) are there in your country?
3. What factors shaped these landforms?

Read the extract and highlight different geomorphologic factors.

Landscapes at both local and global scales have developed from a combination of processes. Plate tectonics, weathering and the action of moving water, ice and wind both create and destroy landforms. Yet these processes are insufficient to explain the many different and dramatic changes of scenery which can occur within short distances.

Each individual rock type is capable of producing its own characteristic scenery. Landforms are greatly influenced by rock type’s vulnerability to weathering, its permeability and its structure.

D. Waugh, Geography, an Integrated Approach, p. 178

4. Change the order of the letters to find names of rocks and complete the table.

<i>rock</i>	<i>translation</i>	<i>example of region</i>
nestomeli		the Palava Hills, the Moravian Karst
stosanend		B..... Paradise
angrite		the Jizera Mountains
negiss	<i>rula</i>	the Bohemian-Moravian H.....
saltba	<i>čedič</i>	the D..... Mountains
mecongralote		the Iron Mountains
cami-stish	<i>svor</i>	the Bohemian Massif

LISTENING Physical Geography II - Geomorphology

<https://www.youtube.com/watch?v=GkcjTRMTst0>

1. Before listening, check the meaning of the words.

LANDFORMS	PROCESSES	ROCKS	VERBS
arch	erosion	sandstone	grind
pinnacle	deposition	granite	wear down
dune	exfoliation	quartz	scrape
canyon	folding	feldspar	scour
river bed	faulting	hornblende	crack
dome		mica	

Discuss

Which shapes are created by wind erosion?

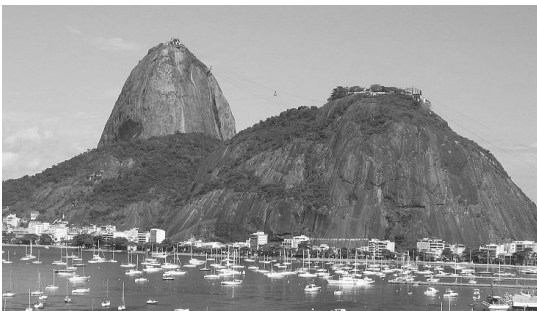
Which landforms were formed by running water?

What does temperature cause in rocks?

2. Watch the video and fill in the missing parts of sentences.

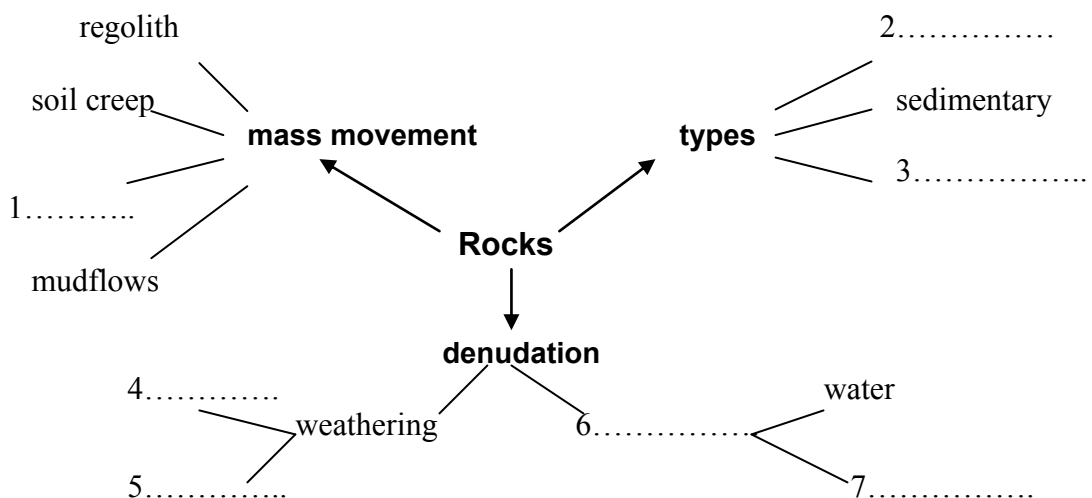
- 1) Erosion is the process by which.....
- 2) Depositional features are those which
- 3) Grinding and smashing effect is caused by.....
- 4) Natural arches and pinnacles can be found in
- 5) Dunes are created when
- 6) Given enough time, water can wear away even
- 7) V shaped canyon has been formed by
- 8) Arroyos or washes are
- 9) Repeated heating and cooling of rocks causes.....
- 10) At night, water in creaks, causing rock
- 11) Exfoliation takes place in granite which was originally
- 12) Gravity influences rocks in a way that they

3. Describe the processes which contribute to the development of forms like this:



Sugarloaf Mountain, Rio de Janeiro

MIND MAP – pair work: complete the map and describe how geomorphology studies rocks



Clue (náповěda): *igneous, chemical, wind, landslide, metamorphic, mechanical, erosion*

READING: Aeolian processes

From Wikipedia, the free encyclopedia, elaborated by E. Čoupková

1. Pre-reading. Explain these terms.

sediment sparse clay minerals landforms sphinx sculpture diameter hollow

2. Read about Aeolian processes and wind erosion and find what these terms refer to.

- a) Aeolus.....
- b) arid environments.....
- c) deflation
- d) abrasion
- e) desert varnish.....
- f) ventifacts
- g) yardang
- h) blowouts.....

Aeolian (or Eolian or Æolian) processes pertain to the activity of the winds and more specifically, to the winds' ability to shape the surface of the Earth and other planets. Winds may erode, transport, and deposit materials, and are effective agents in regions with sparse vegetation and a large supply of unconsolidated sediments. Although water is much more powerful than wind, aeolian processes are important in arid environments such as deserts. The term is derived from the name of the Greek god, Æolus, the keeper of the winds.

Wind erosion

Wind erodes the Earth's surface by deflation (the removal of loose, fine-grained particles), by the turbulent eddy action of the wind and by abrasion (the wearing down of surfaces by the grinding action and sandblasting of windborne particles). Regions which experience intense and sustained erosion are called deflation zones. Most aeolian deflation zones are composed of desert pavement, a sheet-like surface of rock fragments that remains after wind and water have removed the fine particles. Almost half of Earth's desert surfaces are stony deflation zones. The rock mantle in desert pavements protects the underlying material from deflation.

A dark, shiny stain, called desert varnish or rock varnish, is often found on the surfaces of some desert rocks that have been exposed at the surface for a long period of time. Manganese, iron oxides, hydroxides, and clay minerals form most varnishes and provide the shine.

Deflation basins, called blowouts, are hollows formed by the removal of particles by wind. Blowouts are generally small, but may be up to several kilometers in diameter. Wind-driven grains abrade landforms. Grinding by particles carried in the wind creates grooves or small depressions. Ventifacts are rocks which have been cut, and sometimes polished, by the abrasive action of wind. Sculpted landforms, called yardangs, are up to tens of meters high and kilometers long and are forms that have been streamlined by desert winds. The famous sphinx at Giza in Egypt may be a modified yardang.

3. WORD STUDY - find the verbs which describe what happens to rocks, landforms and sediments.

d - - - - t e - - - e ab - - - e ex - - - e
t - - n - - - - t gr - - d p - - - - h

DESCRIBING A PROCESS

1. How frost can weather rocks – put the letters in the correct order, identify connections

- A] As it does so, it expands by about 10%.
- B] By day,
- C] By night,
- D] Eventually,
- E] freezing and thawing occur so frequently that the rock is gradually split and broken up.
- F] This widens the cracks and puts a strain on the rock.
- G] water collects in cracks in rocks.
- H] when temperatures drop to 0°C, the water freezes and turns to ice.



1 _ 2 _ 3 _ 4 _ 5 _ 6 _ 7 _ 8 _

2. Which vocabulary and which language structures are typical for describing a process?

3. Read the model description and identify the typical words and structures you have mentioned in q.2

Periglacial processes -Ground contraction

The freezing of the active layer during the severe winter cold causes the soil to contract. Cracks open up which are similar in appearance to the irregularly shaped polygons found on the bed of a dried-up lake. During the following summer, these cracks fill with meltwater and, sometimes, also with water and windblown deposits. When this water freezes, either the following winter or during cold summer nights, the cracks widen and deepen to form ice wedges. This process is repeated annually until the wedges, which underlie the perimeters of the polygons, grow to as much as 1m in thickness and 3 m in depth. Fossil wedges, i.e. cracks filled with sands and silt left by meltwater, are a sign of earlier periglacial conditions.

Waugh,p.133

CLASSIFICATION OF PROCESSES Complete missing factors and match the right examples.

type of process

1. Fluvial

2. Karst

3. Glacial

4. Periglacial

5. Eolian

6. Biogenic

7. Hillslope

main factor in the process

...

water affecting limestone

...

freezing and thawing

...

...

force of gravity

examples of landforms

A moraines, eskers, lakes

B meander, gorge, delta

C peat bogs, coral reefs

D scree, tongue-like features

E sinkholes, canyons, polje

F ergs, dunes, loess areas

G ice wedges, patterned ground



esker



scree



sinkhole