Измењено: 2023-12-01 08:53:14

English for Geology Students 1 – Dyslexia friendly

Lidija Beko

Дигитални репозиторијум Рударско-геолошког факултета Универзитета у Београду

[ДР РГФ]

English for Geology Students 1 – Dyslexia friendly | Lidija Beko | | 2023 | |

http://dr.rgf.bg.ac.rs/s/repo/item/0008465

Дигитални репозиторијум Рударско-геолошког факултета Универзитета у Београду омогућава приступ издањима Факултета и радовима запослених доступним у слободном приступу. - Претрага репозиторијума доступна је на www.dr.rgf.bg.ac.rs

The Digital repository of The University of Belgrade Faculty of Mining and Geology archives faculty publications available in open access, as well as the employees' publications. - The Repository is available at: www.dr.rgf.bg.ac.rs

ENGLISH FOR GEOLOGY STUDENTS

LIDIJA BEKO

1

Dyslexia friendly

Lidija Beko

ENGLISH FOR GEOLOGY STUDENTS

1

Dyslexia friendly

Table of contents

Table of contents

Table of contents

Part 3 Volcanoes

Bromo caldeira in East Java in Indonesia

Volcanologists, engineers and scientists have to be continually creative in designing early warning systems in the case of imminent volcanic eruptions. It is now possible to use satellite systems to monitor the 1,500 or more potentially active volcanoes on the Earth. This allows scientists to rapidly identify new volcanic eruptions in remote areas and study what is happening there, as well as to study the release and distribution through the atmosphere of volcanic ash, and the flow and cooling of lava. Unusual seismic activity, increase in the size of the volcano, the release of gases and changes in the magnetic field have all been observed as warning signs of an eruption.

Types of magma / lava

Basaltic magma. Generally formed by the melting of ultramafic/ultrabasic rocks in the upper mantle, basaltic magma tends to have low viscosity, and usually rises quite rapidly to the surface, showing little reaction with other rocks in the crust. Containing relatively low amounts of silica and dissolved gases, basaltic lava emits via relatively quiet volcanic eruptions at temperatures between 1000˚ C and 1250˚ C.

Andesitic magma. The subduction of the oceanic lithosphere into the Earth's mantle causes the melting of ultramafic rocks and provides additional source material – the oceanic crust itself, or oceanic sediment – for andesitic magma, which commonly occurs around continental margins. With a relatively high silica content (around 60%), andesitic magma has intermediate viscosity, leading to volcanic eruptions of medium intensity. The average temperature of the andesitic lava is 800˚C and 1000˚C.

Rhyolitic magma. Highly viscous rhyolitic magma predominantly forms by melting of continental crust rocks, which are rich in both water and silica. With the combination of the considerable volumes of gas trapped within the magma and its general resistance to flow (high viscosity), rhyolitic magma commonly gives rise to highly explosive volcanic eruptions, and usually has a temperature between 650˚ C and 800˚ C.

Two factors contribute to the tendency of magma to rise towards the higher levels of the Earth's crust and / or up to the surface. The first is the principle of convection – molten magma is less dense and more buoyant than the surrounding rock, hence it rises. The second is pressure: if someone squeezes a ball of dough in their hand, the dough will

ooze between the fingers; in the same way, the weight of rock pressing down on magma causes it to ooze upwards.

Magmas and lavas flow at different speeds relative to their viscosity or flow resistance – the lower the viscosity the faster the flow. Imagine knocking over a carton of milk and a carton of yoghurt – the less viscous milk flows much faster and further than the higher viscosity yoghurt. Temperature, volatiles content and the amount of silica all affect viscosity. For instance, as its temperature increases, magma becomes less viscous and flows more easily, just as cooking oil flows more quickly across a pan as it is heated. Magma / lava with a higher volatiles content tends to have a lower viscosity than that without volatiles (dry magma), due to volatile atoms breaking down and potentially accumulating to produce bubbles. Magma / lava with a high silica content (felsic magma) has high viscosity due to the tendency for long chains of silicon-oxygen tetrahedra to form, which cannot easily flow past each other. Low silica content (mafic) magmas have much lower viscosity. Consequently, high viscosity, cooler felsic lava tends to accumulate at the eruption site or vent, while hotter, lower viscosity mafic lava will spread over a wide area as a thin sheet.

Volcano types

Volcanoes can be classified as three different types: shield volcanoes; cinder-cone or cinder volcanoes; composite volcanoes or stratovolcanoes. The different types exhibit different properties in terms of shape, size and composition.

Shield volcanoes. Formed by the successive laying down of sheets of basaltic lava in predominantly non-explosive eruptions – the basaltic lava which fuels them has low viscosity, thanks to the low amounts of silica and dissolved gases it contains, rendering such volcanoes less explosive than others – shield volcanoes rise from a roughly circular base to form a mountain with gradually sloping sides. A number of island chains, such as Hawaii, Tahiti and the Galapagos, represent shield volcanoes.

Cinder-cone. With a tendency to be small and steep-sided, cinder-cone volcanoes form as a result of ejecta rising high into the atmosphere and falling back around the initial vent. Fuelled by slightly more viscous magma that contains greater amounts of water, silica and dissolved gases than the lava composing shield volcanoes, cinder-cone volcanoes form by moderately explosive events. A number are to be found in the west of North America, with

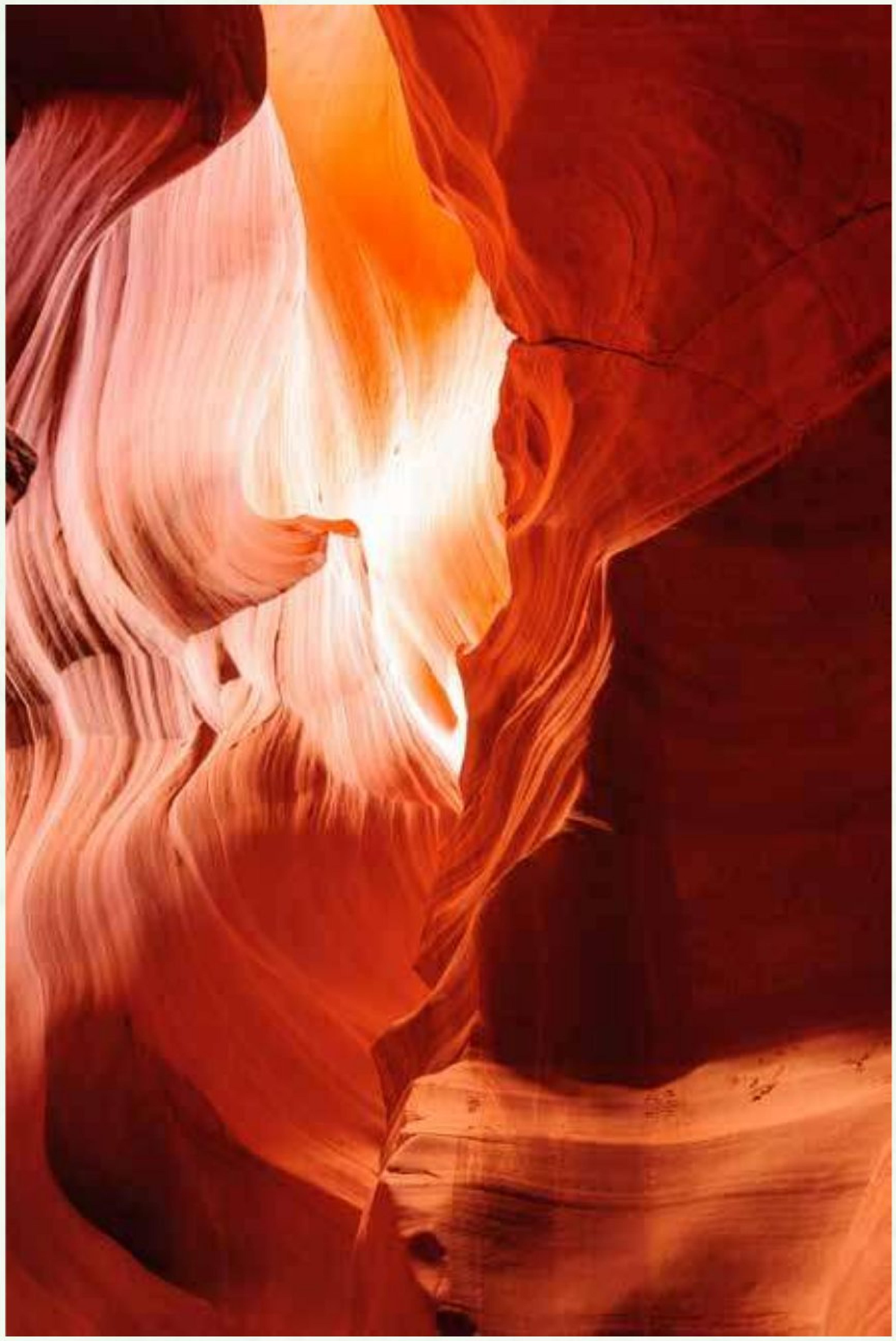
Geological Wonders

Antelope Canyon, Arizona, USA

The geological cycles and forces have created some truly amazing and beautiful effects across our globe. Slot canyons, such as the two sections of the Antelope Canyon in Arizona, are among the most intriguing and beautiful, with swirls and whorls of rock carved by rushing flood waters and raging winds over vast periods of time.

Their beauty, however, can mask serious dangers as well, and tourists wishing to experience their wonder may well put themselves in the way of harm.

Using the material below, or other information you are able to retrieve from online sources, list some of the dangers that exploring slot canyons may entail if you do so unprepared and alone; also list some sensible precautions that you should take.



Winding Antelope Canyon in Navajo Tribal Park, near Page Arizona

https://en.wikipedia.org/wiki/Antelope_Canyon
https://www.atlasobscura.com/places/antelope-canyon
https://www.smithsonianmag.com/travel/most-beautiful-slot-canyons-180962270/
https://www.opb.org/news/series/valhalla/oregon-slot-canyon-natural-wonders/

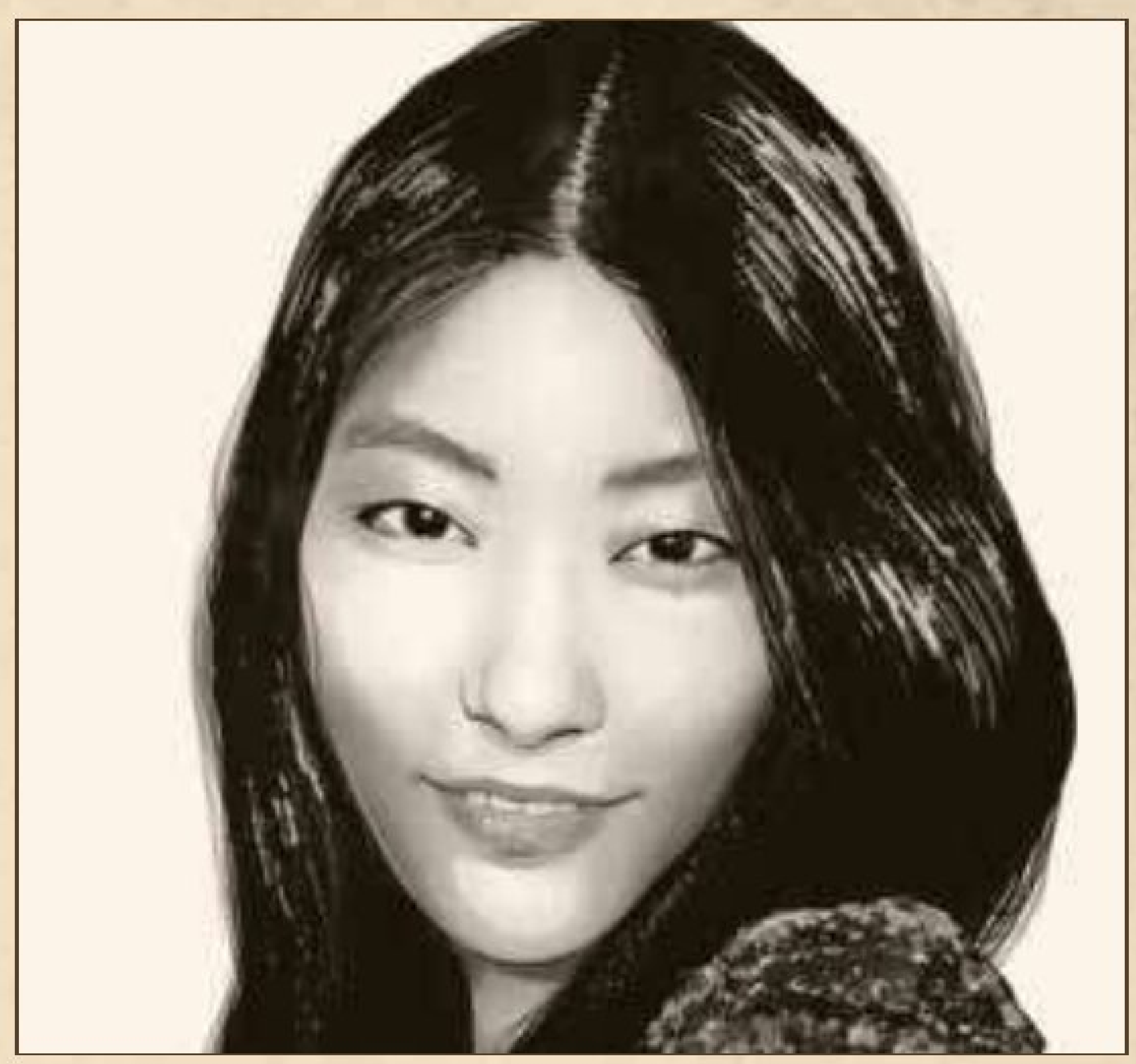
YOUNG PETROLOGIST

Newspaper

Petrologist

Like geologists in general, petrologists study rocks and stones. However, a petrologist specialises more in the composition and formation of specific rocks and features, rather than taking the broader view. Typical activities include:

- investigating the process by which crustal matter has formed over time (composition, structure, history)
- extrapolating findings of such research in order to hypothesise general formative processes, weathering, breakdown of formations over time, especially in regard to sedimentary rocks.



Uluru Research Institute

The Uluru Research Institute, funded by the Australian Government, is creating a team to carry out a research project at the Uluru site. While the work will be largely focused on collecting data on the composition of the rock and its gradual formation, there will also be a significant degree of collaboration with Aboriginal Australians – for whom this is a sacred site – to ensure that no damage is done to the site, and also to collect and collate the mythological and religious traditions associated with Uluru.

(The processes by which rock deposits are laid down and formed, and their subsequent change in form through erosion, weathering, glaciation, seismic activity or other forces have produced some amazing and landscapes across our planet. Some of them, like Uluru, have come to have religious or spiritual significance for the local population, and many have become major tourist sites. This brings up many questions about how such sites should be safeguarded, so that future generations can also enjoy their magnificence.)

99$

T: 012-345-6789