

It is important to go through this example with your students so they know how to do the activity. This is a new program they are learning and going through the example will help them to be able to explore on their own.

Explore Google Earth

Practice using Google Earth to explore Earth's beautiful features.

What you'll need:

- a computer or other device

What you'll do:

Use Google Earth to view Uluru Rock, Australia.

1. Open your Internet browser and go to:

<https://earth.google.com>

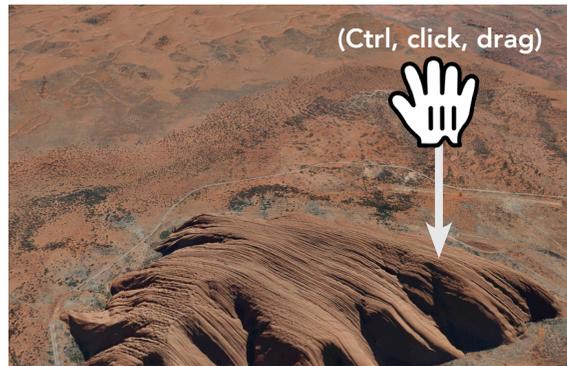
2. Search "Uluru Rock, Australia."



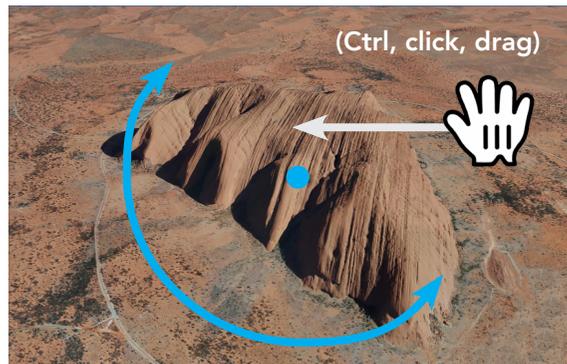
3. Move the view to the side.
Click and drag your mouse.



4. Tilt the view up
or down. Press the
"ctrl" key, then click
and drag up or down
("command" key for
Mac).



5. Rotate the view in a circle.
Press the "ctrl" key, then
click and drag to the side
("command" key for Mac).



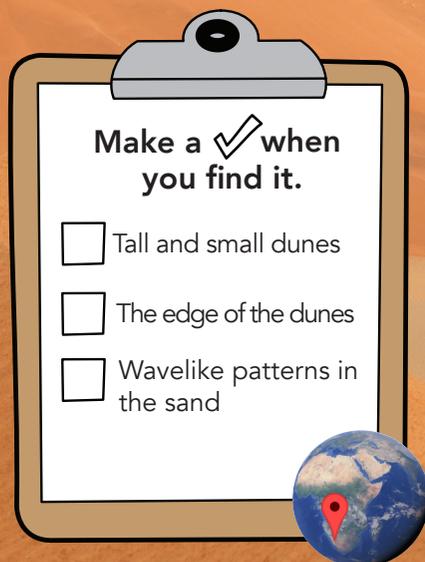
6. Zoom in or out. Click
the "+" or "-" icon, then
click on the map.



Winds quickly reshape desert sands

Wind can change a sandy desert landscape. Wind blows sand up one side of a dune and down the other. Winds can move the sand dunes of the Namib Desert up to 40 feet (12 meters) per year.

Explore:



Here are some features you can show your students using Google Earth:

- Tall and small dunes: (slow or fast) It took a long time for all the dunes in the desert to form; however, their shapes change quite quickly.
- The edge of the dunes: (slow) It took a long time for the wind to blow all the sand from the surrounding landscape into the dune field.
- Wavelike patterns in the sand: (fast) Dunes move quite quickly in wavelike patterns. A dune can move up to 40 feet in one year.

During a flood, the river water is often brown with dirt and mud. Floodwaters can cut deep into riverbanks causing erosion to occur quickly.

Here are some features you can show your students using Google Earth:

- Where the river is wide: (slow) It took a long time for the river path to form. Where the river is wide the water is moving more slowly and less erosion occurs. The wide river path is found on the high ground before the waterfall.
- Where the river is narrow: (slow) It took a long time for the river path to form. Where the river is narrow the water is moving faster and more erosion occurs. The narrow river path is found on the low ground after the waterfall.
- A deeply cut river valley: (slow) The deeply cut river valley is found after the waterfall. It took many floods and a long time to form the deep cut.

Explore:



The Grand Canyon is very large and impressive. It became that way after thousands of years of erosion from the Colorado River.



Was the Grand Canyon formed quickly or slowly?
How do you know?

Here are some features you can show your students using Google Earth:

- The Colorado River path: (slow) It took a long time for the river to cut its deep path.
- Flat high ground: (slow) It took a long time for the flat high ground (plateau) to form. It took millions of years for the layers of rocks to be deposited. Each layer was formed by an Earth event and there are thousands of them.
- Valleys with white, red and brown layers of dirt: (slow) It took a long time for the river to cut into the rock forming deep valleys and canyons. From one year to the next the canyon does not seem to change much.

Explore:



Make a when you find it.

- Colorado River path
- Flat, high ground
- Valleys with white, red and brown layers of dirt



A volcanic eruption happens quickly

Ash flies up high in the sky as this volcano erupts. Lava also flows out from the crater. Volcanic eruptions such as these can happen quickly—in a few seconds, minutes or days. This is a very short time compared to other geologic events.

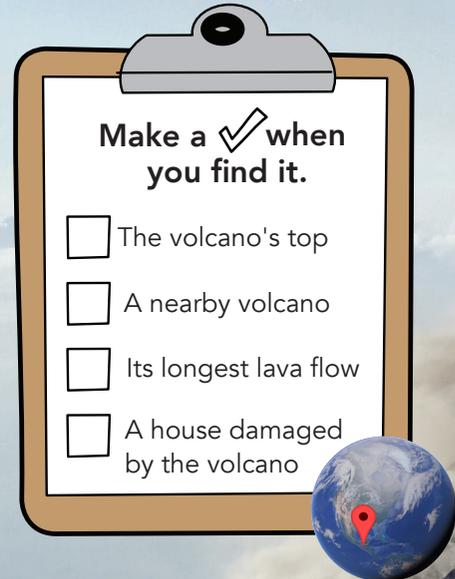
2-ESS1-1 Earth's Place in the Universe:

Examples of events and timescales could include volcanic

Explore:



Explore Google Earth to find the following features on Volcán de Fuego.



Here are some features you can show your students using Google Earth:

- Find the volcano's top: (slow) It takes a long time for a volcano to form.
- Find a nearby volcano: (slow) It takes a long time for a volcano to form.
- Find the volcano's longest lava flow: (fast) A lava flow can happen in one eruptive event.
- Find a house damaged by the volcano: (fast) A house is damaged by a lava flow in just a few hours. (You will find this feature on the longest lava flow.)

An island's formation happens slowly

The Hawaiian Islands were formed by volcanic eruptions. During an eruption, hot lava flows out of the ground and cools to make new land. The Kilauea volcano has been actively erupting for a very long time. It has taken over half a million years for volcanic eruptions to create the big island of Hawaii.

Explore:



Disciplinary Core Ideas: ESS1.C: The History of Planet Earth

Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.

Features of student performance 2. Evidence

- a. Students describe* the evidence:
- iv. That some results of Earth events occur very slowly (e.g., erosion of rocks, weathering of rocks).

The formation of an island happens very slowly over millions of years.

Make a ✓ when you find it.

- Eight Hawaiian Islands
- A volcanic crater
- Black rock (lava flow)
- Two big volcanos

Explore Google Earth to find the following features in Hawaii.

Did each of the events in the checklist happen quickly or slowly?

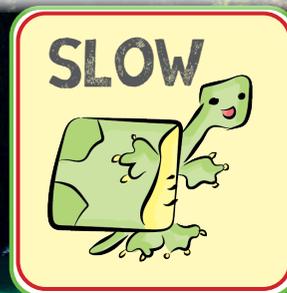




Fresh lava comes out of the Kilauea volcano in Hawaii.

Here are some features you can show your students using Google Earth:

- Find eight Hawaiian Islands: (slow) It took a long time for all the islands to form (millions of years).
- Find a volcanic crater: (fast or slow) It could take a long time or a short time for a volcanic crater to form. A small crater could be formed in one eruption in a day or a week. A large crater could form after many eruptions spanning hundreds of thousands of years.
- Find black rock (lava flow): (fast) A lava flow can happen in one eruptive event.
- Find two big volcanos: (slow) It takes a long time for a volcano to form.



Did the Hawaiian Islands form quickly or slowly?

It takes thousands of years for fresh volcanic rock to erode into soil that can support lush tropical forests.