



# Planetary Features

## Geology on Terrestrial Planets

### Classroom Activity

#### Overview

**Age Range:**

8-13

**Prep. Time:**

15 minutes

**Lesson Time:**

1 hour 25 minutes

**Cost per activity:**

High

**Includes the use of:**

Sand, Craft Sand, Water,  
Trays and rocks/pebbles

#### Outline

Students will first learn the correct terms for geological features, before identifying these same features found on Earth on other planets.

Grouping the images from the other planets into categories, labelling them and noting the similarities.

Students will then complete an activity, to understand how water carves channels into the surface.

### Pupils will Learn:

- The processes of tectonism, volcanism, gradation and catering that shaped and formed Earth, the moon and the terrestrial planets
- To identify geological features both on earth and on other planets

### Lesson Plan:

Overview of the time required to complete lesson.

Description	Time	Notes
Introduction to the subject	15 min	Naming geology features on Earth Tectonics- <a href="https://youtu.be/nGIvw-QZtNU">https://youtu.be/nGIvw-QZtNU</a>

Online Observatory: [onlineobservatory.eu](http://onlineobservatory.eu)

The online observatory collaboration consists of the following partners:

Baldone Observatory, Brorfelde Observatory, Cardiff University, Harestua Solar Observatory, Helsinki Observatory



		Volcanoes- <a href="https://www.youtube.com/watch?v=IAmqsMQG3RM">https://www.youtube.com/watch?v=IAmqsMQG3RM</a>
Activity 1	15 min	Categorising and labelling features on other planets
Break	15 min	
Introduction to Activity 2	10 min	Water forming deltas: <a href="https://www.youtube.com/watch?v=A47ythEcz74">https://www.youtube.com/watch?v=A47ythEcz74</a>
Activity 2	30 min	Carving river channels: <a href="https://youtu.be/gcQItNewhPY?list=PLvQkYyArNCy1U2R2fn1ugXaJ0EnqX4FaN">https://youtu.be/gcQItNewhPY?list=PLvQkYyArNCy1U2R2fn1ugXaJ0EnqX4FaN</a>

## Introduction to the subject:

Teachers should introduce geology as the process that has shaped and continues to shape our planet through the processes of **volcanism, tectonism, gradation, and impact cratering**. An overview of each of these processes should be given.

But geology does not just apply to earth, by studying geological features on other planets we can gain an insight into their formation and history.

## Activity 1:

- Divide into groups of four, distribute the planet features image sheet.

The first two pages of images are geological features from Earth that the students should recognise.

1. Student will look at their image sets, cutting them out if this has not already been done.
2. The groups should decide on **four categories** to organise their Earth images into, preferably naming each group after its formation process and justifying their choices.
3. Following this, students will need to look at the images of geological features on other planets and the moon, moving each into its respective category based on the key feature shown.
4. Ask the students to label parts of the images that they can name, this should give them the chance to redefine each of the categories and move images that may not have common features.



5. Display (or hand out) the actual answers, having students compare it with their results.

## Introduction to Activity 2:

Water is very powerful, it can weather rocks, pick up and deposit sediment and even carve channels. Water is also essential for life, so a good way to look for signs of life on another planet is to look for signs of water. If we can recognise how water forms features, such as channels, we can know what to look for on the surface of other planets.

<https://www.youtube.com/watch?v=A47ythEcz74>

## Activity 2:

- Ensure all the trays have 3 pea sized holes at one end and then cover these with masking tape

The teacher will introduce the activity. Take special care of introducing...

Steps of activity

1. Have all the groups prepare their trays of sand and rocks, encourage each group to fill the tray differently all starting with 5-7cm of regular sand. Ensure the holes at one end of the tray are not covered.
2. Dampen the sand and add 2-5 rocks (depending on tray size) to the tray.
3. Groups should position their tray so that the holes are over the edge of a table, with a bucket for water collection beneath.
4. Have the groups tilt their trays up at the un-holed side, depending on what you use to hold up the trays each group will likely be at a different angle.
5. Students should carefully collect water and then pour it into the high end of the tray.

<https://youtu.be/qcQItNewhPY?list=PLvQkYyArNCy1U2R2fn1ugXaJ0EngX4FaN>

## Assessment:

- How did the water affect the sand?
- What features can they see in the sand?
- Compare trays with different groups, what is similar and what is different?
- What factors might have affected how the water flowed?
- How does the water get around obstacles?

Inspired by the activity from the Lunar and Planar Institute:

<https://www.lpi.usra.edu/education/explore/LifeOnMars/activities/MarsFromAbove/CarvingChannels/>

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## Further Activities:

If there is time, have the groups repeat the experiment, changing their setup. They may change the combination of sand layers, the tilt of the tray, the layout of rocks or any other factors they can think of. Have them sketch the result each time they do the experiment, at the end they should be able to make comparisons.