



Interpreting the Geology of Europa & Ganymede

Comparing Jupiter's Moons

Classroom Activity

Overview

Age Range:

12-16

Prep. Time:

0 minutes

Lesson Time:

40-50 minutes

Cost per activity:

Low (printing costs)

Includes the use of:

Printout, pens/pencils

Outline

Students will use reference images of the surface of Ganymede and Europa, two of Jupiter's moons, to answer a series of questions related to geology and the age of features.

A peer review process can be used to mark the work.

Pupils will Learn:

- Making observations and drawing scientific conclusions from them

Lesson Plan:

Overview of the time required to complete lesson.

| Description | Time | Notes |
|-----------------------------|-----------|-------------------------------------|
| Introduction to the subject | 10 min | |
| Activity 1 | 20-30 min | |
| Assessment | 10 min | Use: ModelAnswers_EuropaAndGanymede |

Online Observatory: onlineobservatory.eu

The online observatory collaboration consists of the following partners:

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



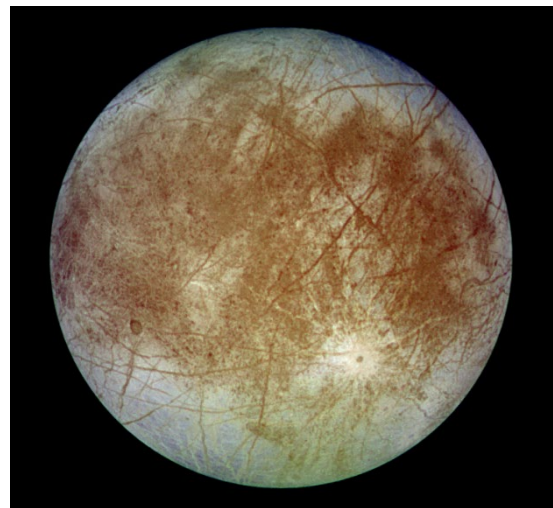
Introduction to the subject:



Ganymede is also one of the four large Galilean moons of Jupiter and the largest moon in the Solar System. With a diameter of 5268 km, it is larger than the planet Mercury. The surface of Ganymede is composed of water ice at a very low temperature (around -160° Celsius). The ice therefore behaves like rock but there is evidence that, like Europa, the surface has cracked, moved and flowed. In the distant past Ganymede was warm inside, probably due to tidal heating and the icy crust moved about on a partly liquid subsurface layer. In places, ice has flowed to the surface through linear cracks creating features called sulci (sulcus singular).

(Image: NOAA)

Europa is another of Jupiter's Galilean moons, with a diameter of 3120 km. Its surface is composed of water ice solidified at a temperature of around -170° Celsius. However, cracks on the surface reveal that its crust has been mobile upon a subsurface liquid water layer, some of which has filled the cracks (sulci) and solidified. Within Europa, the heat source that melts the ice, is probably energised by tidal forces. The whole surface is smooth with no tall features.



(Image: NASA/JPL)

Activity 1:

- Printout and distribute the student guide.

Introduce the activity, telling students that all the information they need is in the student guide.

1. Students should read the guidance and look at the images at the start of the student guide.
2. Then they should work through the questions that are provided on the student guide

Assessment:

- Have students switch papers and use peer assessment, marking the answers using the [ModelAnswers_EuropaAndGanymede.pdf](#)

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