

Living in the shadow of Italy's volcanoes

Where is Mount Etna?

Mount Etna is located on the east coast of Sicily roughly midway between Messina and Catania (Figure 1). It is the largest and tallest volcano of Europe, and one of the most active volcanoes on Earth. It has erupted frequently since its first eruption some 500,000 years ago.

Figure 1

The location of Mount Etna



Image source: <https://www.tes.com/lessons/CFYc3HnIDIMtaQ/enikah-what-is-the-oldest-volcano>

What are the characteristic features of Mount Etna?

Look at Figure 2. It is a view of Mount Etna from the south. Notice the smoking crater top left in the photo. The photo shows the complexity of the volcano with its many craters and lava flows. Notice also the partly forested flanks of the volcano.

Formation of Mount Etna

Figure 2

Mount Etna from the south



Image source: http://en.wikipedia.org/wiki/Mount_Etna#mediaviewer/File:Mount_Etna_from_the_south_060313.JPG

Mount Etna has a very broad elliptical base (38 x 47km) and rises to a height of 3350m above sea level. Whilst it is broadly classed as a shield volcano, it does in fact consist of a series of nested stratovolcanoes (layers of alternating ash and lava) each with its own crater or caldera (enlarged crater formed when a crater collapses in on itself).

How has Mount Etna formed?

Mount Etna has been formed at a highly complex plate margin where the African plate is converging with the Eurasian plate. It is a destructive plate margin and the African plate is slowly being subducted beneath the Eurasian plate (Figure 3). There are many fractures and faults at this plate margin accounting for the highly complex pattern and types of volcanoes in the region.

Formation of Mount Etna

Figure 3

The formation of Mount Etna



Image source: DTWE

Scientists believe that dense high-temperature magma rises to the surface through a 'slab window' in the subducting African plate accounting for the effusive rather than explosive nature of Mount Etna's eruptions. There is still considerable uncertainty about this and several other theories have been suggested.

(see Resource 2 for more details on the tectonic setting)

What happens when Mount Etna erupts?

There are four summit craters on Mount Etna, with the most active in recent years being the south-east crater which opened up in 1978. Strombolian eruptions, which produce ash, tephra and lava fountains, are fairly common in these craters.

Occasionally there are eruptions on the volcano's flanks usually along fissures (cracks) which open up on the volcano's sides. The mountain's largest feature is the Valle del Bove ('Valley of the Ox'), a large horseshoe-shaped caldera on the eastern slope.

Eruptions are frequent and can be more or less continuous for many years. From 1995-2001 there were 150 summit eruption episodes involving lava flows or fire fountains. In 2012 a series of eruptions took place along a fissure on the flanks of the Southeast Crater (Figure 3).

Formation of Mount Etna

Figure 3

Recent eruption of Mount Etna (2012 tbc)



Image source: <http://etna10.com/from-space/>

Questions

1. Study Figure 4 below which shows a recent eruption of Mount Etna. Access Google maps to help you interpret the possible impacts of this eruption.
 - (a) What were the products of the eruption?
 - (b) In what direction was the wind blowing?
 - (c) Use the Google map to help you suggest some of the likely impacts on the area. Consider economic, social and environmental impacts. Identify towns and cities affected by the ash cloud.

Formation of Mount Etna



<http://etnatao.com/from-space/>

2. Use the following websites to find out more about Mount Etna. Consider the tectonic background, the nature of the eruptions and any current threats. You will find some interesting webcams and lots of excellent photos.

<http://www.etnatao.com/etna/>

<http://www.ct.ingv.it/en/webcam-etna-en.html>

<http://www.ct.ingv.it/en/volcanoes-etna.html>

<http://geology.com/volcanoes/etna/>