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What caused the formation of Mount Vesuvius?

Living in the shadow of Italy's volcanoes

Overlooking the city and Bay of Naples, Mount Vesuvius is the only active volcano in mainland Europe (Figure 1). Whilst the most famous eruption occurred in AD79, when ash and pyroclastic flows destroyed the Roman cities of Pompeii and Herculaneum, it has erupted violently many times during its history. Its most recent eruption was in 1944.

Mount Vesuvius is one of several volcanoes that has formed along a subduction plate boundary known as the Campanian Arc (Figure 2). This forms part of the boundary between the African and Eurasian plates and is the only segment where subduction is occurring.

Mount Vesuvius' formation results from the subduction of a small section of the African plate as it slides beneath Italy (Figure 3). Scientists believe that a slab of the descending plate has become detached creating a 'slab window'. This has affected the chemistry of the magma leading to explosive eruptions, producing ash clouds and pyroclastic flows.

Figure 1

Mount Vesuvius overlooking the Bay of Naples

Image source: DTWE

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What caused the formation of Mount Vesuvius?

Figure 2

Mount Vesuvius – the tectonic setting

Image source: DTWE

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What caused the formation of Mount Vesuvius?

Figure 3

The formation of Mount Vesuvius

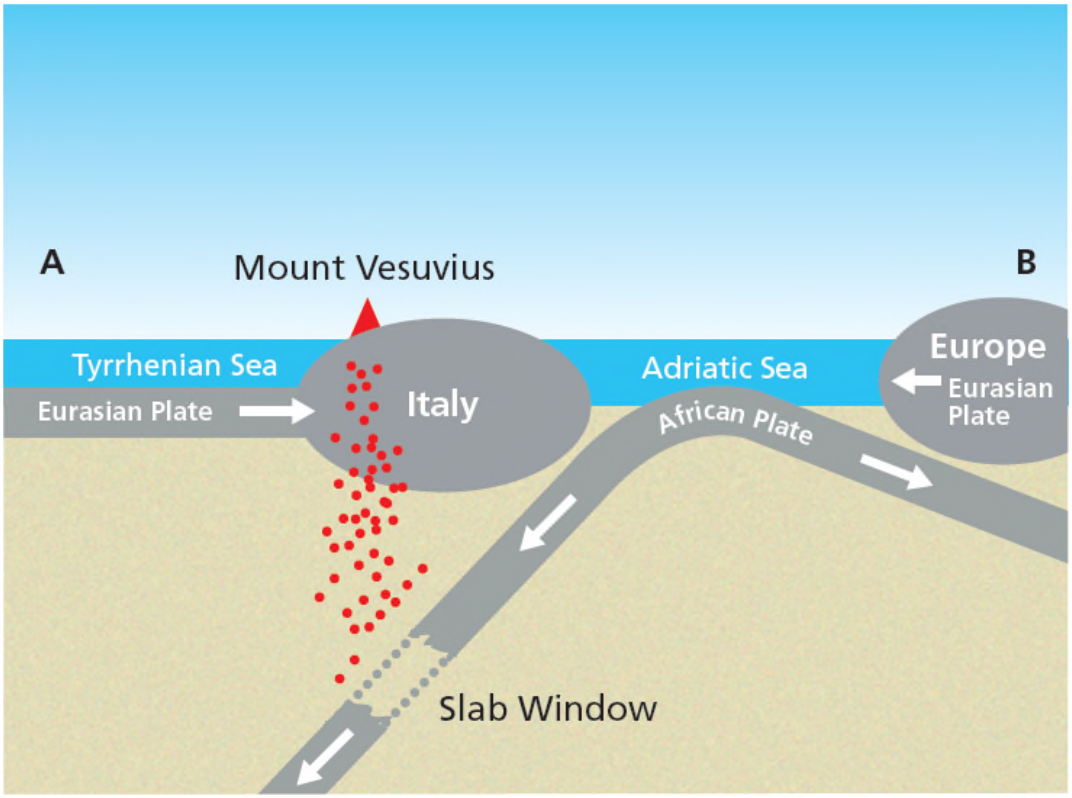

Image source: DTWE

Questions

1. Locate and label the city of Naples on Figure 1.
2. How does the photo Figure 1 serve as a warning to the people of Naples?
3. Outline the formation of Mount Vesuvius.
4. Why are the eruptions of Mount Vesuvius different from those of the other volcanoes in the region?
5. On a copy of Figure 3, add labels to explain the formation of Mount Vesuvius.