

Student tasks

Read the item below:

Volcanic eruption causes flight chaos in Mexico

Popocatépetl is an active stratovolcano located 70 km southeast of Mexico City and is the second highest peak in Mexico. The volcano is one of the most active in Mexico with a major eruption in 2000 and six minor eruptions between then and 2013. The volcanoes in Mexico form part of the Pacific Ring of Fire and are the result of the tiny Cocos oceanic plate colliding with, and being subducted under the continental North American plate.

Popocatépetl began rumbling again in May 2013 and erupted with plumes of ash, which rose three kilometres into the air, and fragments of fiery volcanic rock which were thrown up to 700 metres from the crater. The eruption continued into July 2013, when the alert level was set at one notch below evacuation level.

Although Mexican airlines continued their scheduled flights into Mexico City airport, US Airways, Delta, United, American and Alaska Airlines cancelled flights. They were concerned that the ash could affect the safety of the passengers on their planes. Consequently, stranded passengers were forced to wait for hours at Mexico City airport. Jorge Andres Gomez, a spokesperson for the airport said any change in the wind or intensity of the volcano would complicate the situation.

In May 2013, the Mexican government sent hundreds of soldiers to the area in case the Popocatepetl eruption increased in intensity and residents needed evacuating. In July 2013, they established an 11 km no-fly zone around the volcano although a spokesperson said, 'We are playing safe. There's a very thin presence of ash in the air, but we wouldn't expect it to affect equipment.' They also suggested that people living close to Popocatépetl took precautions such as using masks, covering their water supplies and staying indoors.

Answer the following questions:

1. Identify the **cause** of the Popocatépetl eruption.
2. Identify at least three **effects** of the Popocatépetl eruption.
3. Identify at least six **responses** to the Popocatépetl eruption.

Extension tasks

4. What **economic effects** might the Popocatépetl eruption have on the Mexican economy?
5. Suggest one **environmental effect** of the Popocatépetl eruption.



Popocatépetl

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Teaching notes

This resource asks students to identify causes, effects and responses which are a vital KS4 examination skill.

Questions asking students to distinguish between cause, effect and response are common in KS4 examinations. The feedback from senior examiners in the annual report on the examinations frequently states that candidates are unable to make these distinctions e.g.

'Effects invited students to describe impacts such as deaths, injuries, buildings and roads collapsing ... Yet the vast majority of students answered a different question, covering either the responses rather than the effects or giving reasons why the effects were more severe in a poorer area.'

The resource could also be used to demonstrate that these questions allow different levels of response. Task 1, for example, 'Identify the cause of the Popocatépetl eruption', allows the following possibilities:

A basic response with a partial explanation and/or an incomplete sequence:

The plates are colliding, one plate sinks under the other, and there is a build-up of pressure.

A clear explanation with a complete sequence and developed and linked points:

An oceanic and a continental plate are colliding, one is subducted and melts. There is a build-up of pressure, which is released through the eruptions.

A detailed explanation showing a detailed understanding with accurate information:

Due to convection currents, the denser oceanic plate is subducted beneath the continental plate. The leading edge of the oceanic plate melts due to friction and heat. Magma rises and is released in a series of explosive eruptions.

Additional tasks

- Students could be asked to tweet a message in 140 characters, from the airport to their followers explaining their delay.
- Students could be asked to prepare a press release from an airline explaining the reasons behind the flight cancellations.
- Students could be asked to suggest reasons why thousands of people live in the shadow of Popocatépetl.

Additional material

- A short video of the May 2013 Popocatépetl eruption is available at <http://www.bbc.co.uk/news/world-latin-america-22535495>
- A series of six photographs relating to the Popocatépetl eruption is available at <http://www.bbc.co.uk/news/world-latin-america-17802922>
- A series of maps, photograph and a video including details of the proposed evacuation is available at <http://www.dailymail.co.uk/news/article-2324377/Popocatepetl-volcano-Mexico-looks-ready-blow-Officials-poised-evacuate-thousands.html#ixzz2YSej82qK>