

## THE NYIRAGONGO VOLCANO

by Garry Atterton

**L**EARNING ABOUT NATURAL HAZARDS is great Geography! Everybody loves finding out about volcanoes, earthquakes, floods and storms. Although major hazards do make the news, it is amazing how many of these events do not get into our newspapers or onto our television screens.

Figure 1 shows some of the natural hazards that occurred in the year 2002. How many of these did you know about? Probably the only two that made big news was the eruption of Mount Etna in Italy and the Nyiragongo volcanic eruption in the Democratic Republic of the Congo.

This unit examines the causes of the Nyiragongo eruption, its effects on the local people, and the short-term solutions that took place in January 2002.

### The Nyiragongo volcano

What is interesting to study is the fact that the Nyiragongo volcano is in an area of the world that little is written about in geography textbooks.



Figure 2: East Africa, showing the location of the Nyiragongo volcano

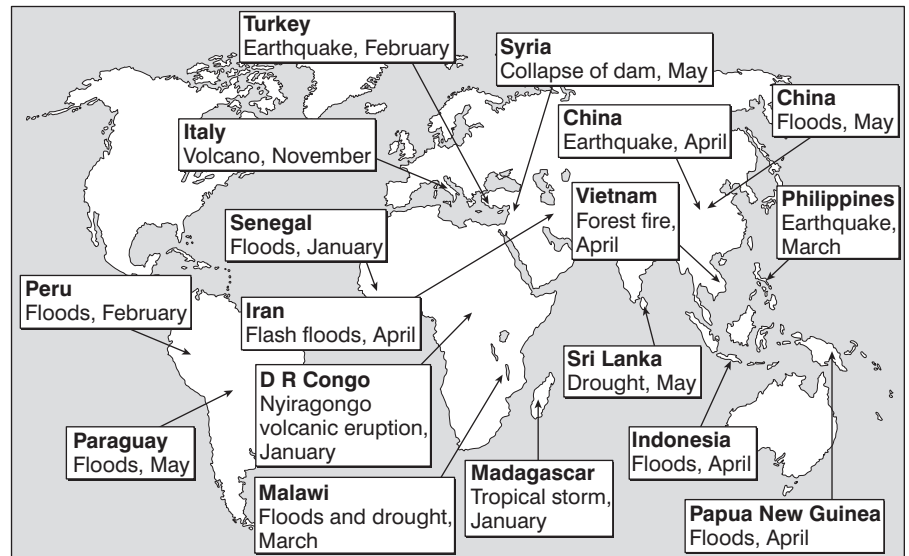


Figure 1: Global natural disasters, 2002

Figure 2 shows the location of the volcano. It is found on the border of the Democratic Republic of the Congo, next to a tiny country called Rwanda.

### Causes of the eruption

Vulcanologists (volcano experts) say that the devastating eruption was a ‘disaster waiting to happen’. Nyiragongo is one of the most active volcanoes in the world. Yet the timing of the eruption came as

a surprise to vulcanologists.

The eruption was caused by tension being released along a series of faults along the East African Rift Valley (Figure 3).

It is technically possible to predict volcanic eruptions. However, Nyiragongo is in a very remote area in a country with limited scientific resources.

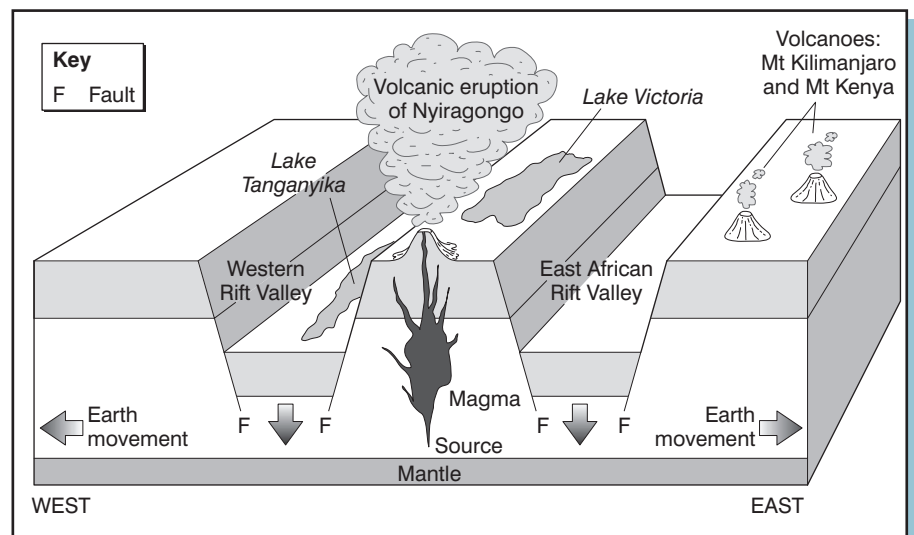


Figure 3: Cross-section of the East African Rift Valley

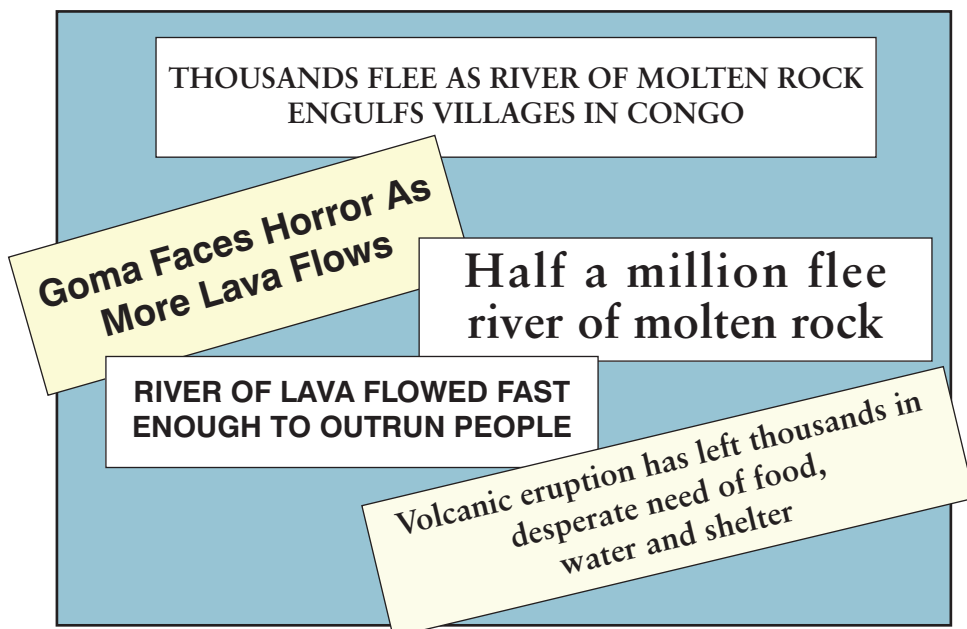


Figure 4: Newspaper headlines on the Nyiragongo eruption

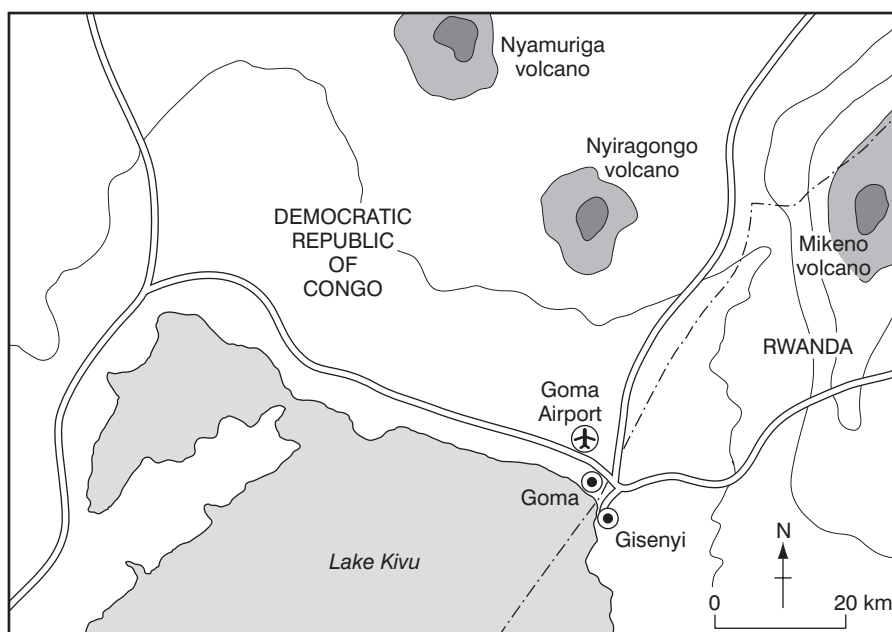


Figure 5: Location of the Nyiragongo volcano

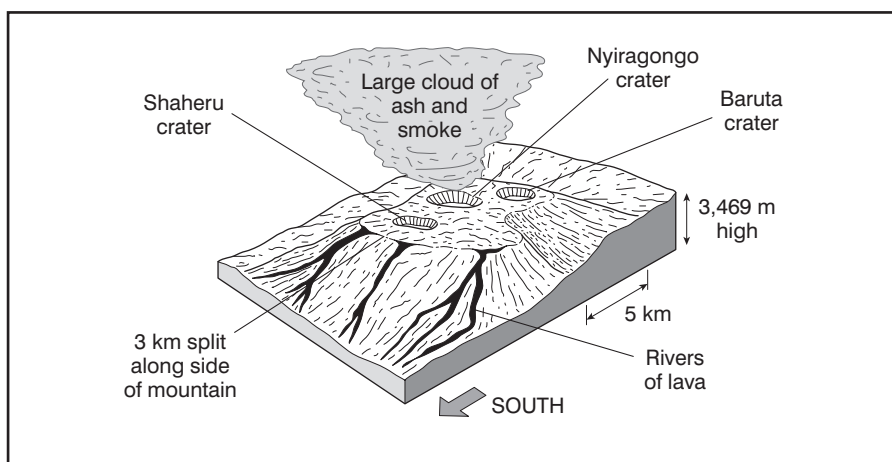


Figure 6: Eruption of Nyiragongo volcano, 17 January 2002

## Location of the East African Rift Valley

The Rift Valley extends 4,000 km from Mozambique in the south to the Red Sea in the north. The sections of crust have been pushed up, arched and violently broken. Some sections of the crust have moved outwards, causing the central section to dip down to form the Eastern and Western Rift Valleys. You have probably seen images of these plains teeming with wildebeest, zebra and elephant. This is a land under stress. There are 30 active volcanoes in this spectacular region. It is a great scar on the face of the Earth.

Nyiragongo is on the edge of a shifting section of the crust. The 3 km crack that opened on the side of the mountain, when it violently erupted, was caused by the shifting plates. It is possible that the east of Africa may detach itself completely from the rest of Africa. However, this could take 50 million years!

## The consequences

After the eruption of 17 January 2002, British newspapers covered the story with eye-catching headlines (Figure 4).

Nyiragongo volcano is in the Democratic Republic of Congo, just 50 km to the north of the city called Goma (Figure 5).

Figure 6 shows that the Nyiragongo volcanic eruption of 17 January 2002 was quite different from many diagrams that we see in textbooks (see Figure 9 on page 4). If you examine Figure 6 carefully you will see not a single crater, but three. A large split can be seen in the side of the mountain from which the flowing rivers of lava spilled out at an unusually fast rate.

At the European Athletics Championship in September 2002, the English athlete Dwaine Chambers, during his 100 metre sprint, very briefly ran at an amazing 28 mph. The Nyiragongo eruption moved at 40 mph. It is extremely rare for a volcano to



Figure 7: The experiences of local people

produce a river of lava fast enough to outrun and kill a person.

This was not the first time the volcano had erupted. In 1977 a lava lake that had filled the crater drained away and within half an hour around 2,000 people were dead.

Vulcanologists who were there in 2002 flew through a sulphurous haze and saw a new crater and lava spewing material 6 metres into the air. The rivers of lava went straight over the city of Goma. The city below looked an amazing sight. As much as 80% of the infrastructure (roads, water supply, airport etc) was destroyed by the encroaching flames. The airport was cut in two by one of the flows. The lava was half a mile wide in places, and turned vast parts of the city into a scorched wasteland, creaking and groaning as it went. The lava eventually slowed and cooled into a wall of black rock that was 3 metres deep in places.

There followed a mass exodus of half a million people from the city. This totally unplanned and unauthorised movement was probably one of the most rapid enforced migrations ever to take place after a natural disaster. Try to imagine what it would be like for you, if you had just 2 minutes to take whatever you could carry from

your house because of imminent disaster. What would you take: your playstation, your skateboard, some CDs – or would you take water, food or a blanket?

Newspaper reporters managed to talk to some local people, and recorded their comments (Figure 7).

The United Nations predicted a human catastrophe as half a million people pitched down in the jungle in the neighbouring country of Rwanda. There was no shelter, no electricity, no sewerage systems and no running water – this was yet another disaster waiting to happen.

Aid agencies, such as Christian Aid and Oxfam, believed that despite the devastation caused by the volcano, the people had to return to Goma. It was the only way to organise the distribution of food, medicine and blankets. The Rwandan Government also felt they could do little to help. The people were frightened of returning and were convinced they would be better off in the jungle. But amazingly, within a week most of the half million people had picked up the few possessions they had and returned to Goma and the surrounding villages.

### Out of the ashes

Working with the community, the British aid agency Oxfam made the

best use of donations to save lives. Figure 8 was written by Médard Hakiqumungu, who ran Oxfam's emergency water project following the eruption.

### Summary

This unit has examined the Nyiragongo volcanic eruption of January 2002. You should now be able to:

- show knowledge of the location and types of natural disasters found around the world
- show understanding of the processes involved in a volcanic eruption
- appreciate the impact of a natural disaster on people.

When the volcano erupted, lava destroyed the main water pipes. Thousands of poor people had to move to an overcrowded suburb on the edge of Goma. All the town's water had to be delivered in trucks. The tankers deliver the water to bladders (small storage tanks) which are linked to tap stands, where people fill their containers. We are meeting our target of supplying at least 15 litres of clean, safe water to each person every day. That means that people have enough to keep them healthy.

During emergencies there's always a big risk of water-borne diseases, and in this region cholera is a particular threat. We don't just deliver the water – we also make sure people stay safe and healthy long after this crisis is over.

Figure 8: Comments from an aid worker

# Activities

1 (a) Study Figure 1. Make a list of the different types of hazard. Then add the 2002 events to the appropriate type.

(b) With a partner, decide which type of hazard seems to be the most common.

2 Referring to Figure 2, briefly describe the location of the Nyiragongo volcano.

3 Study the text under the heading 'Causes of the eruption', and Figure 3.

(a) Describe the location of the East African Rift Valley.

(b) Using other sources, find out definitions of the following key words:

- rift valley
- crust
- plate tectonics
- faults.

(c) Explain why East Africa is moving away from the rest of the African continent.

4 Study the newspaper headlines in Figure 4. Write down four facts about the causes and consequences of the eruption.

5 Study Figure 5. Why do you think the people of the city of Goma decided that the best way out of the city was to go to the south-east? Why didn't they go north or south?

6 Study Figures 6 and 9, and the text.

(a) Make a simple sketch of Figure 6.

(b) List three ways in which the Nyiragongo volcano is quite different from the one shown in Figure 9, which is the image presented in most geography textbooks.

7 Imagine that you were a reporter flying over the volcano and the city of Goma. Write a newspaper article of about 100 words describing the scenes you saw.

8 Look at the comments in Figure 7.

(a) Why were people suffocating?

(b) Why did a few people not want to move?

(c) Why did most people want to move?

(d) Why do you think Mahamuli Kahembe blamed the ancestors?

9 Imagine that you work for the United Nations. You were on the scene shortly after the eruption. Write an email to your headquarters explaining why the United Nations and other aid agencies need to get the half million refugees out of the jungle and back to the city of Goma and surrounding villages as quickly as possible.

10 After the people returned to Goma, the British aid agency Oxfam set up an emergency water project. Study the section 'Out of the ashes' and then answer these questions:

(a) What happened to the water supply after the eruption?

(b) Why is clean water essential after an emergency?

(c) How did Oxfam help to improve the water supply?

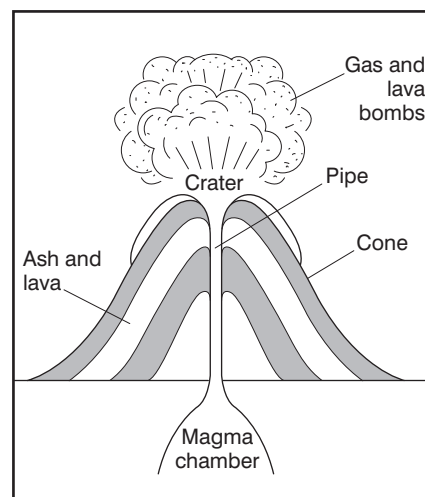


Figure 9: The classic textbook structure of a volcano