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Information note for parents and teachers

On behalf of the United Nations Secretariat for the International Strategy for Disaster Reduction, I have the pleasure to present Volcano Daily.

Volcano Daily is intended to make young people around the world aware of the dangers that volcanoes represent and, in particular, all the measures that can be undertaken to prevent and protect against volcanic disaster. We have chosen this subject as part of our information campaign on disaster reduction for sustainable mountain development, to accompany the celebration by the United Nations of the International Year of Mountains, 2002.

I hope you find Volcano Daily enjoyable and informative, with interesting activities. More details of the United Nations International Strategy for Disaster Reduction can be found at the end of the text.

Happy reading, and do not forget, prevention is better than cure!

Sálvano Briceño, Director
United Nations Secretariat for the
International Strategy for Disaster Reduction

The technical text of the publication is by Henry Gaudru, a vulcanologist and author of a number of books and films on volcanoes; he is also the President of the European Vulcanological Society, a member of the International Association of Vulcanology and Chemistry of the Earth's Interior (IAVCEI) and an adviser on volcanic risks for ISDR.
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Greetings!
My name is Vulca
the volcano and I am here to
explain to you how to read “Volcano
Daily”, which is about me. In the following pages, you
will read that a journalist came to talk to me to ask questions
about my family and myself and how I behave. The journalist also
talked about me with a vulcanologist who is a person who works on
volcanoes and their way of life. You will learn many things about vol-
canoes like me. What is very important to remember now is that, even
if I can be dangerous sometimes, as you will see in “Volcano Daily”,
you, and all the young people living close to volcanoes, can actually
do many things to avoid my eruptions and protect yourselves
from them. Together, we can avoid what people call a
“natural disaster”, i.e. that people lose their homes,
that they are injured or killed because of one
of my eruptions.

Hello
there, my name is
Henri the vulcanologist.
I know a lot about volcanoes and my
work is to explain how volcanoes
behave. I also help people to live
well with volcanoes and protect
themselves from them
when necessary.

Volcano Daily

After sleeping for more than 600 years, the volcano has awoken. There have been a number of earth tremors, and a plume of steam and ash has risen above the crater. The alert has been sounded, and the local inhabitants are on their guard because a violent volcanic eruption could occur any day. Our special envoy is on the spot.

Question: Mr. Volcano, who are you?

When people talk about me they often say I am violent and nasty … and it is true that when I am in a temper I can smash your houses, destroy your roads, ruin your crops and even, sometimes, kill some of you …
But don't forget it is partly thanks to me that you are alive today. A very, very long time ago, long before the dinosaurs, when the planet was still young, I spat out a lot of gas that allowed life on Earth to start … and it was after that that water, air, plants, animals and, a lot later on, people, came on the scene.

How many volcanoes are there in your family?

There are lots of us and we live in most countries, above ground, under the sea and even on other planets. Some of us are as big as mountains, others are no bigger than hills, some smoke almost constantly and others like to sleep for long periods.

A vulcanologist comments

The Earth has many volcanoes … Over 10,000 have been found on the Earth's surface and there are several million under the sea. More than 1500 volcanoes have erupted over the past 10,000 years, 400 of them during the 20th century. Thirty-odd erupt each year.

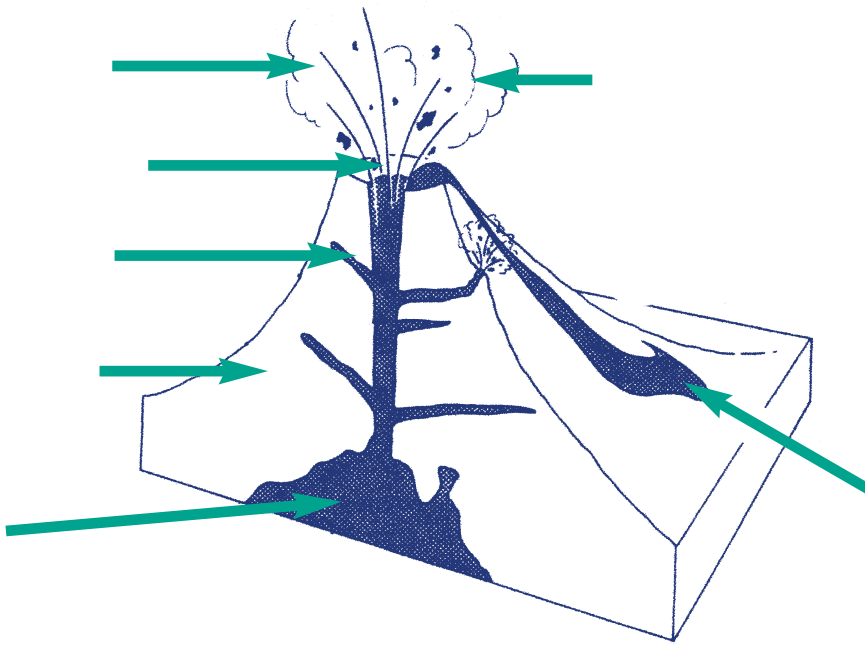
Questions to the vulcanologist

Why are there volcanoes?

The Earth is a living planet. Several kilometers under our feet there is rock that is blazing hot. Sometimes this very hot rock manages to make its way to the surface, and that is when a volcano is born.

What is a volcano?

A volcano is a sort of break in the Earth's surface through which the blazing rock, called **magma**, comes up. It is like a **chimney** which sometimes allows magma from the interior of the planet to escape. The hot rock is several kilometers beneath our feet. It is very hot (over 1000° C). At that temperature rock melts, a bit like thick soup, and bubbles form in the magma, which can contain large quantities of **gas**. The solid surface of the Earth is like a lid put tightly on a saucepan of boiling water. It stops the gas escaping. But if the solid ground breaks open the gas can come out and it brings magma with it: that is what we call **lava**. As it comes up and spreads out the lava cools and solidifies. And as the lava comes out, quietly or violently, it builds up a sort of smoking mountain, **the volcanic cone.** From the top of the cone you get **smoke**, **ash** and lava.



Put the words underlined in the right places on the diagram

Interview with the volcano

What are your family like?

Very varied: there are old lazy-bones that let their lava run out smoothly, little agitated ones that are constantly exploding, and great big angry ones that blow their heads off with a terrible bang – there are all sort of funny types in my family.

A vulcanologist comments

Some volcanoes are not very dangerous – we call them "red" volcanoes – but others can get terribly worked up and present a danger to the people living nearby, and we call them "gray" volcanoes.

Red volcanoes have spectacular eruptions, which we sometimes call effusive, but are not terribly dangerous. Magnificent fountains of red-hot lava rise above boiling lava lakes in their craters, and rivers of lava spill down their sides – a real firework display! Because the lava flows are very liquid and contain very little gas they can flow out of the crater very fast. Unless the blazing rock encounters water on its way up there will not be a violent explosion.

Gray volcanoes are more violent and dangerous; they have what we call explosive eruptions. They explode when they erupt because there are gas bubbles that find it very difficult to escape from the thick, sticky magma. Ash, gas and blazing rocks can be flung high into the sky. The huge clouds of smoke often fall back towards the Earth and flow like a blazing flood down the sides of the volcano, destroying everything in their path. When it is all over, the fields and houses are covered in a layer of gray, which is where the term gray volcano comes from.

The seven angry faces of a volcano

1 The volcano covers houses and crops under coarse or finer ash: this is an ash fall. Examples: Galunggung, Indonesia, 1982; Rabaul, Papua-New Guinea, 1994.

2 The volcano covers villages and fields under a river of fire that burns everything: this is a lava flow. Examples: Vesuvius, Italy, 1944; Heimaey, Iceland, 1973; Nyiragongo, Congo, 2002.

3 The volcano emits a fiery avalanche that burns and destroys everything in its path: this is a pyroclastic flow. Examples: Mt. Pelée, Martinique, 1902 ; El Chichon, Mexico, 1982 ; Unzen, Japan, 1991.

4 The volcano spews smoke that may make it hard to breathe or even kill you : this is volcanic gas. Examples: Dieng, Indonesia, 1979; Nyos, Cameroon, 1986.

5 The volcano warms up snow or ice, or rain loosens previous layers of ash, sending mud cascading into inhabited valleys: this is a lahar or mud flow. Examples: Ruapehu, New Zealand, 1953; Nevado del Ruiz, Colombia, 1985; Mt. Pinatubo, Philippines, 1991.

6 The volcano destroys homes and covers the ground and crops with boulders: this is a debris avalanche. Examples: Papandayan, Indonesia, 1772; Marapi, Indonesia, 1979; Mount St. Helens, USA, 1980.

7 The volcano may flood towns and villages by the edge of the sea or a lake by sending large quantities of rocks into the water: this is a tsunami. Examples: Krakatoa, Indonesia, 1883; Colo, Indonesia, 1983.

The champions of the Volcano family

- **Biggest:** Mauna Loa, which stands 9000m tall from the seabed to its summit and is 250 km across at its base.
- **Highest:** Nevado Ojos del Salado, in Chile, which rises to 6885 m above sea level.
- L**Most often active:** Kilauea, in Hawaii (USA), with 74 eruptions since 1794.
- **Most violent: Tambora:** in Indonesia, which killed over 90,000 people when it erupted in 1815.
- **Biggest crater (caldera):** Toba, on the island of Sumatra in Indonesia. The volcanic caldera is 100 km long and 30 km across.
- **Highest smoke plume:** Taupo, in New Zealand, 186 A.D The column of smoke rose to an altitude of 50 km.
- **Biggest lava flow in history:** Laki, in Iceland, in 1783: the flow was 60 km long and covered an area of 580 km2.

Interview with the volcano:

What can happen if you live on or beside a volcano?

I may sleep for a very long time between eruptions, sometimes decades or centuries ..

I may remain quiet for your entire life, but sometimes I wake up, and not always in a good mood … I begin by shifting and stretching, then I smoke for some days, or months, or even years … then one day I shake myself hard, roar and begin to spit ash and blazing rocks, which will start to fall on the fields and houses.