



MOUNT ONTAKE ERUPTION 2014

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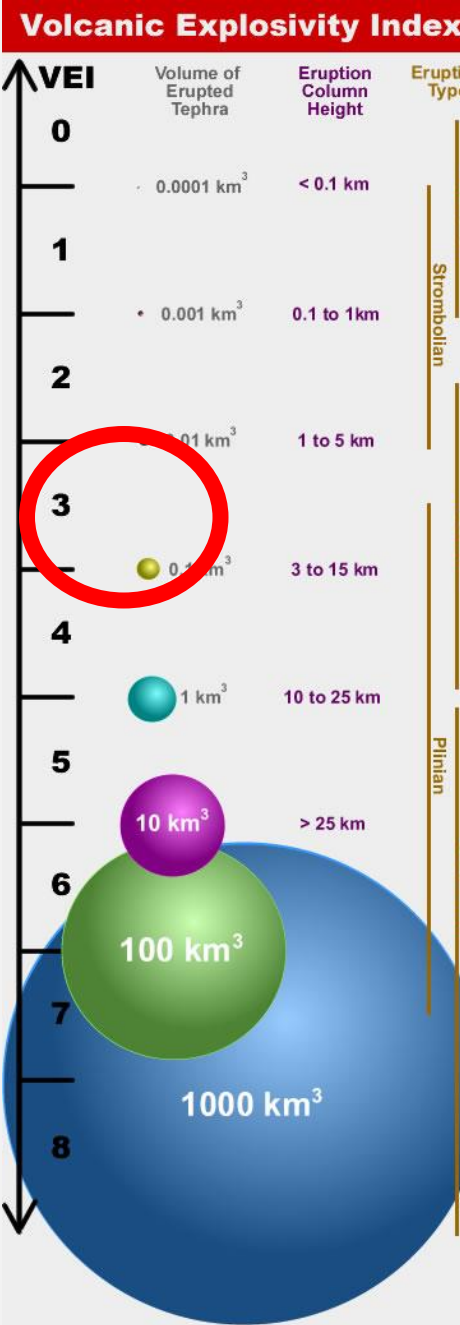


OVERVIEW OF THE DISASTER

What is volcano eruption?

Deep in the Earth some rocks slowly melt and become a thick flowing substance called magma because it is so hot. Since it is lighter than the solid rock around it, magma rises. Eventually, some of the magma pushes through vents and fissures to the Earth's surface.

Some volcanic eruptions are explosive and others are not. The explosivity of an eruption depends on the composition of the magma. If magma is thin gases can escape easily from it. When this type of magma erupts, it flows out of the volcano.



OVERVIEW OF THE DISASTER

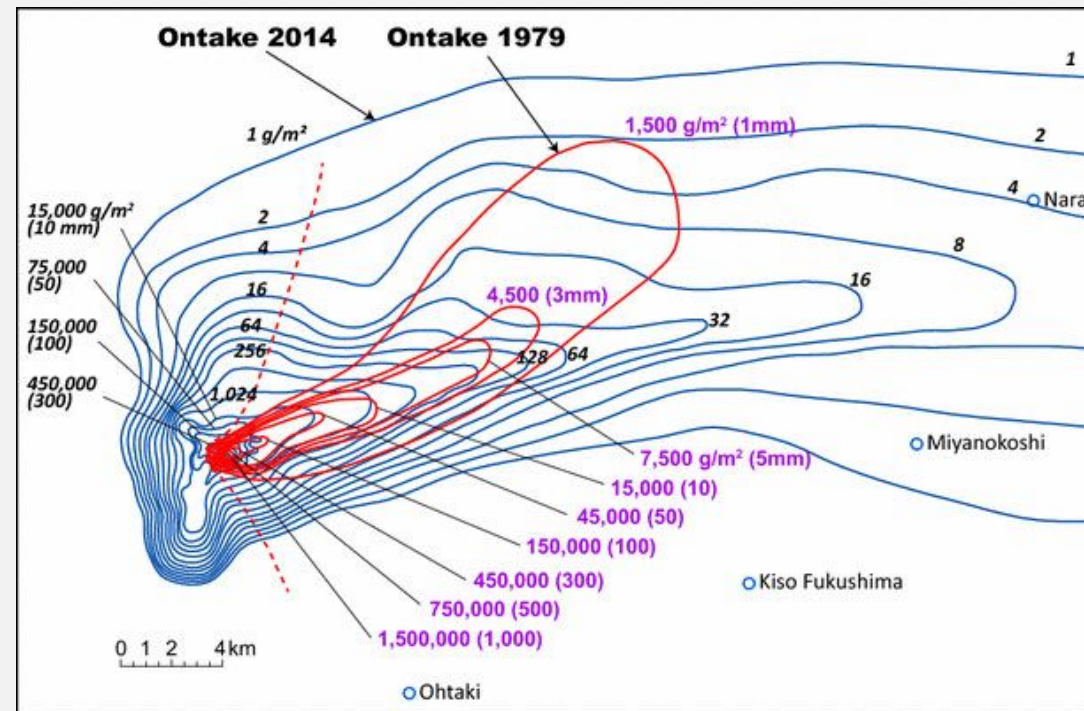
Mount Ontake, is the 14th highest mountain and second highest volcano in Japan (highest volcano is Mount Fuji) at 3,067 meters.

Ontake Mountain is located around 100 km northeast of Nagoya, and around 200 km west of Tokyo, at the borders of Kiso and Ōtaki, Nagano Prefecture, and Gero.



OVERVIEW OF THE DISASTER

Ontake was thought to be inactive until October 1979, when it underwent a series of explosive eruptions which ejected 200,000 tons of ash. There were minor, non-explosive eruptions in 1991 and 2007.





OVERVIEW OF THE DISASTER



A sudden volcanic eruption of Mount Ontake happened on 27th September 2014.

The mountain is a popular tourist attraction.

It is known with certainty that there were 327 people on the mountain that day.

63 people died in the disaster.

OVERVIEW OF THE DISASTER

The eruption reached a maximum height of 7000 m and ash came from the mountain in a southwest direction for more than 3 km.

The eruption of Ontake Volcano is the worst volcanic disaster in Japan in 90 years.

The 2014 eruption followed a swarm of shallow volcanic-tectonic earthquakes.

Economic damages were in excess of USD 100 million.







PRECAUTIONS

Of the 110 active volcanoes in Japan, 47 of them are monitored closely by scientists. Mount Ontake is one of them. Scientists have 12 seismometers on the volcano, as well as five GPS instruments and a tiltmeter, used to measure whether or not the ground is moving.



WHY MOUNT ONTAKE ERUPTION DID NOT PREDICTED?

Eruption has a large steam component. Red hot magma boiled ground water around the volcano until it exploded and was released as steam, launching ash high into the air.

The difficult aspect of this kind of eruption is that it can go virtually undetected. “An eruption like this doesn’t even require magma to move around,” says geophysics professor Dufek, implying that it wouldn't have been noticeable on seismometers

Eleven minutes before the eruption, the seismometers showed a volcanic tremor, but neither the GPS nor the tiltmeter showed any changes.

Volcanic tremors are very common at active volcanoes and often occur without being associated with an eruption.

WHY MOUNT ONTAKE ERUPTION DID NOT PREDICTED?

Some scientist argue that with different monitoring devices, early signs might have been visible to scientists

Some volcanoes in Japan, although not Ontake, also have devices for measuring gas release. This could, for example, show whether increased amounts of sulphur dioxide are escaping. Some volcanoes also have devices for measuring underground electrical conductivity: an increase in conductivity can signal rising water or magma.

DISASTER MANAGEMENT

Hundreds of people were stranded on the mountain for hours following the eruption, as ash poured over three kilometres down the mountain

Personal safety measures taken by exposed hikers saved lives. This included sheltering behind large rocks, placing backpacks on heads, and wearing hard hats provided from the mountain huts.

Flights at Tokyo's Haneda airport were delayed as planes changed routes to avoid the peak.

The JSDF began carrying out helicopter searches for missing people







DISASTER SPECIFIC ACTIONS?

- Rescue team formed immediately with more than 500 police and military personals.
- Metal and landmine detectors were used efficiently to locate the victims under the ash.
- 2 days after the eruption search and rescue operations are halted due to the raising concerns of the return of volcanic activity.
- It is discovered that some victim were still holding their phones to take the picture of the disaster.



WHAT WAS RIGHT/WRONG?

Eleven minutes before the eruption, the seismometers showed a volcanic tremor, but neither the GPS nor the tiltmeter showed any changes.

People should have warned when the seismometers showed the volcanic tremor, but they could not warn.



There were 12 seismometers on the volcano. (only three seismometers were working at the time)

Using metal and landmine detectors to find victims under ash.



LESSONS LEARNED

Interviews conducted post-eruption showed that 76% of the climbers did not consider that they needed to be prepared for an eruption.

After eruption they have combined to form one commission for the entire volcano, improving communication between the prefectures and subsequently to the public. The commission is comprised of volcanologists, local government, JMA and other interested agencies.

From the 1st April, 2015 Government made it mandatory for all climbers of Ontake to submit a mountain climbing notification form in an effort to improve knowledge of the number and location of people on the mountain, and to improve communication in times of crisis by recording their emergency contact information.



QUESTION

Should it be allowed to climb or hike to this kind of mountain if the eruptions are unpredictable?



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