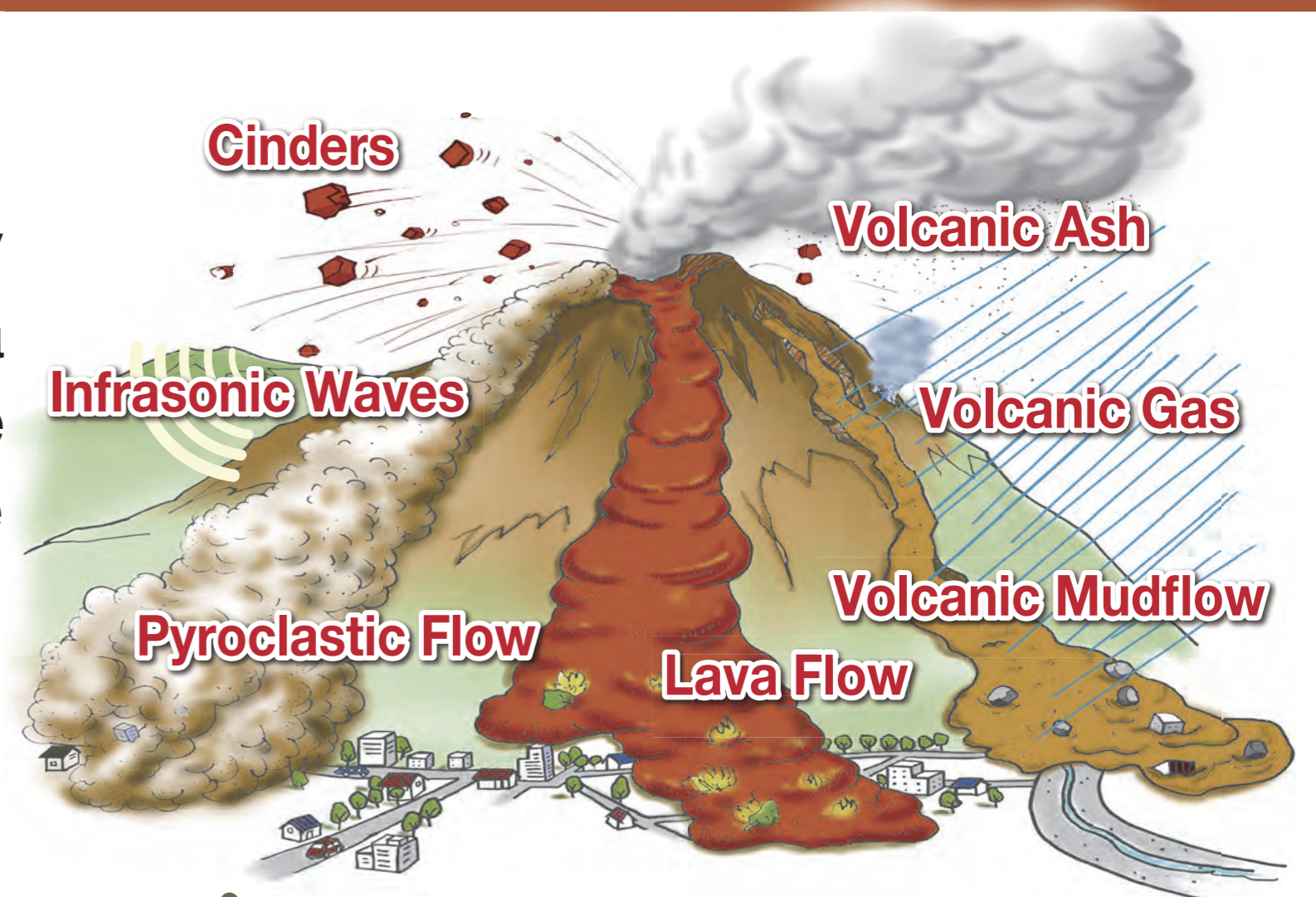


# What Happens When Volcanoes Erupt?

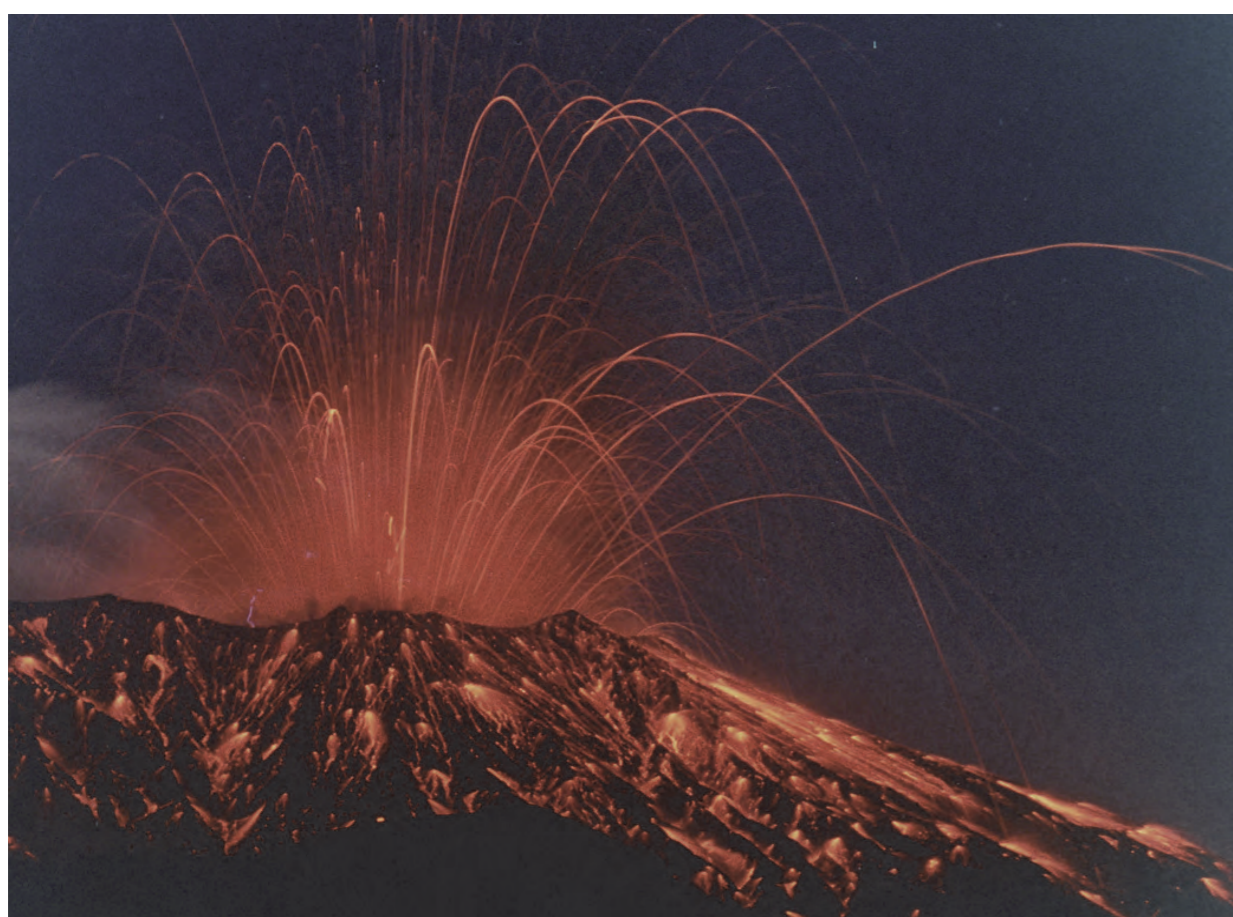
Volcanic eruptions and what they look like vary greatly depending on factors such as the characteristics of the magma (viscosity), the amount of volcanic gas and the nature of the water in the chamber. Earth and sand that is heated in the eruption may also melt snow and cause a volcanic mudflow.



## In the Air

### Cinders

When a volcano erupts, it can cause fragments of magma and rock to fly out of the crater at the speed of a cannonball. When Mt. Tokachi erupted in 1989, rocks as large as 20 m were expelled from the crater to fall to the ground nearby. While no large volcanic rocks (called ballistic projectiles) have reached the Fukiage Hot Springs or Bougakudai (Tokachidake Observatory) during recent years, there may be eruptions of a larger scale again in the future. Pebble-sized volcanic rock can be carried by the wind for up to several kilometers.



Cinders fly into the sky during the eruption of Sakurajima  
Photo courtesy of Sakurajima Volcano Research Center, Disaster Prevention Research Institute Kyoto University

### Volcanic Ash

Volcanic ash is finely crushed magma and rock that is ejected from the crater to high into the sky where it is carried by the wind and spread before falling to the ground. This ash can be thick enough to block out light from the sun. Swamps where volcanic ash has fallen and the surrounding area can be especially dangerous because rainfall in these areas can cause mudflows.



A car covered in volcanic ash (Miyakejima Island)  
Photo courtesy of the Japanese Meteorological Agency

### Infrasonic Waves

(vibrations in the air that can't be seen with the human eye)

Explosions generate increased air pressure that can cause windows and other glass to shatter. These sounds are low frequency, but sometimes audible.



Damage caused by vibrations in the air (called infrasonic waves) from the Mt. Asama eruption  
Photo courtesy of the Japanese Meteorological Agency

## In the Flow

### Lava Flow

Lava flow is magma that reaches the surface of the earth and flows down the mountain in a melted state. As it flows, it cools from the outer layer and hardens. Lava that flows from Mt. Tokachi is not particularly fast.



Lava flow from Izu Oshima is less viscous (sticky) than that of Mt. Tokachi, so it flows a bit more quickly.  
Photo courtesy of the Japanese Meteorological Agency

### Pyroclastic Flow

Pyroclastic flow is a dangerous mix of high temperature volcanic stones, gas and gas that exceeds speeds of 100 km/h. This kind of flow can be extremely destructive. A small-scale pyroclastic flow occurred during the 1988 Mt. Tokachi eruption.



The Mt. Unzen-Fugen pyroclastic flow  
Photo courtesy of Japanese Meteorological Agency

While the pyroclastic flow that occurred at Mt. Unzen-Fugen was small, the heat it generated in the air still claimed the lives of 43 people at the base of the mountain.



The Mt. Tokachi pyroclastic flow  
Photo courtesy of Asahikawa Local Meteorological Office

### Volcanic Mudflow

Eruptions can cause large rocks and driftwood to mix with muddy water and flow down the mountain at the same speed as a car. Snow melted in the high temperatures of a pyroclastic flow or avalanche of molten rock can produce massive amounts of water that in turn create violent mudflows. These are known as lahars and can cause extensive damage along vast stretches of river.

**If a pyroclastic flow happens when there is snow in the mountains, there is also a risk of volcanic mudflows!**



A volcanic mudflow at Mt. Tokachi  
Photo courtesy of the Kamifurano Board of Education