

## GLOSSARY

### Andesite.

Volcanic rock, usually dark grey, with about 54% to 63% silica. See silica. Andesite is the predominant rock type of most volcanoes on the Alaska Peninsula.

### Ash.

Fine fragments (less than 0.08 inch/2 mm across) of volcanic rock formed in an explosive volcanic eruption.

### Ash cloud.

Cloud of gas, steam, ash, dust, and coarser fragments that forms during an explosive volcanic eruption and commonly gets blown long distances. Also called an eruption cloud.

### Ash flow.

Mixtures of hot pumice, ash, and volcanic gas that travel along the ground.

### Ballistic.

Fragments ejected explosively from a volcanic vent on an arcuate trajectory, much like a cannonball. Sometimes called a volcanic bomb. Ballistic fragments seldom land farther than a mile or two from the volcano; concurrently erupted ash clouds go much farther.

### Basalt.

Volcanic rock with about 45% to 53% silica. (see silica). Basaltic lavas are more fluid than andesites or dacites, both of which contain more silica.

### Caldera.

Crudely circular depression, generally larger than a crater, and typically more than 1.2 miles (2 km) across. It is formed by the collapse of a volcano during withdrawal or ejection of a large volume of magma that leaves the roof of the magma reservoir unsupported.

### Crater.

Bowl-, funnel-shaped, or cylindrical depression usually near the top of a volcano, and commonly less than 1.2 miles (2 km) across. It is formed by volcanic explosions and usually involve constructive buildup of crater-rimming deposits rather than subsidence of the floor (cf. caldera).

### Dacite.

Volcanic rock with about 64% to 68% silica. (see silica). Dacite lavas are viscous and tend to form thick blocky lava flows or steep-sided piles of lava called lava domes. Dacitic magmas tend to erupt explosively, thus also ejecting abundant ash and pumice.

### Debris avalanche.

Rapidly moving slide masses of rock debris, sand, and silt that often form by structural collapse of a volcano. Debris avalanches can travel considerable distances from their source, and deposits are characterized by a hummocky surface.

### Debris flow.

Rapidly flowing mixture of water, mud, and rock debris. A volcano-derived debris flow is commonly called a lahar. Parts of debris avalanches can transform into debris flows by mixing with the water in rivers or lakes overrun.

### Effusive eruption.

An eruption that produces mainly lava flows and domes (as opposed to an explosive eruption).

### Eruption cloud.

Cloud of gas, steam, ash, and other fragments that forms during an explosive volcanic eruption and travels long distances with the prevailing winds. Also called an ash cloud.

### Eruption column.

The ascending, vertical mass of erupting debris and volcanic gas that rises directly above a volcanic vent. Higher in the atmosphere, columns usually spread laterally into plumes or umbrella clouds.

### Ejecta.

General term for anything thrown into the air from a volcano during an eruption; synonymous with pyroclast. (cf. pyroclast).

### Explosive eruption.

An energetic eruption that produces mainly ash, pumice, and fragmental ballistic debris (as opposed to an effusive eruption).

### Fallout.

A general term for all the ash and debris that falls to earth from an eruption or ash cloud.

### Fumarole.

A small opening, crack, or vent from which hot gases are emitted. Commonly on the floor of a volcanic crater, but sometimes also on a volcano's flanks. Short-lived fumaroles also issue from hot lava flows and pyroclastic deposits during their period of cooling.

### Ignimbrite.

The deposit of a hot chaotic mixture of pumice, ash, and gas that travels rapidly (as fast as tens of meters per second) away from a volcanic vent during an explosive eruption. Ignimbrite is a pumice-rich type of pyroclastic flow that commonly accompanies plinian eruption columns. Synonymous with ash-flow tuff.

### Lahar.

See debris flow. A mixture of water and volcanic debris that moves rapidly downstream. Consistency can range from that of muddy dishwater to that of wet cement, depending on ratio of water to debris.

### Lava.

Molten rock that reaches the earth's surface and maintains its integrity as a fluid or viscous mass, rather than exploding into fragments (cf. magma).

### Lava dome.

A steep-sided mass of viscous and often blocky lava extruded from a vent; typically has a rounded top and covers a roughly circular area. May be isolated (like Novarupta) or, alternatively, associated with lobes or flows of lava from the same vent.

**Mafic magma.**

Magma that contains lower amounts of silica and is generally less viscous and less gas-rich than silicic magma. Tends to erupt effusively, as lava flows. Includes andesites (54-63% SiO<sub>2</sub>) and basalts (45-53% SiO<sub>2</sub>).

**Magma.**

Molten rock beneath the earth's surface (cf. lava).

**Magma chamber.**

A storage area or reservoir of molten rock beneath the earth's surface.

**Phreatic eruption.**

An eruption that primarily involves steam explosions, usually groundwater flashed by the heat of subsurface magma.

**Phreatomagmatic eruption.**

An eruption that involves both magma and water, which typically interact explosively, leading to concurrent ejection of steam and pyroclasts.

**Plinian eruption.**

A large explosive eruption that produces a steady vertical eruption column of pumice and ash, that may reach tens of kilometers above a volcano. Results in far-traveled ash clouds, widespread fallout of pyroclastic debris, and can have accompanying pyroclastic flows and surges. (Named for Pliny, who observed and reported on the eruption that devastated Pompeii in A.D. 79).

**Post-caldera.**

A term used to describe the time after caldera formation.

**Postglacial.**

Refers to the end of the last major ice age, about 10,000 years ago. Geologically, the transition from Pleistocene (>10,000 years) to Holocene (<10,000 years) time. A loose term: The actual withdrawal of major Pleistocene ice sheets varied with location and latitude.

**Pumice.**

Highly vesicular volcanic ejecta, essentially magma that has been frothed up by escaping gases and solidified during eruptive cooling. Rhyolitic pumice is typically of low enough density that it floats on water.

**Pyroclastic.**

General term applied to volcanic products or processes that involve explosive ejection and fragmentation of erupting material. The Greek roots mean "fire" and "broken."

**Pyroclastic flow.**

A hot (typically >800 degrees C), chaotic mixture of rock fragments, gas, and ash that travels rapidly (tens of meters per second) away from a volcanic vent. Pyroclastic flows that form from an explosive eruption column contain a high proportion of fine ash and pumice and are sometimes called ash flows or ignimbrites. Pyroclastic flows that form by failure of the front of a cooling lava dome or flow are called block and ash flows.

**Rhyodacite.**

Volcanic rock with 68% to 72% silica (see silica). Rhyodacitic lavas are viscous and tend to form thick blocky lava flows or steep-sided piles of lava called lava domes. Rhyodacite magmas tend to erupt explosively, commonly also producing abundant ash and pumice.

**Rhyolite.**

Volcanic rock with more than 72% silica (see silica). Rhyolitic lavas are viscous and tend to form thick blocky lava flows or steep-sided piles of lava called lava domes. Rhyolite magmas tend to erupt explosively, commonly producing abundant ash and pumice.

**Scoria.**

Vesicular volcanic ejecta, essentially magma that has been frothed up by escaping gases. It is a textural variant of pumice, with scoria typically being less vesicular, denser, and usually andesitic or basaltic.

**Silica.**

Silica is SiO<sub>2</sub>, the predominant molecular constituent of volcanic rocks and magmas. It tends to polymerize into molecular chains, increasing the viscosity of the magma. Basaltic magma having lower SiO<sub>2</sub> is fairly fluid, but with increasing contents of SiO<sub>2</sub>, andesite, dacite, rhyodacite, and rhyolite magmas become progressively more viscous. The greater difficulty for dissolved gas to escape from more viscous magma makes higher-silica magmas generally more explosive.

**Silicic magma.**

Magma that contains more than ~63% silica and is generally viscous, gas-rich, and tends to erupt explosively. Includes rhyolite, rhyodacite, and dacite in the Katmai cluster.

**Stratocone.**

A steep-sided volcano, usually conical in shape if there is one central vent, built of lava flows and fragmental deposits from many periods of eruptive activity. Also called a stratovolcano or composite cone.

**Tephra.**

Any type and size of rock fragment that is forcibly ejected from the volcano and travels an airborne path during an eruption (ash, bombs, scoria, cinders, etc.). Generally synonymous with fallout, but sometimes used more loosely to embrace pyroclastic-flow material as well.

**Tsunami.**

Seismic sea waves typically initiated by sudden displacements of the sea floor during earthquakes. Collapse of oceanic volcanoes can initiate some tsunamis.

**Vent.**

Any opening at the earth's surface through which magma erupts or volcanic gases are emitted.