

VOLCANIC PROCESSES SUMMARY TABLE

Geologic Setting	Hot Spots (and Mid-Ocean Ridges)	Subduction Zones
Cause of Melting	Decompression Melting causes partial melting of mantle rock.	Water Fluxing causes partial melting of mantle rock (produces mafic magma) Melting of continental crust by hot mafic magma.
Magma/Lava Composition	Mafic (basaltic). Consistent composition.	Intermediate is most common, but sometimes felsic and occasionally mafic. The composition of the lava erupted is variable primarily because the amounts of assimilation and differentiation that occur to magma on its way to the surface vary (see the volcanic processes handout).
Gas content of magma/lava	Generally relatively low in dissolved gasses.	Generally relatively high in dissolved gas.
Viscosity of magma/lava	Generally low viscosity and runny.	Generally relatively high viscosity; often only capable of very slow flow.
Style of Volcanism	Lava flows, fountaining if there is enough dissolved gas.	Often very explosive, but can produce lava flows as well. The combination of gas-rich very viscous magma/lava can cause catastrophically explosive eruptions.
Types of Volcanoes Formed	Shield volcanoes (not at mid-ocean ridges); cinder cones. Note that basaltic volcanism can occur at locations other than hot spots and mid-ocean ridges, and that shield volcanoes can form wherever there is a lot of basaltic volcanism.	Composite or Stratovolcano.
Example Volcanoes	Mauna Loa, Newberry Volcano	Cascade volcanoes in northwest U.S., including Mt. St. Helens, Mt. Rainier, and Mt. Hood; other famous examples include Mt. Pinatubo (Phillipines), Mt. Fuji (Japan), and Mt. Vesuvius (Italy).