III. Volcanic Eruptions

A. **Magma Reaches Earth's Surface:** Inside a volcano is a system of passageways through which magma moves.

1. **Inside a Volcano:** All volcanoes have a pocket of magma beneath the surface & one or more cracks through which the magma forces its way.
   a. Beneath a volcano, magma collects in a magma chamber.
   magma chamber: the pocket beneath a volcano where magma collects
   b. The magma moves upward through a pipe. **pipe:** a long tube through which magma moves from the magma chamber to Earth's surface.
   c. Molten rock and gas leave the volcano through a vent. **vent:** the opening through which molten rock & gas leave a volcano; often there is one central vent at the top of the volcano however, many volcanoes also have other vents that open on the sides.
   d. **Lava flow:** the areas covered by lava as it pours out a vent
   e. **Crater:** a bowl-shaped area that forms around a volcano's opening

2. **Volcanic Eruption**
   a. Dissolved gases get trapped in magma.
   b. As the magma rises to the surface, the pressure of surrounding rock decreases on the magma.
   c. Dissolved gases expand, forming bubbles.
   d. As pressure falls within the magma, the size of the gas bubbles increases
   e. These expanding gases exert an enormous force that pushes magma from the magma chamber through the pipe until it flows or explodes out the vent.
   f. When a volcano erupts, the force of the expanding gases pushes magma from the magma chamber through the pipe until it flows of explodes out of the vent

B. **Kinds of Volcanic Eruptions**

1. **Quiet Eruptions**
   a. A volcano erupts quietly if its magma is low in silica
   b. Low silica content causes magma to have low viscosity
   c. Gases bubble gently, & lava oozes out of the vent quietly
   d. Lava can flow for many kilometers producing both pahoehoe & aa.

2. **Explosive Eruptions**
   a. A volcano erupts explosively if its magma is high in silica.
   b. High silica content causes magma to have a high viscosity.
   c. Magma is thick & sticky; it builds up in the pipe plugging it like a cork.
   d. Trapped gases build up pressure until they explode
   e. Magma is pushed out with great force, breaking lava into fragments that cool & harden quickly into different pieces.
   pyroclastic flow: the expulsion of ash, cinders, bombs, & gases during an explosive eruption

C. **Stages of Volcanic Activity:** The activity of a volcano may last less than 10 yrs. to more than 10,000,000 yrs.

1. **Life Cycle of a Volcano**
   a. **active:** a volcano that is erupting or has shown signs that it may erupt in the near future.
   b. **dormant:** a volcano that is not currently active, but may become active in the future.
   c. **extinct:** a volcano that is no longer active & is unlikely to erupt again.

2. **Monitoring Volcanoes**
   a. Geologists monitor changes in and around a volcano
   b. These changes may give warning a short time before a volcano erupts, but the type is uncertain.
   c. A temperature increase in underground water may be a sign that magma is nearing the surface.
   d. Geologists also monitor small earthquakes that occur around a volcano before an eruption; the upward movement of magma triggers these quakes.