

Volcanism

Description of Model 2: Volcanism

Volcanism produces many landforms including the volcano. Volcanic activity is caused by the internal heat of our planet which melts rocks that then travel to the surface. There are three main types of volcanos: shield, composite and cinder cone. They each have different characteristics. When magma solidifies beneath the surface plutons are formed. There are four of these: batholith, laccolith, sill and dike and you should be able to identify each of these structures.

Volcanic activity produces many interesting structures. The most dynamic is the volcano itself, and it is important for us to realize that most volcanoes are relatively recent. Notice that all of the volcanic structures on the model occur on top of the flat sandstone beds. These sedimentary beds extend to the east and west of this model. The volcanic activity began after the sedimentary beds had risen above the level of the sea.

Volcanic activity is caused by great heat below the earth's surface, melting rock and sending it to the surface through vertical conduits. (39). The molten rock or magma travels up through the overlying layers of rock and forms volcanoes.

This model shows two main types of volcanoes, a composite volcano (28) and a lava type volcano (21). The composite type volcano is made up of alternate layers of lava and volcanic ash or cinders. The depression in the top of the composite volcano is called a crater.

A smaller, more recent volcano (30) is located on the flank of the composite volcano (28). One of the lava flows (31) emerging from the volcano has dammed the river and created a lake (27).

Cinder cones (25), in contrast to the larger volcanoes, are composed almost entirely of cinders. An explosion cone is shown in cross-section. On the southeast corner of the model are several radiating dikes (34).

Downstream from the point where the river is dammed by the lava flow, it emerges onto a sandy flood plain and divides into numerous channels, becoming a braided stream (26). Rain falling on a symmetrical mountain such as a volcano forms a special kind of drainage pattern, called radial drainage (24). The streams radiate from the summit of the mountain. The large lava type volcano (21) has a huge depression known as a caldera (22). In time, this caldera filled with water to form a huge lake. Later a small cone (23) formed as a result of further volcanic activity. In this manner Crater Lake in Oregon was formed. The cone in Crater Lake is called Wizard Island.

To the southeast of the large lava volcano can be seen an extrusive lava flow (33). This lava flow has poured over the land in a relatively quiet fashion, quite in contrast to the lava flows that originate from the craters of volcanoes. The great Columbia Plateau in eastern Washington and Oregon originated in this manner. Notice that this lava flow has affected the course of the river.

In the cross-sections, notice the locations of horizontal masses of lava called sills (36). The dome at the intersection of the grids (H & 14) is caused by a laccolith (37). A laccolith is a large subterranean body of magma which was squeezed between layers of rock causing uplifting of the overlying rocks.

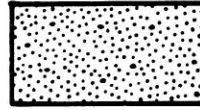
LEGEND



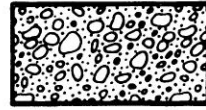
BRECCIA



MAGMA



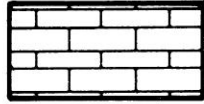
SANDSTONE



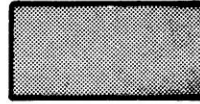
CONGLOMERATE



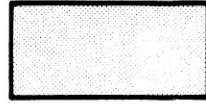
SHALE



LIMESTONE



LAVA



ASH

Volcanism Find each feature on the model and write the number of the feature in the table below.
Answer the questions below.

Feature Number	Feature Name
	Caldera
	Conduit
	Crater
	Dike
	Laccolith
	Series of Cinder Cones
	Sill
	Composite Volcano

1. What is the difference between a sill and a dike?
2. What is the difference between a caldera and a crater?
3. What is the difference between a laccolith and a batholith?
4. What is the difference between a cinder cone and a composite cone?
5. Where in the United States would you most likely find a volcano?