

VOLCANOES

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INTRODUCTION:

For decades geologists have argued about the source of *magma*, the hot, mobile material that is generated within the Earth and which solidifies into igneous rock (volcanic and plutonic rocks). Seismologists have recognized that the asthenosphere (a layer below the rigid lithosphere) which extends from depths of about 75 -250 km is the one large region in the mantle that is partially molten. It is reasonable therefore, to identify this layer as a major source of magma. At certain places, where the lithosphere is fractured or otherwise weakened (along the plate boundaries), the magma rises, squeezed up by the weight of the overlying crust, some of which eventually reaching the surface where it erupts as *lava*. *Volcanism* is one of the major subject of Earth Sciences, which involves detailed study of the *forgoing processes and activities*.

1. What is a Volcanic Activity:

- 1-1. Volcanic regions
- 1-2. Types of volcanoes
- 1-3. Types of rocks that are formed
- 1-4. Volcano related other phenomena

2. Why scientists study volcanoes:

- 2-1. To understand the differentiation process of magma within the earth
- 2-2. To understand the volcanic processes and evolution in other planets
- 2-3. To understand the mineralization process
- 2-4. To predict and forecast future events
- 2-5. To predict the hazard zones
- 2-6. To forecast about the climatic variations due to change in air quality.

3. How scientist study volcanoes:

3-1. Monitoring

- Seismicity
- Geodetic surveys
- Gas geochemistry
- Geophysics

3-2. History

- Geological Mapping
- Dating

3-3. Hydrological Process

- Numerical modeling
- Experimental research

4. Uses of Volcanoes:

- 4-1. As an energy resource
- 4-2. As an economic mineral resource