

Eruption dominant volcanism vs. geothermal activity dominant volcanism

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It has been pointed out that geothermal activity is closely related with volcanic activity. It is vaguely considered that the geothermal activity is maintained by the energy of the volcanic activity, but the relation between both is not so examined. This talk aims to propose the following idea, which is a little bold; volcanic activity has two end members depending on the easiness of ascent of magma. The type of volcanic activity will be eruption dominant (or extrusive) when the magma easily ascends to the ground surface, while it will be geothermal activity dominant (or intrusive) in an opposite case.

Research on volcanic eruptions has achieved a lot of results so far. For instance, it succeeds in detecting many precursory phenomena such as increase of seismic activity, deformation of volcanic body suggesting the accumulation and the movement of magma, geomagnetic changes caused by the rise of the temperature and anomalous change of volcanic gases. However, this research has left a lot of problems. For instance, eruption has not occurred in Iwate Volcano, though many precursory phenomena such as deformation of volcanic body and increase of seismic activity indicating magma intrusion were detected. In recent Asama Volcano, the correspondence of the seismic swarm and the eruption has changed to be unclear and the prediction of the eruption turned to be difficult. These problems originate in the variety of easiness of magma ascent. Examining the problems by this aspect will lead a better understanding on the variety of volcanism.