Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

MIS30-P07 Room:Convention Hall Time:May 21 18:15-19:30

Volcanic and lava activity detecting using MODIS data

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There are a lot of active volcanoes in the world. But it is difficult to monitor all volcanoes because of costs. However, we can monitor efficiently a lot of volcanoes using satellite remote sensing technologies, because a volcanic activity will cause the increase in surface temperature and satellite (whose sensor can observe the surface temperature) remote sensing can cover a large area on surface. Therefore, our purpose of this study is to create an adequate algorithm detecting thermal anomalies related to volcanic activities (especially lava activity witch causes serious damages involve human lives) using satellite data. The developed algorithm investigates the difference temperature behavior between a target point and reference points. Therefore, removing cloud is essential in our algorithm.

The developed algorithm has been applied to Mt. Merapi (Indonesia), Mt. Shinmoe-dake (Japan) and so on and we found the effectiveness of it and reduction of faint changes due to clouds.

In addition, we examined the cloud removal method that we used in this study by comparing with continuous observation lidar data conducted by Institute for Environmental Studies at Tsukuba.

The details will be shown in our presentation.

Keywords: volcanic activity, satellite data, MODIS, Shinmoe-dake, lidar