

AOB Seminar

What happens in the reservoir during dome collapse - insights from borehole strain recordings during the collapse on Montserrat in July 2003.

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Conference Room I (annex of AOB)

Short abstract :

The island of Montserrat in the Caribbean has been built up by successive volcanic activity, with the last previous eruptive activity about 300 years ago. Seismic activity repeats about every 30 years and, during the 1990s, an episode of dome growth resulted in multiple collapses which destroyed the capital and much of the farming land. During an interval of relatively quiet, 4 borehole sites were drilled and instrumented with strainmeters, tiltmeters and short period seismometers as part of a multi-institutional experiment (CALIPSO). These sites were drilled in December 2002 through February 2003 as the volcanic activity began to increase. New dome growth resulted in the dome reaching its greatest height since activity began some 7-8 years ago. On July 12-13, the dome collapsed in the largest event so far recorded. Although we were at that time in the process of converting our sites from on-site to telemetry status, 3 of the strainmeters recorded the collapse. The largest signal, at a site very close to the ocean, is due to tsunamis generated by flows into the ocean. All sites show a strain offset (over the ~12 hours of major activity) together with a ~20 minute period oscillatory signal. Both signals originate from the same source about 5 km deep with the offset being indicative of an increase in the reservoir pressure.

詳細情報 : <http://aob-new.aob.geophys.tohoku.ac.jp/res-edu/AOBseminer.html>

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