最近の桜島火山における地盤の変動

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ON THE RECENT CRUSTAL DEFORMATIONS OF VOLCANO SAKURAJIMA

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Synopsis

The vertical deformations of the earth's crust in the vicinity of Volcano Sakura-jima accompanied with the recent activity are studied from the results of precise levellings.

Vertical displacements measured by the precise survey along Hiki-no-hira route show obvious correlation with calculated vertical movements from the equation based on elasticity, if we suppose to exist the second pressure center or the force of internal origin under the center of Volcano Sakura-jima. So, the existance of supposed magma reservoir under the center of Sakura-jima is cleared. Consequently, we come to the conclusion that the vertical displacement of the ground surface near Volcano Sakura-jima is reasonably explaind as the elastic deformation which is caused by the increase or decrease of hydrostatic pressure of two spherical internal pressure sources or magma reservoirs. Those pressure centers are supposed to exist under the center of Aira Caldera and under the center of Volcano Sakura-jima.

Total energy released in explosion-earthquakes during the periods of each two successive precise levellings are estimated from the maximum amplitude of explosion-earthquakes which were observed by the network of seismographs. From the estimation of total energy released in explosion earthquakes, it was during 1960–1961 that Minami-dake crater has been most active since 1955. It may be safe to say that the vertical displacements of B.M. 29 and B.M. 111 represent the internal activity of two pressure centers in the Volcano, as those two bench marks are the nearest bench marks to two pressure sources respectively. B.M. 111 showed upheaval movements of the interior of Sakura-jima prior to the activity in 1960. After that, B.M. 111 has been depressing year after year. B.M. 29, however, showed upheaval movements untill 1961.

If we study more accurately those close relations between the crustal deformations and the volcanic activity, we will find a hint to approach to the mode of transfer of energy in the Volcano.