

GPS observation and estimation of pressure source of Batur volcano in Indonesia

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Batur volcano is north west of Bali Island in Indonesia. This volcano has two big calderas that is over than 10 km. O.Rebi I.A.Nicholls(2004) said that C1 caldera was made B.P.29300, and C2 caldera was made B.P.20150. In recently activity, this volcano erupted with lava flow in 1963 and 1974. And from 1990 does not have lava flow. But August 1994, November 1997, and June 1998 the volcano has steam explosion from center vent of the caldera. So I think that the volcano stores magma.

Batur volcano was made GPS observation network by Institute Technology of Bandung (ITB) and Volcano Survey of Indonesia (VSI). At first the network was only 10 points, but now becomes 23 points. GPS observation began from 1999. Darmawan et al(2001) estimates the magma source of Batur volcano that uses in 1999 data and 2001 data. But the observation points are only 9 points. And moving is under than 1 cm, except for 1 point. So deformation of volcano is not available for estimate of magma source. By reason of observation accuracy, deformation of volcano have not yet find.

This study's object is GPS observation in Batur volcano and finding deformation of volcano, estimation of magma source from deformation,

At first I use data (2002-2004), and I proceed. But the data has big RMS ERROR. So I did GPS observation in December 2004. And I try to get better data than before. For the long time observation, I chose the observation point. Before the observation, I thought again place of observation point, judging from situation of satellite and situation of observation point and around of the observation point. We observed 14 point, each point observes for 2 days. And fix point observes for 12 days and 24 hours, we made a new point out of the caldera. And the result of the observation, we get 2.5 times to 4 times data than before. Fix point gets more 10 times data than before.

I use this data and before data, I proceed from the Bernese GPS software version 4.2. I fix 2 IGS points. I compare this data with another data, this data decrease RMS ERROR. I can improve the data quality. And I will find the deformation of volcano, and I estimate pressure source of the volcano.

I will go to Indonesia, next June or July. And do the GPS observation for improvement of the data quality.