

## Crustal deformation at Miyakejima Volcano on June 26 - June 27, 2000 obtained from kinematics GPS method.

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According to Okada (2000) significant tilt changes was occurred at MKT station from 18 h 30 m on June 26, 2000 corresponds to magma intrusion at that area. Okada succeeded explain the deformation stage of Miyakejima using 5 tilt stations. In order to create clear magma intrusion information of Miyakejima volcano we processed seven GPS sites (GSI and ERI) continuously every 30 seconds using kinematics method.

We use ionosphere free fix double difference solution with precise IGS orbit and fix the MK3 station. We reject the data with unsuccessful ambiguity resolution and transform our solution into topocentric NEU coordinates system. In order to study the coordinates changes form time to time we divided our result into four stages. Stage 1 from 09:15 until 21:00 on June 26 2000, Stage 2 from 09:15 until 23:41 on June 26 2000, Stage 3 from 09:15 on June 26 until 04:00 on June 27 and stage 4 from 09:15 on June 26 until 20:00 on June 27 2000. Based on asymmetry of deformation patterns we chose to model this event as a dike intrusion using uniform opening dike model (Okada, 1986).

Ground deformation was occurred near MK2 station at 19 h 45 m on June 26, shown by 10 cm horizontal deformation with East direction. No significant deformation from other stations at that time (stage 1). At 21 h 41 m on June 26 another ground deformation occurred near JHD and RJH station shown by SW direction's deformation (stage 2). At 22 h 25 m on June 26, MK4, IGY, MK1, KKH stations start to deformed with direction NE. At 0 h 45 m on June 27, MK2 point changes its direction from East into NorthWest. This deformation probably corresponds to dike intrusion with NW-SE strike (stage 3).

Our preferred dike model is position Lat. 34.071 Long 139.470, dipping 90 degree with strikes nearly west-east (N109E), is about 3.9 km long and 4 km wide, depth about 0.5 km from the surface and about 2m tensile. The existing of this dike caused the MK1, KKH, IGY and MK4 deformed to NorthEast direction and JHD and RJH station deformed to SouthWest direction. Significant deflation at MK2 station probably caused by the existence of Sheet shaped source at Lat. 34.085 Long 39.595, strike 110 degree, is about 3 km long and 2 km wide, depth about 5 km for the surface and about -0.5 m tensile (stage 3). After 10 h 30 m on June 27, deformation magnitude became higher, this phenomena probably caused by the dike tensile became larger (stage 4).