

Precise hypocenters and source mechanisms of deep low-frequency and high-frequency earthquakes beneath Mt. Fuji

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Low- and high-frequency earthquakes (LFs and HFs) occur northeast and south flank of Mt. Fuji, respectively. Many LFs occurred in two periods September - December 2000 and April - May 2001. HFs intensively occurred in the period from January to April 2001. We combined data of ERI, JMA and NIED, picked up arrival times of LFs and HFs with careful identification of phases and determined their hypocenter precisely. We located hypocenters for the 75 LFs and 58 HFs with good S/N during 1998 - March 2003 by using the DD method (Waldhauser and Ellsworth, 2000). The LF hypocenters define an ellipsoidal volume some 5 km in diameter ranging from 11 to 16 km in focal depth beneath the northeast flank. Consulting the location errors, the extent of the volume is significant. This volume is centered at 3 km northeast of the summit and its long axis directs SE-NW. The SE-NW direction coincides with the distribution of the volcanic flank craters, indicating the existence of a dyke with SE-NE strike beneath Mt. Fuji. The locations of LFs in 2000 - 2001 shift 1 km northwest from those in 1998 - 1999 and 2002 - 2003. While the focal depths of the LFs in 1998 - 1999 are at depths of 13 - 16 km, the LF were located apparently shallow with time at depths of 11 - 16 km in September 2000 - December 2001. The source mechanism of the largest LF (M2.3) contains large CLVD and volumetric components. The HF hypocenters distribute between 6 and 12 km in depth along a sub-vertical plane beneath the south flank, which also directs SE-NW. Source mechanisms of two HFs (M1.9 and M2.7) exhibit strike-slip motion, indicating a fault plane with a strike that is consistent with the NW-SE trend of the HF seismicity. P axes of the both mechanisms direct N-S, indicating the compressional stress in N-S direction beneath the south flank of Mt. Fuji. This direction is different from the NW-SE direction. This compressional stress pattern consists with the pattern estimated from the P axes of focal mechanisms in the region around Mt. Fuji and Izu Peninsula direct N-S to NW-SE (Ukawa, 1991). In the region, collision with the Eurasian plate at the northern edge of the Philippine Sea plate exists.