

Crustal deformation associated with the 2000 eruption of Usu volcano as observed by a continuous GPS observation network

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A continuous GPS observation network with 11 stations around Usu volcano was installed two days before the 2000 eruption, which took place at the western part of the volcano on 31 March 2000. The cumulative displacements in the radial direction from the center of the volcano reached 1.5 m before the eruption at station UVO and OHD located north and south of the central Usu volcanic massif, respectively, and 2.3 m at station KNP located 500m northeast from one of the new craters formed by this eruption. These displacements were monotonously increasing with time. However at station IZM located closest to the crater, the displacement was only 0.2 m in the NW direction up to the noon of 30 March and then changed its direction to SE. After the eruptions, new 25 GPS stations were installed in early May around the Nishiyama crater in order to monitor the remarkable doming phenomena which started near new Nishiyama crater after the eruption. The observation up to the end of May 2000 shows displacements at all stations characterized by both upheaval and outward radial direction from the Nishiyama crater. By August 2000 displacements at all stations had turned in the direction towards the Nishiyama crater and started to subside.