Annual Variation on GPS Masurements at Izu Volcano Island(2)

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Distinct periodic variations with annual frequencies are detected in the time series of continuous Global Positioning System (GPS) site coordinates in Japan. Heki (2001) discusses the ground deformation caused by the snow load from the time series of continuous GPS site coordinates in northeastern Japan. The significant annual variations are observed at GPS sites in the Izu Volcano Islands. Murakami et al. (2002) suggest the annual change of magma chamber from the annual change at Izuoshima Volcano.

We discuss GPS measurement errors in the annual coordinates variations observed in the Izu Volcano Islands (Murase and Kimata, 2002). We show the following examples as the basis. Although the pressure source is estimated from the GPS measurements between the Niijima and Shikinejima, no significant annual variation is not observed between the GPS sites at Niijima and Shikinejima. The mountains with an altitude of 800m rise high over Oshima and Miyakejima in the central part of the island, but no mountain with an altitude of 300 m rises high over around the GPS sites at Shikinejima and Niijima. When a low pressure passes through the Sea of Japan, in a reference point, the same changes as time series of coordinate changes at the GPS sites in Miyakejima are observed.

By Hatanaka (2002), the annual variations of GPS measurements are decreasing by the estimating of the propagation delay gradient in troposphere. He also makes clear the significant annual variation in the north-south component of the delay gradient and the locality in the

variation. He suggests the delay means the some meteorological situation in the locality.

We process the GEONET GPS data using the PPP, GIPSY/OASIS II at 11 sites in the Izu Volcano Islands to discuss the annual variations of the GPS measurement with more detail.