

## Relationship between zenith wet delay and horizontal strains by GPS observations in volcanic area

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In order to improve the estimating accuracy of site coordinates by GPS, it is important to grasp the effect of positioning on the local meteorological phenomena caused by topographical features, especially in and around volcanic areas.

In this paper, these variations are estimated and compared by using the data obtained in special observations of GPS/MET campaigns, which are performed separately in and around the Nagasaki-Shimabara Peninsula (1998) and South Kyushu including Sakurajima Volcanic area (1999) during the Baiu season.

As a result, relationship between the changes of zenith wet delay and horizontal strains is detected. The reason is that the estimated tropospheric delay are corrected not enough for anomalies of spatial water vapor.

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GPS zenith wet delay (ZWD) changes according with spatial distribution of water vapor. In the other hand, apparent horizontal strains appear with the variation of horizontal coordinates due to meteorological effect. In this paper, these variations are estimated and compared by using the data obtained in special observations of GPS/MET campaigns, which are performed separately in and around the Nagasaki-Shimabara Peninsula (1998) and South Kyushu including Sakurajima Volcanic area (1999) during the Baiu season.

As a result, relationship between the changes of zenith wet delay and horizontal strains is detected. The reason is that the estimated tropospheric delay are corrected not enough for anomalies of spatial water vapor. It is possible to separate the apparent horizontal strains from crustal movement by correcting with tropospheric gradients.