

## A Gravity Measurement at the Reference Station of Osaka City University and its Variation

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The gravity exploration is a useful method in pushing forward basement structural analysis for city disaster prevention. The comparison measurement of the gravity value was obtained on the station according to the transfer in Osaka City University, and reported on the change of passing year from the measurement value before this time.

A presented gravity reference station (A station) is in front of the entrance of the Faculty of Science. A new gravity reference station (B station) is in the general education district north end. The gravity values at the temporary reference station in Kinki Polytechnic University (C station) and in Hattaso Geoscience Institute (D station) were also measured respectively. C station was used by Ryoki (2010) and Ryoki (2011). The standard station for the comparison of the gravity values was Kyoto FGS. The gravimeter was LaCoste & Romberg G-308.

The gravity values on the reference stations were obtained; A station:979707.69 mgal, B station:979707.91 mgal, C station:979688.49 mgal, D station:979699.18 mgal. These values were determined from 979707.68 mgal which was measured absolutely in Kyoto FGS on May 12, 2003 (Geographical Survey Institute, 2004).

The gravity value on A station measured March or April, 1973 was 979721.86 mgal in 1930 Potsdam system (Nakagawa and Satomura, 1973). This value was converted to 979708.03 mgal in 1967 gravity system. Moreover, it was 797707.59 mgal in the measurement on July 30, 1981 (Ryoki, 1982). When the value in 1981 and the value in 1973 are compared based on the measurement value in 2011, the gravity value is -0.10 mgal and + 0.34 mgal. The height is -0.092 m (after Ryoki(1982) and Mitamura(2011)).

The height in A station is 0.092 m rises from about 1981 to present, and the gravity value is 0.10 mgal increases. A rise of 0.092 m makes a gravity effect of almost -0.03 mgal in Free-Air reduction. But the measurement value increases. An increase in the height is thought to be a result which considered how to cope with the ground subsidence in the whole area of Osaka plains, and yet an increase in the gravity value in A station is a problem which should be examined more in detail including the activity signs such as Uemachi Fault Zone.

### References

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