The Gravity Survey in the Chikko-Shinmachi - Minami-Eganosyo Line which Crossed the North-side Area of Senboku Graben

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1. Summary

When advancing earthquake disaster prevention, the existence of a buried active fault which is not known well poses a problem. So far, research of an active fault has been advanced focusing on the field investigation or the result of a seismic exploration in a survey line selected based the field investigation. On the other hand, in addition to these, the dense gravity survey has been carried out by many survey line which cross Uemachi fault zone in order to grasp the structure of a deposition base, in the Osaka Senboku area. As an example of results, the position of the presumptive active fault (Yoshioka *et al.*, 2013), that is lying along the Gulf, is confirmed in Hamadera (Ryoki, 2017). In this report, it is shown that the result of gravity measurement on the east-west survey line set to about 2.5 km north of Ryoki (2017).

2. Target area

The survey line lay about 15km east-west from Minami-Eganosho, Habikino City, to west end of Chikkou-Shinmachi, Nishi-ku, Sakai City. Among them, it is measured by the Ryoki (2015) that a investigate line is about 6 km from Sanjo-dori, Sakai-ku, Sakai City to Shin-Kanaoka-cho, Kita-ku.

3. Method

Gravity measurement was carried out using the LaCoste & Romberg relative gravimeter G-308. As a general rule, this measurement was carried out on the baseline standard point of the Geospatial Information Authority of Japan (GSI) and the reference point / auxiliary point of the public block area, and the survey result (GSI, 2017) of each point was used for gravity correction. In the case where the point was lost, the position before the loss was confirmed on the map and it was taken as the gravity measurement point. Since measurement was done in plain part, topographical correction was not applied this time.

4. Result

Fig. 2 shows the results of free air anomalies and simple Bouguer anomalies projected in the east-west direction. The horizontal axis is the distance from the western end of this line. Fig. 2 shows the active faults, as well. All of these faults are roughly orthogonal to the current survey line.

5. Conclusion

Show at Figure 2, the presence of the Mikunigaoka high gravity anomaly area is noticeable. The maximum value of Bouguer anomaly in this section is 15.6 mgal, from which the distance to a flat part in the eastern area is about 3.8 km, the difference is about 4.0 mgal. The Bouguer anomaly gradually decreases in the west of the maximal position. But when look closely, small gaps are recognized on the east side in response to the fault positions (1) - (4) on the surface. The fault (5) does not show remarkable features in Bouguer anomaly. On the other hand, the existence of active faults is not known to the east of the maximum position of Bouguer anomaly. However, as far as the distribution of Bouguer anomalies is concerned, the displacement of a large foundation structure is also suggested here.
In the Senboku area, there were gravity measurement results for several survey lines which were unpublished as it was difficult to access geographical information, which was an online information, at the

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time of measurement. These are going to be made public in the future.

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Keywords: Osaka Plan, Uemachi fault zone, subsurface structure, reverse fault, digital geographic information, public control point

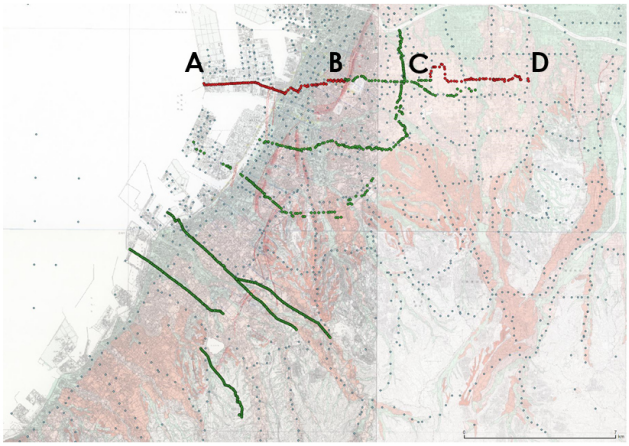

図 1　重力測定点の位置　A–B，C–D：今回の測定点(赤印)，その他は筆者によって公表された測定点(緑印)．小さな点はその他の既存の測定点．吉岡・他(2013)の断層線を記入してある．(中田・他(1996)，中田・他(2009)，岡田・他(1996)，岡田・他(2009)に加筆)．

Fig. 1 Position of gravity measurement points. Red circles (A – B, C – D): current measurement points, green circles: recent measurement points by the author, small circles: existing points by several other authors. Fault lines by Yoshioka *et al.* (2013) are added (after Tanaka *et al.* (1996), Tanaka *et al.* (2009), Okada *et al.* (1996), Okada *et al.* (2009)).

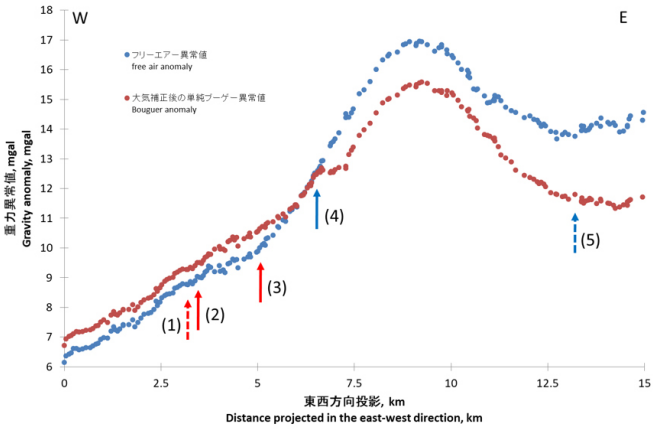

図 2　重力異常稠密測定の結果 東西断面　赤色矢印は吉岡・他(2013)，青色矢印は岡田・他 (1996)および岡田・他 (2009)による活断層位置を示す．実線は確実度の高い活断層，破線は推定活断層．

Fig. 2 Profile of gravity anomaly in dense survey East-West section. Red arrows indicate the points of the extremal value in the simple Bouguer anomalies. Red arrows indicate the points of active faults by Yoshioka *et al.* 2013) and blue arrows by Okada *et al.* (2009). The solid line shows the active fault with high certainty, the broken line shows the estimated active fault.

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