

The Dense Gravity Surveying Situated in *Senboku Graben* on Takaishi-Sakai Profile which to Cross Uemachi Fault Zone

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1. Summary

Basement investigation is advanced energetically to assume the earthquake response generated in an active fault. In Uemachi Fault zone, located on the central part of Osaka plain, several base investigations have been studied supposing the earthquake which occurs in an active fault energetically too. However, the structural analysis by a gravity survey is not carried out with sufficient point-of-measurement density. Then, the authors have advanced the dense gravity survey in Senboku Area (for example, Ryoki, 2011, *etc.*) In this time, a gravity anomaly was measured densely along mostly Takaishi-Sakai Line in which a seismic prospecting with P wave reflection method was studied by Iwata *et al.* (2013).

2. Target area

The gravity survey line is about 8.3 km distance of east-and-west projection from Takasago, Takaishi-shi to the Handakita-cho, Naka-ku, Sakai-shi. The line intersects some active faults of Uemachi Fault Zone (Nakata *et al.*, 1996).

3. Acquisition of geographic information

Latitude, longitude and the altitude of the public-surveying points used the coded data which the Geographical Survey Institute (2013) offered. When it measured on a road, the technique of Ryoki (2015) was applied to refer to them.

4. Result

Fig. 1 shows the measurement result projected in the direction of east and west. The simple Bouguer anomaly has not given geographical feature compensation at Fig. 1. The arrows in the figure show the positions of the active fault by Tanaka *et al.* (1996). Fig. 1 is very as harmonic as P wave profile shown by Iwata *et al.* (2013).

5. conclusion

When Fig. 1 is compared with the profile presented by Nakata *et al.* (1996), a fault structure, which can be presumed from gravity anomaly, consists in the same place as the active fault which is shown with P wave profile. About 0.7 mgal decrease of the eastern throw consists in near -53 km. This decrease forms a low gravity anomaly zone with the Uemachi faults which shows the western throw near -51.5 km. This gravity anomaly can be contrasted with the "bending structure" which shown by Iwata *et al.* (2013), and the base depth of that structure is interpreted as -1750m order. Such a structure is too shown at about 3.5 km southwest (Ryoki, 2014), and it can be seen besides in Ootsugawa profile presented by Iwata *et al.* (2011) though it is narrow. From the above observation fact, it is thought that a Graben is formed here of two structures of eastern throw and western throw. In this paper, this Graben is called "Senboku Graben." The eastern edge of the Senboku Graben is westernmost reversed fault of Uemachi Fault Zone which is divided into three near here. When the form of a gravity anomaly is considered carefully, there is a high possibility that the western edge of the Senboku Graben is also a reversed fault of the eastern throw which accomplishes the eastern edge and a pair.

References

GSI (2013): For publication of GSI Maps, <http://www.gsi.go.jp/johofukyu/johofukyu40032.html>.
Iwata et al. (2011) : *Preponderant Investigation in Uemachi Fault Zone*, 2010, p. 19 - 77.

- Iwata, T. et al. (2013) : *Preponderant Investigation in Uemachi Fault Zone*, 2012, p. 66 - 163.
 Nakata, T. et al. (1996) : 1:25,000 Osaka Seinann-Bu, *Active Fault Map in City Zone*, D1-No. 333.
 Ryoki, K. (2011) : *Journal of Kinki Polytechnic College*, vol. 19, p. 18 - 19.
 Ryoki, K. (2014) : *Japan Geoscience Union 2014 convention proceedings*, SSS26-P02.
 Ryoki, K. (2015) : *Japan Geoscience Union 2015 convention proceedings*, SSS31-P05.

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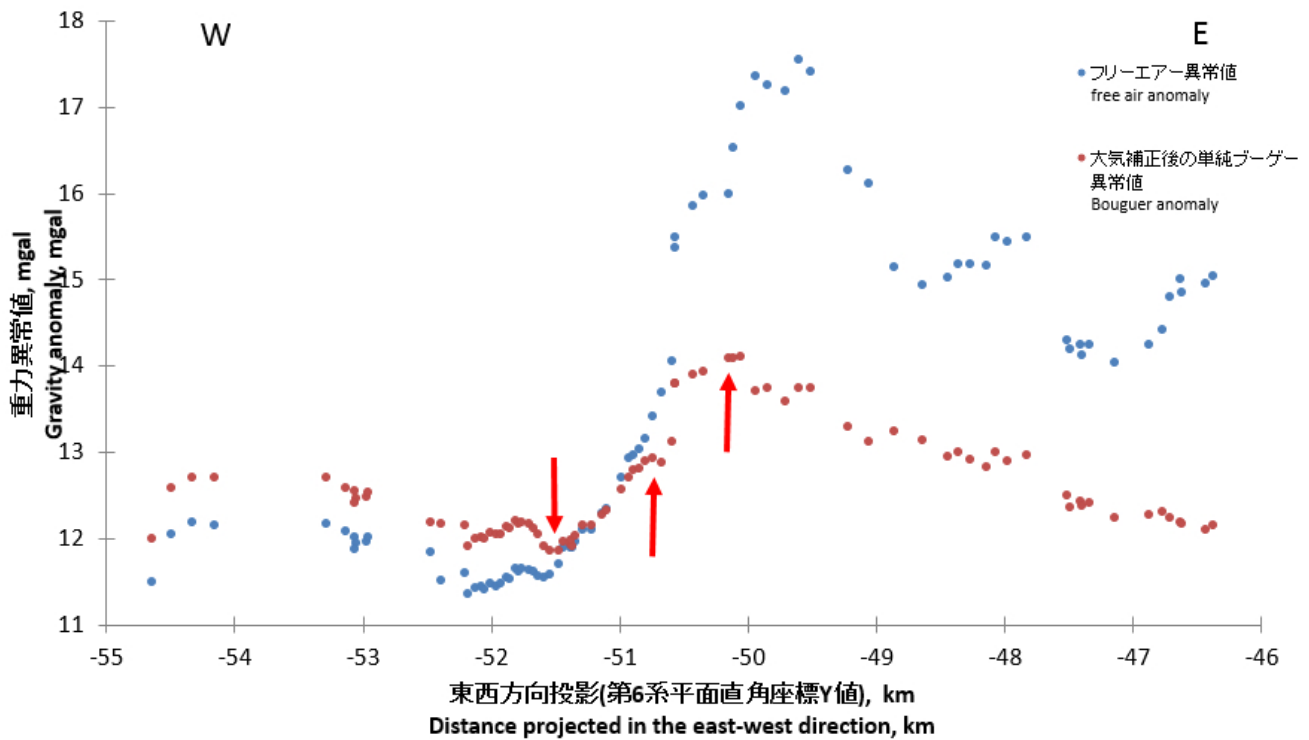


図1 重力異常稠密測定の結果 東西断面

Fig. 1 Profile of gravity anomaly in dense survey East-West section