

Microgravity survey around the Dendahara trench site across the Atera fault

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Introduction: TRIES carries out structural survey of the Atera fault since 2000 (Tanaka et al., 2001, Joint meeting; Tanaka et al. and Okubo et al., 2001, the fall meeting of SSJ). This time, we report the preliminary results of microgravity survey about the Dendahara district where trench excavation survey was done in 1993 (Toda et al., 1995, Zisin).

Background of the Dendahara district: The southern tip of the Atera fault is the junction with the Byobusan fault from the southwest and the Magometoge fault from the North. Although seismicity in the Atera fault zone is low, the one of this place is high relatively. Therefore, this place is interesting from the viewpoint of fracture mechanics. In addition, though it is unidentified to be coincident or not, offset landform owed to faulting is clear. Then, several trench surveys have been done until now. However, the vertical sense in the southern tip of the Atera fault is the southeastern side uplift which is reverse to that of regional trend. We have to make clear the relationship of the offset landform and basement structure estimated from gravity anomaly. We decided that the rectangle region of 500mX1000m including the Dendahara trench site as the midpoint is microgravity survey area.

Procedure: We define here that microgravity survey is more accurate than 0.05mgal. The accuracy of positioning, especially elevation dominates the result of gravity anomaly because of resolution of gravimeter itself. Therefore, the observation point positioning is achieved good accuracy than 10cm by the use of GPS and T.S. And then, we used the 50m mesh topographic data by GSI for terrain correction in region of 20km from measurement station. But, the 25m mesh which compiled from positioning data was also used for terrain correction in the rectangle region. In mountain region such as the object area, more highly precise terrain correction may be demanded (Iwano and Fukuda, 2000, Geodesy bulletin). However, we think that the terrible wrong estimation is not induced while unconsidered interpretations that influences by one point of measurement have not done. We adopt 2.3g/cc as Bouguer density by correlation method. To be specific, we ignored the high topographic place where granitic rocks outcrop and selected the density which seemed to be smallest correlation between the topography and Bouguer anomaly in the region where sedimentary layer distributed over.

Preliminary result: In the deduced Bouguer anomaly, the low gravity anomaly band (LGZ) is found along southwestern side of fault line. This seems to be correspond to crushed basement by faulting. Moreover, gravity high (shallow basement) area seems to relate with fault bending and reverse sense of vertical offset. For the situation, it is considered that the surface layer which had been moving to southeast by faulting run aground on the basement surge, and then the offset landform became northeast falling.