[EJ] Evening Poster | S (Solid Earth Sciences) | S-SS Seismology

[S-SS08]Active faults and paleoseismology

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Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Geologic and historic information on seismic cycles and on the magnitude and source faults of past earthquakes is essential information to understand future large earthquakes. The study of past faulting and seismicity is an important issue for an interdisciplinary community of seismologists, geologists, geomorphologists, archaeologists, and historians.

[SSS08-P17]Characteristics of the Shikano–Yoshioka fault revealed by gravity anomaly

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Keywords:Gravity gradient tensor, Two-dimensional Talwani's method, Tottori Plain, Density structure, First horizontal derivative

The Shikano–Yoshioka fault is located in eastern Tottori and its total length is 26 km. Surface earthquake faults have appeared along the Shikano and Yoshioka faults at the occurrence of the 1943 Tottori earthquake. The source fault of the Tottori earthquake is estimated to cross the Tottori Plain (Kanamori, 1972). However, few studies have reported the existence of the source fault beneath the Tottori Plain. Recently, several works have revealed subsurface fault structures of active faults from analyses of gravity anomaly and gravity gradient tensor. In this study, based on the analysis of dense gravity measurements data, we report characteristics of the Shikano–Yoshioka fault revealed by gravity anomaly.

We used gravity anomaly data measured on the field in June, September and October 2017, together with those of the Geographical Survey Institute (2006), Yamamoto et al. (2011), the Geological Survey of Japan (2013) and Tottori University. We applied Bouguer and terrain corrections with a correction density of 2300 kg/m^3 to the compiled gravity data to calculate Bouguer anomaly. We also applied a plain trend correction and a low–pass filter with a cutoff wavelength of 1 km for the analysis of Bouguer anomaly.

It is difficult to recognize features related to the Shikano–Yoshioka fault from Bouguer anomaly. However, from the horizontal derivative of Bouguer anomaly perpendicular to the fault strike, we can find locally a distribution of the horizontal derivative, which is similar to that characterizing a lateral fault, for the Yoshioka and Iwatsubo fault. The location of inflection point of Bouguer anomaly on each profile in the Tottori Plain lies approximately on a line connecting between the Yoshioka fault and the fault east of the Tottori Plain. This suggests that the location of the inflection point reflects a

subsurface source fault of the Tottori earthquake. Referring to the result of Noguchi et al. (2003), we also constructed a density structure model on the profile located in the center of the Tottori Plain using two-dimensional Talwani's method. The model suggests that the basement at the depth of around 130 m displaces vertically in 30 m.