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The basement structures of the northern Noto Peninsula based on the gravity anomalies

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Upper crustal block structures are usually defined by using surface information, such as geological and morphological data. The northern Noto Peninsula, central Japan, is divided into four geological block structures from tectonic geomorphological perspectives (Ota and Hirakawa, 1979). This division is based on the surface crustal movement. To image the geological blocks three-dimensionally, it is necessary to construct a subsurface structure model. Gravity survey can clarify the detailed subsurface structure with dense gravity measurement.

We compiled the data measured and published previously (Honda *et al.*, in press; Gravity Database of Southwest Japan, 2001; Geological survey of Japan, 2004; Geographical survey institute of Japan, 2006; The Gravity Research Group in Southwest Japan, 2001; Komazawa and Okuma, 2010; Hokuriku Electric Power Company, undisclosed) and calculated Bouguer anomaly in the northern Noto Peninsula. Based on this Bouguer anomaly, we analyzed subsurface density structures along 13 northeastern-southwestern profiles and 35 northwestern-southeastern profiles with the interval of 2 km using the two dimensional Talwani's method (Talwani *et al.*, 1959). In the analysis, we assumed a density structure with four layers: basement (density is 2670kg/m^3), Neocene volcanic rock (density is 2750 kg/m^3 or 2400 kg/m^3), Neocene sedimentary rock (density is 2200 kg/m^3), and Quaternary sedimentary rock (density is 1800 kg/m^3 or 1500 kg/m^3) (Honda *et al.*, 2008).

After the last presentation (Mizubayashi *et al.*, 2012), we improved the analyses results of the basement structure and verified the results. The method to construct the 3D basement structure by compiling many 2D structure profiles was not verified for the accuracy. We constructed the 3D block basement structure model from many 2D structure profiles, and compared the theoretical gravity anomaly from the 3D block model with the observed gravity anomaly. The verification of above method indicates that the pseudo 3D basement structure by compiling many 2D structure profiles reproduct the observed gravity anomaly not on the profiles but on the plane. Therefore our result of the basement structure calculated by 2D Talwani's method has the enough accuracy.

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Keywords: gravity anomaly, Noto peninsula, basement structure