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Gravity survey around the Medeshima Hills in the Sendai Plain, northeast Japan

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Our seismic and gravity survey carried out across the Sendai Plain in 2013 (Watari 2013) shows concealed active fault beneath the Sendai Plain. The concealed fault dislocates not only Pre-Tertiary basement rocks but also Miocene and Pleistocene sediments. Pre-existed bouguer gravity data suggest that the concealed active fault continue toward north via eastern foot of Medeshima Hills. However, the relationship among the concealed active fault, concealed fault of Nagamachi-Rifu active fault system, and Kagitori-Okubushi tectonic line is not so clear. To evaluate the active fault beneath alluvial plain, the length and relationship of these active faults provide essential information.

To reveal the continuity of northern extension of the concealed active fault, we executed gravity survey in the southern part of Sendai Plain, from Medeshima Hills to the right bank of Natori River. The total number of gravity stations is 232, using LaCoste & Romberg D-type gravimeter and G-type gravimeter. The interval of gravity stations is 200 m.

The result of our gravity survey shows no steep gradient of bouguer gravity associated with the concealed active fault in the northern area of Medeshima Hills, indicating that the active concealed fault is terminated in this area.

Keywords: gravity survey, concealed active fault, subsurface structure, continuity of active fault