Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SSS35-P18 Room:Convention Hall Time:May 22 18:00-19:30

Relationship between displacement and gravity change of Uemachi Faults and surrounding faults of Osaka basin, Southwest

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The Osaka basin surrounded by the Rokko and Ikoma Ranges is one of the typical Quaternary sedimentary basins in Japan. The Osaka basin has been filled by the Pleistocene Osaka group and the later sediments. Several large cities and metropolitan areas, such as Osaka and Kobe are located in the Osaka basin. The basin is surrounded by E-W trending strike slip faults and N-S trending reverse faults. The N-S trending 42-km-long Uemachi faults traverse in the central part of the Osaka city. The Uemachi faults have been investigated for countermeasures against earthquake disaster. It is important to reveal the detailed fault parameters, such as length, dip and recurrence interval, so on for strong ground motion simulation and disaster prevention. For strong ground motion simulation, the fault model of the Uemachi faults consist of the two parts, the north and south parts, because of the no basement displacement in the central part of the faults.

The Ministry of Education, Culture, Sports, Science and Technology started the project to survey of the Uemachi faults. The Disaster Prevention Institute of Kyoto University is carried out various surveys from 2009 to 2012 for 3 years. The result of the last year revealed the higher fault activity of the branch fault than main faults in the central part. Kusumoto et al. (2001) reported that surrounding faults enable to form the similar basement relief without the Uemachi faults model based on a dislocation model.

We performed various parameter studies for dislocation model and gravity changes based on simplified faults model, which were designed based on the distribution of the real faults. The model was consisted 7 faults including the Uemachi faults. The dislocation and gravity change were calculated based on the Okada et al. (1985) and Okubo et al. (1993) respectively. The results show the similar basement displacement pattern to the Kusumoto et al. (2001) and no characteristic gravity change pattern. The Quantitative estimation is further problem.

This research is funded by the Comprehensive Research on the Uemachi Fault Zone (in FY2011) by MEXT.

Keywords: Uemachi fault, gravity anomaly, dislocation model