Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SSS032-03 Room:302 Time:May 24 14:45-15:00

Estimate of fault angle about Isehara fault by computer simulation which use CIP method

Koichi Ando[1*], Haruo Yamazaki[1]

[1]Tokyo Metropolitan University

Isehara fault is reverse fault which exist in north east shore of Tanzawa mountainous region.
Isehara fault is parallel with Fusinoki-Aikawa line which is a boundary of Pre Neogene and Neogene (Research Group for Active Faults of Japan 1991).
Isehara fault length is 20 km.
Isehara fault is concealed active fault and appearing flexure at ground surface.
Cover layer thickness from bed rock is 35m that is estimated by drill core data at Miyasita Isehara city near Isehara fault (Takeda et.al. 2003).
Most upper region of cover layer consist of loam and under region of cover layer consist of gravel and sand.
Assuming that connect fault scarp and fault surface that is confirmed by drill core, fault angle is about 40 degree.
But, Isehara fault angle is 50-60 degree that is estimeted by reflection seismic survey (Kanagawa prefecture 1996).
This difference is according to Isehara fault's fault angle become the smaller at near ground surface (Takeda et.al. 2003).

Therefore, Isehara fault's fault angel is uncertain.
In this study, we conduct two-dimensional computer simulations assuming that a covering layer on the bedrock is cut perpendicular to the fault line, and we setimate the fault angle at bed rock for Isehara fault.
In this study, the covering layer is considered to be not an elastic medium but a Bingham fluid. Therefore, its consist of sand and gravel.
We use the constrained interpolation profile (CIP) method to calculate the Bingham fluid.
The CIP method is a type of difference method.
A function and differentiation of function use to advect function for CIP method.
As a result, CIP method succeed with reducing numerical diffusion that is fault of difference method.
The CIP method have advantages which is possible calculate large deformaton and division of layer by the faulting.

We attempt to simulations which is running by changing fault angle, maximum fault slip rate and unit displacements.
We surch parameters which can reproduce fault flexure of Isehara fault.
As a result, we discovered that fault angle is 30 degree, maximum fault slip rate is 0.5 m/s and unit displacements is 3.0 m.
This fault angle is different from previous study value.
This difference is according to Isehara fault's fault angle become the smaller at near ground surface (Takeda et.al. 2003).

Keywords: active fault, Isehara fault, fault flexure, simulation, CIP method, fault parameters