Distribution of fault system and its characteristics around the aftershock area of the 2000 Western Tottori earthquake

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The 2000 Western Tottori earthquake (Mj7.3) occurred where distinctive active fault and related lineament were not identified. Lager than Mj 1 aftershock still frequently observed in this area. A extreme-density observation with a thousand simplified seismograph around the aftershock area has been projected. The objectives of this study is to clarify the detailed distribution and occurrence of faults which exposed around the aftershock area of the 2000 western Tottori earthquake in the range of 12km×4km by field observation and compare the result with the seismographic observation.
In research area, the Late Cretaceous to Paleogene granitic rock s exposed. Some Miocene (partly Pleistocene) acidic to basic dykes were intruded into the granitic rocks.
About 1000 faults were observed in this study area. Orientation of faults were different for each area: the northwestern area was varied and not concentrated, the central area was concentrated to WNW and NE direction, the southeastern area was concentrated to NNW and NE direction. The fault rocks were composed of some mm to cm thick fault gouge and some cm thick cataclasite. Most of cataclasites were hydrothermally altered. Some NW and NE trending faults shows cross-cutting (conjugate) relationship.
Distribution and orientation of observed fault is approximately corresponding with cracks which estimated from seismographic observation after the 2000 western Tottori earthquake (Yukutake, 2010). This result indicates geometry of the 2000 western Tottori earthquake related faults has interrelationship with orientation of pre-exited geological faults. Hydrothermal alteration of cataclasite suggests that the cataclasite had been formed under the hydrothermal condition in depth and fluid had been affected for fault activity. Several lineament had been recognized after the 2000 western Tottori earthquake by air-photo interpretation. The mapped lineament were mostly less than 10 km and some lineament showed conjugate relationship (Takada et al., 2003). Cross-cutting relationship of NW and NE trending faults observed in this study may indicates segmentation of each faults. Minor and obscure lineaments around aftershock area of the 2000 western Tottori earthquake might be developed as a result of segmentation by the cross-cutting of NW and NE trending faults.

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