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Need for future collaboration to contribute active fault research result toward practical use for estimation of strong g

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To better estimate strong ground motion generated by active faulting, it is important to define rupture initiation, propagation and termination as well as to clarify location and geometry of active faults.
For locating asperities (the area of greatest displacement) on an earthquake fault plane after an earthquake, application of geomorphology and geology is as effective as geodesy and seismology. Active faults are the result of cumulative slip by repeated surface faulting. Therefore, it is also important to examine slip distribution along active fault traces to detect asperity on subsurface fault planes before earthquakes.
Nakata and others (1998) proposed a method to locate initiation of fault rupture and rupture propagation from the geometry of mapped active faults, especially branching features of strike-slip faults. Nakata and Goto (1998) interpret that the pattern of vertical slip distribution along strike-slip faults is related to the length of future earthquake ruptures. These models are simple and conceptual, and have faced critical comments that the models are not applicable to existing active faults. However, our continuing study and mapping of the geometry of active faults shows the models to be consistent with our observations.
We suggest that the shape of subsurface fault plane is directly related to branching features of mapped fault geometry and slip distributions along active faults. For example, most of reverse faults are arc shaped, and some of them are multiple arc-shaped (corrugated sheet-shaped) as results of repeated faulting during late Quaternary at least last several hundred thousand year. Therefore the arcuate surface geometry reflects subsurface geometry of active faults. On a corrugated-shaped fault plane, stress will be concentrated along the seam of two fault planes and as a result it is interpreted that rupture will be initiated along the seam.
Detailed active fault mapping of 1:25,000 scale or larger together with continued compilation of an active fault database describing fault slip rates and displacement is urgently needed for discussing and understanding issues related to the location, size and strong ground motion of future earthquakes. The Headquarters for Earthquake Research Promotion began to make " Basic Active Fault Map " and the map is expected to serve for the same purpose. Kagohara and others(2008) compiled data regarding fault slip and slip rate based on previous works before 2001, and demonstrated that slip rate does not differ much through time and that asperity is suggested from slip distribution. Data collected since 2001 especially for newly found active traces needs to be added to the database.

Keywords: active fault database, estimation of rupture initiation point, slip distribution, slip rate distribution, estimation of asperity