

## Surface Rupture and Structural Damage

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During the 2016 Kumamoto Earthquake, surface rupture was observed along the Futagwa-Hinagu Fault zone for the distance of more than 20km. This is a very rare case and this shows that it is very difficult to specify where the surface rupture will appear before the earthquake. For this matter, it is more important to investigate the relationship between the active fault and source fault and the deep basin structure that is a result of the fault activity for many years, rather than the very precise location of the active fault. This was proved after the thorough investigation of the cause of the damage belt during the 1995 Kobe Earthquake. However, if the displacement of the surface rupture is surveyed thoroughly, the information can be used to investigate the relation to the slip on the source fault, which can be used to predict the amount of slip on the source fault of future earthquake occurring on the active faults.

On the other hand, there are concerns that the surface rupture will damage the structures on top of it. If the rupture speed is very slow, the rupture will not be able to split the structure, but the structure will restrict the deformation by the rupture. If the rupture speed is fast enough, it may have the energy to split the structure, so it will be worthwhile to observe the speed of the surface rupture and investigate the relation to the slip on the source fault.

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