Two destructive earthquakes (M6.5, M7.3) in 28 hours hit Kumamoto prefecture with maximum JMA Intensity 7 along Hinagu and Futagawa active fault from April 14, 2016. The co-seismic faults appeared along a 30km-length of the HERP assessed active faults and moreover, some of them distributed widely than the known. We traced surface fault, investigated strong ground motion nearby the coseismic faults by the building Damage Index (DI) method. Two of the most damage concentrated regions, Minani-Aso village (Fig.1) and Mashiki town (Fig.2), are located on both ends of the NE-SW active fault zone.

The DI distribution showed that house total collapses D5(red) and D4(orange) along with the co-seismic faults in both of towns. Left step-over coseismic faults with hundreds meter-length in Minami-Aso combined with strong motion showed causal relation to the local mountain land-sliding, bridge collapse and overturned car. On the other hand, coseismic surface faults ruptured with displacements ~0.5m at eastern Mashiki but occasionally appeared inside Mashiki town where strong ground motions recorded (EW826; NS 773; UD 668 cm/s/s).

To clarify the surface amplification factor and vibration frequency, a total of 50 sets of small array (6 sets of 3-components sensors) of microtremors have been carried out along co-seismic fault nearby.

By examined the relationship between these factors, we hope to understand more about strong ground motion in the immediate vicinity of so-seismic faults in order to contribute to the challenges of the current strong motion evaluation method.