

## Unusual behavior of the surface layer during earthquakes and formation of faults

# Toru Ouchi[1]

[1] Research Center for Urban Safety and Security, Kobe University

The surface layer shows unusual behavior and becomes highly mobilized during large earthquakes as the Chuetsu-Oki (2007) and Kobe (1995) earthquakes. This unusual surface might be composed of mostly soft sediments with from several to several tens meters layer and behave more like fluid under strong motions. This layer shows phenomena of lateral flows as well as liquefactions that are commonly observed in focal regions of large earthquakes. This layer is characterized by quite slow wave velocities and high Poisson ratios that may responsible for unusual and curious behavior during large earthquakes that enhance strong motion damages. Also this layer affects formation of surface fault and sometimes masks them to appear on the surface even if faults are quite shallow. Unusual behavior like lateral flow also makes difficult to investigate surface faults in terms of geodetic and geological survey. Further, this might make impossible to detect the precursory movement of faults. However, very little is understood now for this surface layer. Without knowing this surface layer appropriately we might fail to understand actual faulting processes and mitigate earthquake damages. We need to promote systematic and comprehensive investigations by seismological, geological and engineering means to address these situations.