

Possible mechanism of coseismic groundwater-level drops at Haibara well, Japan

Norio Matsumoto[1], Evelyn Roeloffs[2]

[1] Geol. Surv. Japan, [2] U. S. Geological Survey

Thirty-two coseismic groundwater-level drops have been detected between 1981 and 1997 at the Haibara well. Coseismic water level changes are always negative, although 30 percent of the coseismic strain steps represent contraction. Our results imply poroelastic response to coseismic strain is not the cause of coseismic water level drops at the well.

We hypothesize that the coseismic changes instead represent diffusive response of fluid pressure to abrupt changes induced by ground motions at a location near, but not at, the well. The coseismic drops can be explained if the water table 0.3 - 0.4 km from the well suddenly drops 2.6 times the maximum amount of each coseismic water level drop.