

Self-potential variations due to the water injection experiment at the Nojima fault: A preliminary report

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To investigate the healing process of an active fault the water injection experiment was carried out at the Nojima fault in Awaji, Japan, from January to March 2000. Self-potential variations were measured for estimating the magnitude of electrokinetic parameter (zeta potential) and permeability of the fault zone. We observed self-potential variations that seemed to be associated with the water flows from the injection well to the fracture zone. Amplitudes of the variations were a few to 30 mV across about 300 m dipoles. The negative variations of self-potential appeared around the injection well and the self-potential variations decreased with distance increase from the well. These variations can be explained well with an electrokinetic model.