

## How the stress state changes with time in and around faults

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It is an important factor for forecast a future earthquake how the strength of a fault plane is recovered and how the stress in and around the fault plane accumulate during an earthquake cycle. However, it is difficult to inspect the time variation of stress state in and around a faults in the field because the period of an earthquake cycle is very long. I introduce examples to be concerned with time variations of stress states by downhole in-situ stress measurement (Ikeda et al., 1996a; Ikeda et al., 1996b; Ikeda et al., 2001; Tsukahara et al., 2001; Omura et al., 2004; Yamashita et al., 2004; Hickman and Zoback, 2004; Lin et al., 2007; Yabe et al., 2010; Yamashita et al., 2010; Yabe and Omura, 2011; Kuwahara et al., 2012; Ito et al., 2013; Lin et al., 2013). Those examples indicate that stress increases since after an earthquake toward the next earthquake. However, it is not clear whether the stress increase linearly with time, or change largely just after an earthquake, or increase rapidly just before the next earthquake. We need repeated measurements of in-situ stress to detect directly a time variation of stress state in and around a fault after an earthquake.

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Keywords: stress, fault, in-situ measurement, hydraulic fracture, borehole breakout, downhole measurement