



Detecting the stress condition at an earthquake fault from focal mechanism data: an application to the 2013 Awaji Island earthquake (M6.3), Japan

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One of the approaches used to evaluate the potential of an earthquake occurrence is the detection of the stress concentration at an earthquake fault. The stress fields for pre- and post-seismic event stages will differ from one another. However, this change cannot provide information regarding the potential for an earthquake to occur. Here, we propose a detection method for stress conditions that uses focal mechanism data of microearthquakes. The stress conditions can be defined both by the background stress and by a moment tensor equivalent to the stress concentration. We applied this method to real focal mechanism data from the Awaji Island earthquake (M6.3), Japan, and show the presence of stress concentration around the earthquake fault before the mainshock. In addition, the regional shear stress is shown to be about 11 MPa. In addition, we showed the potential of the earthquake was detectable from data before the mainshock.