



## **Lateral stress drop variations and the Tohoku aftershocks in the context of earthquake source characteristics in Japan**

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A fundamental controversy still exists upon the scaling characteristics of seismic source parameters such as stress drop and radiated energy. Over the past two decades, a significant number of studies provided persuasive evidence for an increase of the latter with seismic moment respectively magnitude, while other researchers casted doubt on these findings, arguing for constancy of stress drop and seismic energy-to-moment ratio and thus similarity of the rupture process between small and large earthquakes.

Recently, a countrywide study in Japan carried out by Oth et al. (2010) showed no evidence of any clear scaling break between small and large magnitude earthquakes. On the other hand, the continuation of this countrywide study, analyzing individual earthquake sequences as well as separating the catalogue of used events into different mechanisms, provided indications that these individual sequences can show significant deviations from self-similarity, and that these deviations are closely related to the dominant faulting mechanism of the sequence.

In this study, as a continuation of the work presented by Oth et al. (2010), I first significantly extended the K-NET and KiK-net dataset used to derive the scaling characteristics throughout Japan and also included aftershocks from the giant Tohoku earthquake in order to study the scaling characteristics of these events. Besides the scaling properties of the sequences already investigated previously, the lateral variations of stress drop throughout Japan will be discussed, and the question where the source parameters of the Tohoku aftershocks fit into this context will be investigated.