

Seismicity Rate as an Indicator of Stress Change: Case of the Northern Ibaraki Prefecture Area

*Takahiko Uchide¹

1. Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology (AIST)

Seismicity rate is sensitive to the change in the stress applied on the fault.

I studied the northern Ibaraki prefecture area, where two large earthquakes in March, 2011 and a large normal faulting earthquake (Mj 6.3) on December 28, 2016 struck probably due to the coseismic and postseismic deformation of the 2011 Tohoku-oki earthquake [*Uchide et al.*, this meeting]. The GNSS data from GEONET of Geospatial Information Authority of Japan (GSI) infers a rapid extension in the east-west direction right after the Tohoku-oki earthquake and a slow east-west compression for a couple of years, which seems to contradict the generation of the large normal faulting event. The GNSS data is the measurement on the ground surface, and the strain rate at depth may be different. Therefore we examine the stress change using the seismicity rate based on the ETAS model [*Ogata*, 1988].

Using *etas_solve* program [*Kasahara et al.*, 2016], the Japan Meteorological Agency (JMA) Unified Earthquake Catalog, I estimate the ETAS parameters for the 100-500 days from March 11, 2011 on which the Tohoku-oki earthquake occurred. I converted the JMA magnitude into the moment magnitude as proposed by *Uchide and Imanishi* [submitted]. A preliminary result suggested that the seismicity rate is more attenuating than the prediction by the ETAS model with the estimated parameters. This may indicate the attenuation in the shear stress on the fault.

Keywords: ETAS Model, Northern Ibaraki Prefecture Area