

Co-occurrence Analysis on the 2011 off the Pacific coast of Tohoku Earthquake

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The March 11, 2011, earthquake off the Pacific coast of Tohoku, Japan, was a record-breaking natural disaster. After the M9.0 mainshock, numerous aftershocks and induced seismicity occurred throughout Japan. In this study, we extract earthquake co-occurrence patterns for investigating mechanical interactions among the affected areas. We applied a novel data mining method to extract frequent and co-occurring seismic patterns. We acquired the affected areas and relationships between earthquake co-occurrence patterns and focal mechanisms from the Japan Meteorological Agency's 2011 hypocenter catalog.

Keywords: data mining, mechanical interaction, asperity, focal mechanism solutions