GLOBAL SEARCH FOR REMOTE TRIGGERING SEISMICITY CAUSED BY THE 2011, M9.0 TOHOKU, JAPAN EARTHQUAKE

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Observations show that large earthquakes can trigger seismicity at large distances from the mainshock. The passing of seismic waves changes the stress conditions on previously over stressed regions causing the triggering of small earthquakes and tremors, this phenomenon is know as remote or dynamic triggering seismicity. We performed a global search of earthquakes and tremors potentially triggered by the surfaces waves from the 2011, M9.0 Tohoku, Japan earthquake. We used EarthScope’s seismic stations and other seismic networks and catalogs to search for instance of instantaneous triggering of earthquakes and tremors during the passing of the seismic waves, as well as for statistically significant changes in seismic rate at several regions after the passing of the waves. Instantaneous triggering of tremor and earthquakes was observed in places as Taiwan, Armenia, Russia, Ecuador and the Caribbean, and changes in the local seismic rate where observed in places as USA, Mexico and the Solomon Sea. In order to have a better understanding of this phenomenon, we analyzed the seismic waves and modeled the stress changes caused by them and their relationship with the local stress where triggering occurred.