

Tidal triggering of earthquakes: A global search

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We statistically test a correlation between the tidal stress and the earthquake occurrence time for a large set of globally distributed earthquakes reported by the Harvard University group. By classifying the data set into three subsets according to fault types, we find an extremely high correlation for shear stress in the case of reverse-fault-type. The correlation is particularly remarkable for shallow and smaller earthquakes. Significant correlation is also found for the trace of stress tensor in the case of shallow and larger earthquakes of normal-fault-type. No correlation is seen for strike-slip-type. For all the cases of high correlation, the occurrence times of the earthquakes are concentrated around the tidal phase angle where the tidal stress accelerates the fault slip motion.