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KINEMATIC MODELING OF THE OCTOBER 23, 2011 VAN, EASTERN TURKEY Mw 7.1 EARTHQUAKE OBTAINED FROM REGIONAL AND TELESEISMIC P EMPIRICAL GREEN FUNCTION ANALYSIS

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A kinematic source model for the Mw 7.1 October 23, 2011 Van Earthquake was generated for both regional and teleseismic distance by employing the Empirical Green's Function Method (Hartzell, 1978) using the STF inversion approach of Dreger (1994). We chose the Mw 6.0 aftershock as the EGF event which occurred 10 hours after the main event and had the similar focal mechanisms and locations with the mainshock. We performed the analysis for two distance ranges; regional (1°-20°) and teleseismic (30°-90°) and selected the stations which have good azimuthal coverage, high S/N levels and similar waveforms for the mainshock and the EGF event. We determined the rupture parameters such as rupture velocity and the rise time as well as slip distribution for the Van earthquake by comparing the regional and teleseismic data where the models have high variance reductions. We found the best-fit range of rupture velocity between 1.5 and 2 km/s and the rise time between 1 s and 2 s. The slip distribution is primarily up-dip towards southwest and the maximum slip is about 3.5 meters. Our results show that the source models obtained from teleseismic and regional data are in agreement with each other. The rupture velocity obtained for the Van Earthquake, about 50% of the shear wave velocity is a characteristic for dip slip earthquakes. The rise time of 1.5 seconds implies 2 m/s slip rate inside the largest asperity.