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The Rupture Process of the 2014 Mw6.8 Gökçeada, North Aegean Earthquake Revealed from Teleseismic and Near-Source Waveforms and GPS Vectors

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We studied the source characteristics and of the Mw 6.8 2014 Gökçeada, North Aegean Sea Earthquake using teleseismic P and near-source ground displacement waveforms along with the GPS displacement vectors. Our model shows that the 2014 earthquake has similar duration to the 1999 Mw7.4 Izmit Earthquake, despite having 2 orders of magnitude smaller seismic moment. The finite-fault model shows three asperities; a large one toward the west of the hypocenter and two smaller asperities toward east. In consistence with the long duration of the waveforms, the rupture extends for 80 km along strike. The 2014 Earthquake is a case where several distinct asperities have ruptured leading to low stress drop, a complex moment rate function with long duration and longer than expected rupture length compared to the size of the earthquake. A relocated aftershock distribution shows that most of the aftershocks are located at both ends of the rupture zone and in between the asperities of the mainshock.