

Empirical Green's function analysis of a moderate earthquake and its largest aftershock north of Algeria.

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In this study, we retrieved relative source time functions (RSTFs) for rupture analysis of a moderate event and its largest aftershock using the empirical Green's function (EGF) method. The earthquake occurred on November 15, 2014 near Tablat city, about 60 km south-east of Algiers the capital. The duration magnitude is Md4.7. The mainshock, its largest aftershock (Md4.3), and another smaller aftershock (Md3.2), which is treated as the EGF, are closely located. Also, the three events have similar focal mechanism suggesting that the deconvolution is well posed in this case. The events were recorded by eight stations of the Algerian permanent network, four of them are 3-components. The results show that the rupture is very complex with multiple sub-events for the mainshock but also for the largest aftershock which exhibited slightly less pronounced directivity effect at some sites. The complexity is better observed when using particularly S-waves data. The azimuthal variation of the RSTFs amplitude indicates that the rupture propagated unilaterally roughly from west to east on a quasi vertical strike-slip fault plane which is consistent with other events mechanisms that occurred in the external zones of the southern part of the Tellian Atlas which is characterized by folds and faults trending mainly NE-SW.