Advance Researches in Civil Engineering
ISSN: 2645-7229, Vol.2, No.1, pages: 79-91

Strong Ground Motion Simulation of the 2017 Sefid-Sang Earthquake in Khorasan-Razavi, NE Iran

Hesaneh Mohammadi [1], Maryam Sedghi [2], Mohammad Reza Gheitanchi [3]*

[1] PhD Candidate, Geophysics Department, Tehran North Branch, Islamic Azad University, Tehran, Iran*

(h.mohammadi@iau-tnb.ac.ir)

[2] senior expert in research, Iranian Red Crescent Society (IRCS), Tehran, Iran

[3] Professor, Institute of Geophysics, University of Tehran, Tehran, Iran

(Date of received: 10/12/2019, Date of accepted: 20/02/2020)

ABSTRACT

On April 5, 2017, an earthquake with moment magnitude of 6.1 occurred Sefid-Sang area about 80 km southeast of Mashhad city in Khorasan-e-Razavi province. In this study, to estimate source parameters and rupture characteristics of the earthquake, the Empirical Green Function (EGF) method and the stochastic finite-fault (SFF) technique were used for strong ground motion simulation. Then the observed records and the simulated graphs by these two methods, were compared. To simulate the earthquake by EGF method, an aftershock with moment magnitude of 4.8 was used as the empirical Green function. The size of the main fault caused by the event was about 10 km in length and 8 km in width. The duration of the rupture in this event was about 18 seconds. The estimated fault plane solution shows reverse mechanism with strike-slip component. Strike, dip and rake of causative fault of the earthquake were determined as 311, 55 and 117 degrees. In addition, the stress drop in this event was calculated to be about 8 bars.

Keywords:

Strong ground motion, Source parameters, Rupture characteristics, Empirical Green Function, stochastic finite-fault method