17th Symposium on Earthquake Engineering
November 14-17, 2022
IIT Roorkee, India
Paper No. 350

Identification of Strong Motion Generetion Area of the 2019 Hualien Earthquake

Saurabh Sharma[1], A Joshi, S Singh[1], C M Lin[1], C H Kuo, K L Wen[1]

[1]Dept. of Earth sciences, IIT Roorkee, India

Abstract

Strong motion generation areas are the extended areas with large uniform slip velocity within the entire rupture plane. The high frequency ground motion due to these areas need to be studied to model the contribution of stress released with respect to the entire rupture plane. In this paper, the high frequency ground motion due to strong motion generation area (SMGA) within the rupture plane responsible for Hualien earthquake has been studied. The Eastern coast of Taiwan was hit by a strong earthquake of M_w (6.2) on 18 April 2019. This earthquake was recorded at 107 stations of Central Weather Bureau across Taiwan. The epicentral distance of stations recording this earthquake varies from 5 to 242 km. In the present work, 10 near-field stations have been analyzed to study the source characteristics of this earthquake. The records from these near-field stations shows the presence of two prominent phases in the horizontal components. These prominent phases have been termed as SMGA and are the source of high frequency radiations (Miyake et al. 2003). The SH component obtained by the horizontal components has been numerically integrated to find the size of SMGAs. The dis-placement record obtained clearly shows the presence of two SMGAs. The seismic moment (M_o) related to these SMGAs are $(3.60 \pm 0.82) \times 10^{17}$ Nm and, $(4.55 \pm 0.7) \times 10^{17}$ Nm respectively.

Keywords: 2019 Hualien Earthquake, Strong motion generation area, Source parameters