

0206花蓮地震(M_L 6.26)之震源破裂特性 模擬分析初探

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摘要

發生於2018年2月6日、鄰近花蓮市之地震事件，對花蓮市造成嚴重災損與人員傷亡，至今，各界仍由不同面相致力分析地震致災原因。本研究應用錯動量分佈反演與地震動模擬兩項技術，針對此起地震事件進行震源與地震動特徵探討。錯動量分佈反演採用小波轉換方法，分析結果顯示0206主震具雙地栓(或稱錯動量集中區、asperity)、錯動量集中於淺部地殼，且具有雙向破裂特性。地震動模擬技術方面，採行三維有限差分法，不僅以反演所得之震源模型作為地震動模擬輸入外，亦將臺灣近期三維速度構造與地表地形納入考量，進行更細緻之地震動模擬，模擬峰值地動速度結果與觀測相符。透過錯動量分佈反演與地震動模擬技術，預期可協助辨識特定工址之地震動特徵，並可貢獻至地震工程、防震減災等評估之重要參考資訊。

關鍵字：0206 花蓮地震、錯動量分佈反演、地震動模擬、地震危害

Preliminary Source-Rupture Characteristics and Ground Motion Simulation of the 0206 M_L 6.26 Hualien Earthquake

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Abstract

The earthquake, which occurred near Hualien city on February 6th, 2018, caused serious property damage and casualties to the city of Hualien. Up to now, researches of various aspects motivated to analyzing the causes of the earthquake are still in progress. In this study, we focused on source and ground motion characteristics of the 0206 Hualien earthquake by utilizing slip distribution inversion and ground motion simulation techniques. A wavelet-based method was applied for capturing rupture characteristics of this earthquake. The results show that the rupture exhibited two asperities, larger slips concentrated in the shallow-crust region, and the rupture was a bilateral type. We also performed ground motion simulation, using a 3-D finite-difference method, to model realistic synthetics. The synthetic PGV map shows a good agreement with the observation. By applying slip distribution inversion and ground motion simulation techniques, ground motion characteristics at a specific site can be sufficiently modeled, indicating that the techniques can contribute to earthquake engineering applications and seismic hazard assessments.

Key Words : 0206 Hualien earthquake, slip distribution inversion, ground motion simulation, seismic hazard.

一、前言

臺灣位處於菲律賓海板塊與歐亞板塊之

交界帶，強烈的造山與隱沒作用，致使臺灣地震活動極為頻繁，從中央氣象局地震測報中心過往地震定位之地震背景資料來看，臺灣年平均規模6.0以上之地震事件約有2起。2010年3