

1. The new illustrations

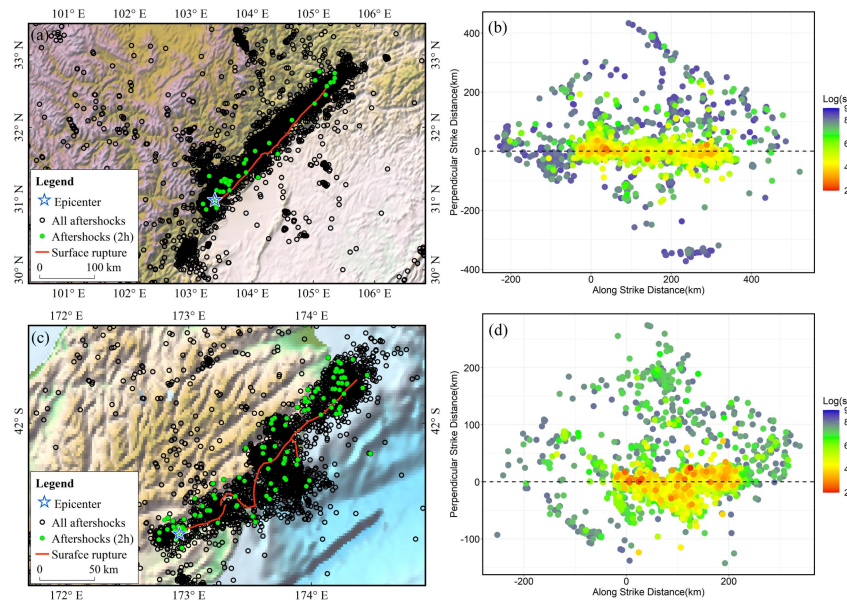


Figure 3: Spatial and temporal distribution of early aftershock sequences after the mainshock. (a) and (c) depict the spatial distribution of aftershocks of 2008 Wenchuan Mw7.9 earthquake and 2016 Kaikōura Mw 7.8 earthquake, respectively. (b) and (d) depict the temporal distribution of aftershocks of Wenchuan and Kaikōura earthquake, respectively. The s in $\text{Log}(s)$ denotes the time in seconds between the aftershock and the mainshock.

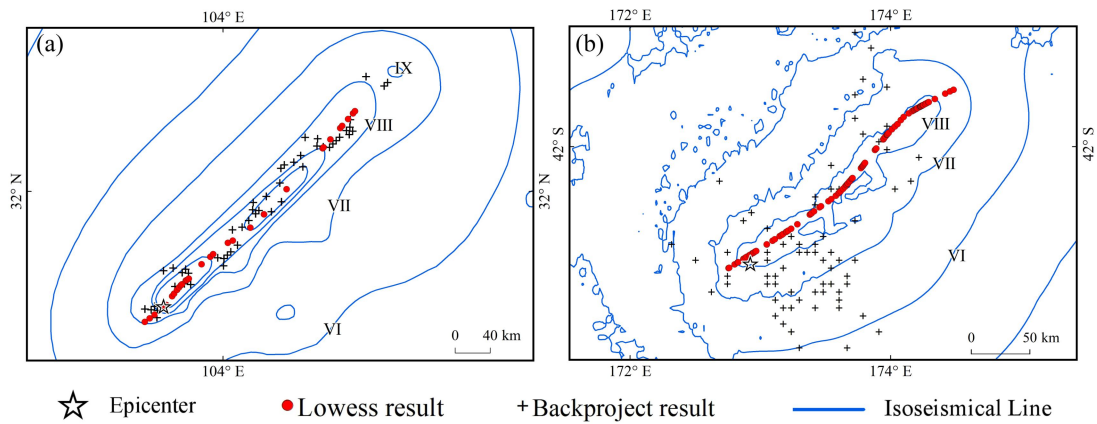
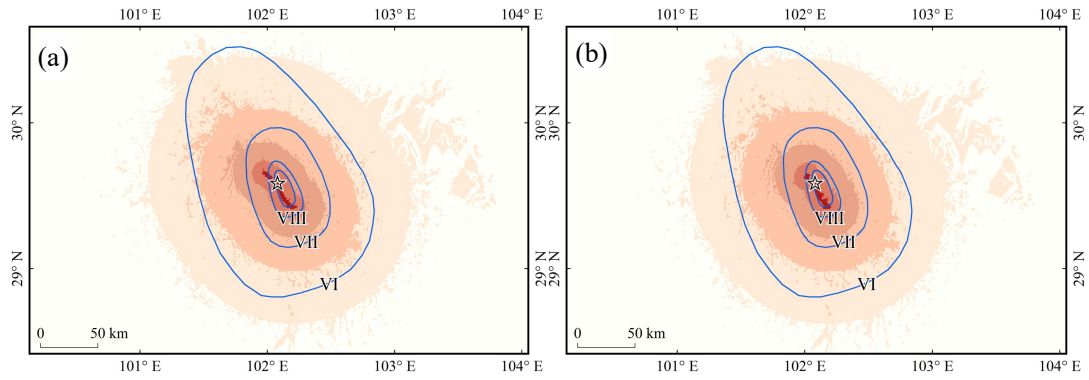


Figure 11: Comparison of surface rupture results obtained using the lowess and inverse projection methods for the (a) 2008 Wenchuan Mw 7.9 and (b) 2016 Kaikōura Mw 7.8 earthquake.

2. Examine our method using examples

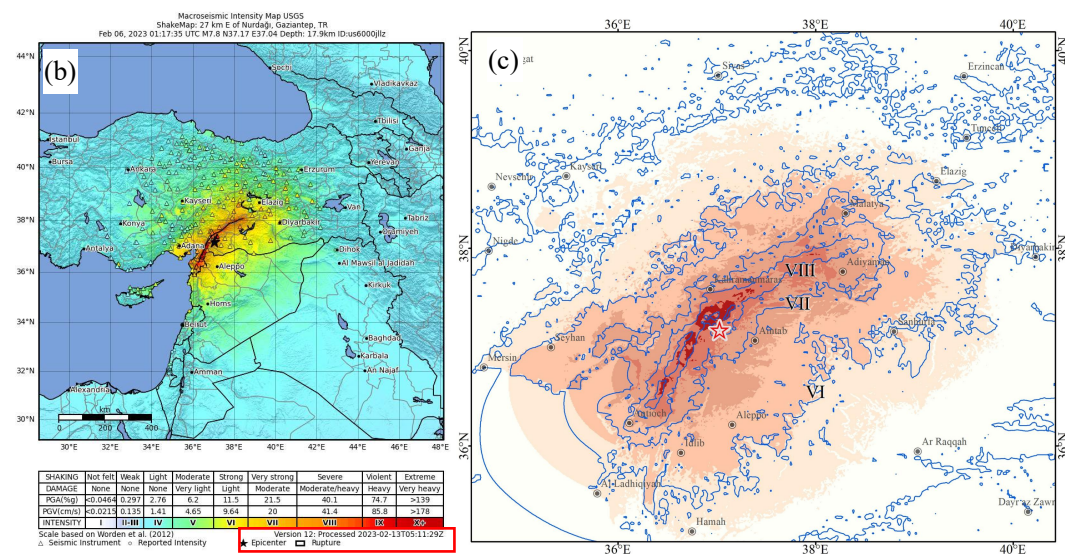
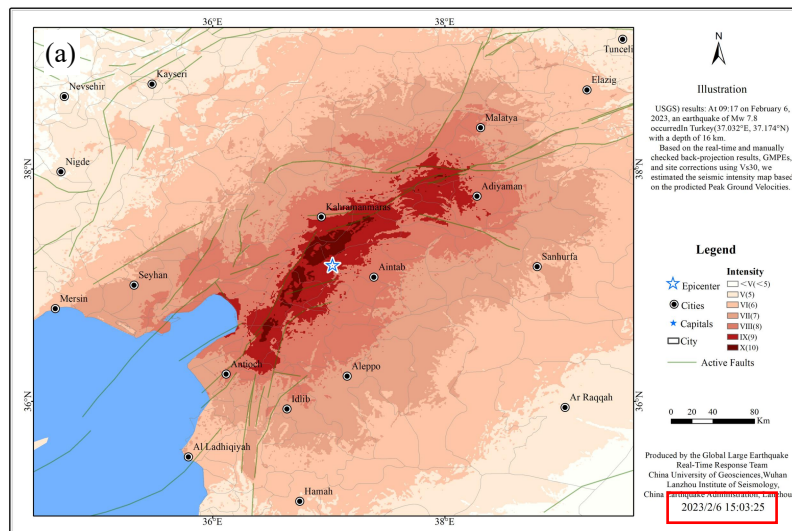
(1) 2022 Luding Mw 6.6 earthquake



(a) Seismic intensities evaluated using AL-SM99. (b) Evaluation of seismic intensities using the modified AL-SM99 strategy. The solid blue line represents the China Earthquake Administration's intensity survey results.

(2) 2023 Turkey Mw 7.8 earthquake

Preliminary estimate of the ground motion of the 2023 Mw 7.8 Turkey earthquake (V2.0)

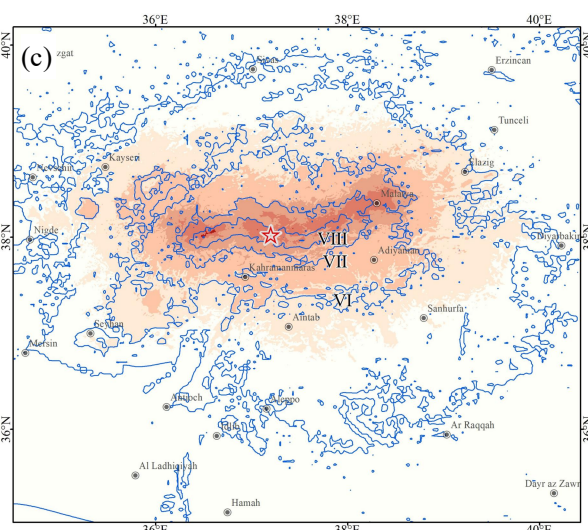
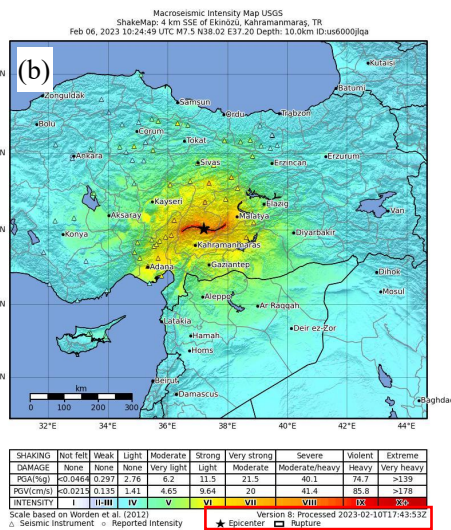
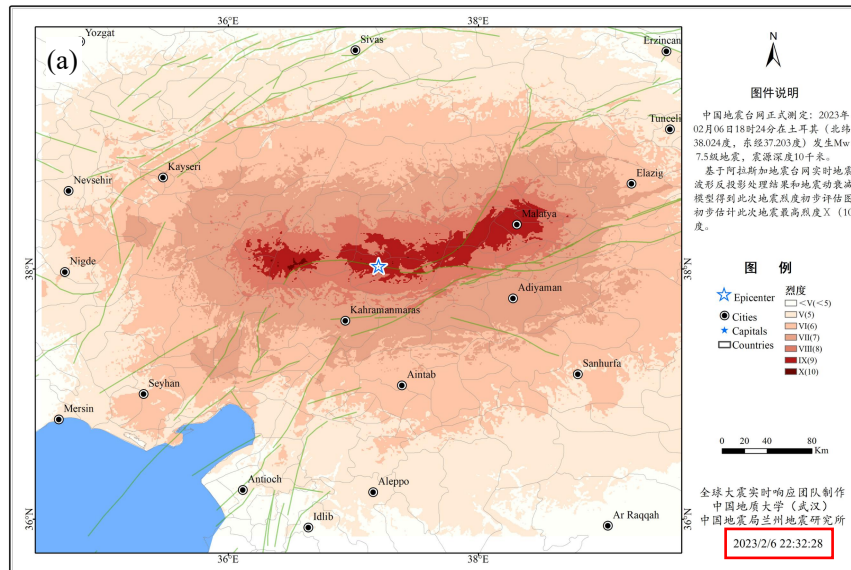


(a) Seismic intensities evaluated using AL-SM99. Data on aftershocks gathered within 2 hours of

the earthquake. Aftershock data within two hours downloaded from REGIONAL EARTHQUAKE-TSUNAMI MONITORING CENTER (RETMC) in Turkey (<http://www.koeri.boun.edu.tr/sismo/2/tr/>). (b) Seismic intensity result released by USGS (Version 12) (<https://earthquake.usgs.gov/earthquakes/eventpage/us6000jllz/shakemap/intensity>). (c) Comparison of AL-SM99-evaluated seismic intensity result with USGS intensity result. The solid blue line represents intensity results from the USGS.

(3) 2023 Turkey Mw 7.5 earthquake

土耳其Mw7.5级地震动强度 (PGV) 评估图V1.0



(a) Seismic intensities evaluated using AL-SM99. Data on aftershocks gathered within 2 hours of the earthquake. Aftershock data within two hours downloaded from REGIONAL EARTHQUAKE-TSUNAMI MONITORING CENTER (RETMC) in Turkey (<http://www.koeri.boun.edu.tr/sismo/2/tr/>). (b) Seismic intensity result released by USGS (Version 8) (<https://earthquake.usgs.gov/earthquakes/eventpage/us6000jlqa/shakemap/intensity>) (c) Comparison of AL-SM99-evaluated seismic intensity result with USGS intensity result. The solid blue line represents intensity results from the USGS.

