



The earthquake rupture image in Huabei region of China

Xiao-jian Lu
China (lxj@seis.ac.cn)

The earthquake rupture zone is the vertical projection area of the earthquake source which generates coseismic movement (brittle fracture) and releases the stress and strain. We determined modern strong earthquakes' rupture zones, the highest intensities and intensity distributions which occurred in Huabei region of China, by using a variety of data of modern technology and methods, such as relocated aftershock, seismic inversion, InSAR, geological survey and geological mapping of seismic damage, interpretation of high-resolution remote sensing image, etc. Then, we developed an empirical relation between earthquake rupture extent and seismic intensity distribution extent based on data of eleven modern strong earthquakes whose rupture extents and intensity distributions were determined well. For the most historical earthquakes we only can obtain data of seismic region structure, intensity distribution, the highest intensity and the distribution of sensible area. For a few events we maybe can obtain the incomplete surface rupture information. We can't get data of historical earthquake rupture zones. Now, using the empirical relation we developed and data of historical earthquake intensity distribution, the highest intensity, we can roughly determine the historical earthquake rupture zone. Compositing the modern earthquakes and historical earthquakes' rupture zones, we draw the strong earthquakes' rupture image in Huabei region of China.