Abstract Details

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Title: TEMPORAL AND SPATIAL RUPTURE PROCESS OF THE GREAT KUNLUN EARTHQUAKE OF NOVEMBER 14, 2001 FROM THE GDSN LONG PERIO WAVEFORM DATA

Abstract:

The temporal and spatial rupture process of the 14 November 2001 K Mountain Pass earthquake (KMPE) is obtained by inverting the high si noise-ratio P-waveform data of vertical components of 20 stations wit epicentral distances less than 90°, which are of Global Digital Seismo Network (GDSN). The inverted results indicate that the KMPE consists sub-events. The rupture of the first sub-event initiated at the instrum epicenter (35.97°N,90.59°E) and then propagated both westwards a eastwards, extending 140 km westwards at the speed of 4.0km/s and eastwards at the speed of 2.2km/s, which appeared to be an asymme bilateral rupture dominantly from east to west. This sub-event formed 220km long fault. Fifty-two seconds after initiation of the first sub-ev which time the first sub-event was not over but in its healing phase, t rupture of the second sub-event initiated 220km west of the epicente propagated both westwards and eastwards, extending 50 km westwa the speed of 2.2km/s and 70 km eastwards at the speed of 5.8km/s, appeared to be an asymmetrical bilateral rupture dominantly from we east. The second sub-event formed a 120km long fault. The second s event fused with the first sub-event 140km west to the epicenter righ seconds after its initiation. Fifty-six seconds after initiation of the first event, at which time the first sub-event was getting close to the end healing phase, the rupture of the third sub-event initiated 220km eas epicenter and propagated both westwards and eastwards, extending westwards at the speed of 4.0km/s and 130 km eastwards at the spe 3.7km/s, which appeared to be nearly an bilateral rupture. This sub-e formed a 270km long fault. The third sub-event fused with the first su event 80km east of the epicenter right 36 seconds after its initiation. Afterwards, the source process of the KMPE was dominated by the sli fusion of the first and third sub-events.

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