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汶川地震断裂带东北端浅部结构的人工地震探测

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Survey of the shallow structure on the northeast end of Wenchuan earthquake fault zone by artificial seismic

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摘要 结合汶川地震断裂带动态监测，利用快速响应探测系统，开展了断层带浅部结构人工地震探测.针对地震断裂带动态监测条件下的复杂波场和低信噪比的情况，在*f-k*波场分离的基础上，分别利用了折射波共中心点成像、面波速度反演、反射波叠加成像方法，进行了浅层断层和构造成像处理，并对处理结果进行了综合解释，给出了断裂带浅部断层分布和速度特征.为汶川地震龙门山断裂带东北端动态监测提供了基础结构信息，所发展的断裂带快速响应探测技术对于地震应急动态监测具有重要意义.

关键词 汶川地震, 断裂带, 人工地震, 波场分离, 浅层结构

Abstract: Fault zone is sensitive to the post-seismic stress state. We can get the fault healing process by monitoring the fault zone seismic velocity temporal variation. In order to get the shallow structure at the northeast end of Wenchuan earthquake fault zone, we carried out a shallow structure survey by artificial seismic sources. The strong shallow reflector and complex structure produced a complicated wave field and low signal to noise ratio data. Based on separated surface, reflection and refraction waves by *f-k* transform, we imaged the subsurface structure by refraction common middle point imaging, surface wave velocity inversion, and reflection wave stack imaging. An integrated interpretation was done combing the three imagine data and the shallow faults and velocity distribution were given. This work is helpful to post-seismic emergency monitoring of earthquake fault zone.

Keywords Wenchuan earthquake, Fault zone, Artificial seismic, Separation of waves, Reflection wave, Shallow structure

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