

APPLICATION OF HIGH-DENSITY SEISMIC EXPLORATION IN THE DETECTION OF GROUND FISSURES IN QIAOZI, BEIJING

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As a kind of supergene geological disaster phenomenon, ground fissures are widespread in many countries of the world. The frequency and scale of ground fissures are increasing year by year, which makes it become a major regional geological hazard. Ground Penetrating Radar (GPR) and surface wave are major methods usually applied in ground fissure detection, but the shallow detection depth and the low resolution limits their applications. High-density seismic exploration is a new technique with higher resolution and greater detection depth in near surface geophysical exploration. High-density spatial sampling enhances wave field continuity and the accuracy of various mathematical transforms, which benefits wave field separation. This paper introduces the advantages of high-density seismic exploration and its application in the detection of ground fissures in Qiaozhi. 2D high-density seismic lines with different group intervals are applied to detect one of the ground fissures. In this test, the arrangements of different group intervals are tested, and the characteristics of different group intervals data are analyzed. Due to the problem of static correction caused by strong anisotropy of shallow material, the error of velocity analysis caused by less effective number of channels and the difficulty of ultra-shallow imaging caused by low folds, the conventional data processing methods cannot fully adapt to the shallow seismic data. This paper studies the processing methods for shallow seismic data and we get better results after these processing.