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利用InSAR资料反演2008年西藏改则 $M_W$ 6.4和 $M_W$ 5.9地震的断层参数

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**摘要** 2008年1月9日在我国西藏改则发生了一次 $M_W$ 6.4地震, 随后有40次3.5级以上余震发生, 其中最大的一次为1月16日的 $M_W$ 5.9余震. 本文处理了ENVISAT ASAR两轨(升轨和降轨)同震资料, 精确确定了同震地表位移的空间分布; 随后利用弹性半空间的位错模拟确定了上述事件的断层面参数; 最后, 基于非均匀滑动模型反演确定了两次地震断面上的滑动分布. 结果表明,  $M_W$ 6.4主震断层为走向 $218^\circ$ 、倾角 $52^\circ$ 的西倾断层, 最大滑动量约1.9 m, 出现在地表以下约7.6 km处; 而 $M_W$ 5.9余震发生在主震断层西3.2 km的地方, 发震断层为走向 $200^\circ$ 、倾角 $59^\circ$ 的西倾断层, 最大滑动量约1.0 m, 出现在地表以下约3.9 km处.

**关键词** [改则地震](#) [断层参数](#) [InSAR](#)

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Source parameters of the 2008 Gêrzê  $M_W$ 6.4 and  $M_W$ 5.9 earthquakes from InSAR measurements

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**Abstract** On 9 January 2008, an  $M_W$ 6.4 earthquake struck Gêrzê, Tibet of China, followed by 40 aftershocks with magnitudes equal to or greater than 3.5, including the biggest one with  $M_W$ 5.9 on 16 January 2008. Two tracks (1 ascending and 1 descending) of ENVISAT ASAR data were processed to precisely determine the locations and amplitudes of coseismic surface displacements firstly. Then the coseismic displacements were inverted to build uniform dislocation models and further distributed-slip models in an elastic half-space. The inverted results suggest that the  $M_W$ 6.4 main shock is associated with a west-dipping fault plane with a strike of  $218^\circ$  and a dip of  $52^\circ$ , while the  $M_W$ 5.9 aftershock is related with a west-dipping fault plane, 3.2 km west to the main fault, with a strike of  $200^\circ$  and a dip of  $59^\circ$ ; and the peak slip of 1.9 m is located at a depth of 7.6 km in the main fault, whilst the maximum slip of 1.0 m is observed at a depth of 3.9 km in the aftershock fault plane.

**Key words** [Gêrzê earthquakes](#); [Fault parameters](#); [InSAR](#)

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