The Information of Wenchuan Earthquake Disaster

Submitted by: China
The Information of Wenchuan Earthquake Disaster

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2008.9
Date: 2008/05/12 14:28
Longitude: 103.4
Latitude: 31.0
Location: Wenchuan County
M: 8.0
Depth: 14km
The contrast of Wenchuan and Tangshan

![Graph showing comparison between Wenchuan and Tangshan](image)

- **M**: Magnitude
- **Rupture Length**
- **Energy Release**

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<th>Tangshan</th>
<th>Wenchuan</th>
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<td>M</td>
<td>8</td>
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<td>Rupture Length</td>
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Outline

1. Seismogenesis
2. Earthquake disaster
1. Seismogenesis

(1) Seismic geologic structure
(2) Intense-earthquake record history
(3) Seismic rupturing process
(4) Aftershock distribution
This quake happened at the middle part of the north-south seismic tectonic zone and on the north-east direction Longmenshan rupture zone which at the east edge of Qinghai-Tibetan Plateau of our nation.
Three intense quakes with Ms greater than 6.0 recorded that happened at the middle and south parts of the Longmenshan rupture zone, there are Wenchuan Ms 6.5 earthquake at April 21th in 1657, Beichuan Ms 6.3 earthquake at Feb. 8th in 1958 and Daba-west earthquake at Feb. 24th in 1970, reversely, there is few intense quake greater than Ms 6.0 recorded at the north part of the Longmenshan rupture zone.
(3) Seismic rupturing process

the rupturing process of Wenchuan quake, as result show that, the quake is a unilateral rupturing event occurs from epicenter to north-east direction, the rupture is 300 km at length.
(3) Seismic rupturing process

Time = 1 s

由汶川映秀扩展到北川、青川，断层破裂长度达300KM
根据地震波的波谱分析，这次地震是一次以断层逆冲运动为主、兼有走滑运动分量的破裂过程。

在破裂扩展的过程中，震源机制随空间发生变化。

反映8.0级地震是由7个阶段的破裂组成的多重破裂过程，开始和中间阶段表现为逆冲为主的破裂，后来逐渐转变为以走滑为主的破裂。

7个阶段对应的单次地震的矩震级分别为Mw=7.1、7.1、7.6、7.4、7.4、7.4和7.2。
(4) The distribution map of aftershock
As far as at 12:00 on 7th September 2008, Sichuan digital seismic network has been recorded 27,784 aftershocks with Ms greater than 1.0.

Ms 4.0 to 4.9, 222 times
Ms 5.0 to 5.9, 31 times
Ms 6.0 to 6.9, 8 times

The strongest aftershock of the Wenchuan earthquake is the Qingchuan Ms 6.4 quake happened at 16:21 on May. 25th.
2. The earthquake disaster

(1) The loss of earthquake disasters
(2) The characteristics of earthquake disasters
(3) The distribution of the earthquake intensity
(1) The loss of earthquake disaster

1) Casualties. By 12o’clock on September 7, the Sichuan WenChuan earthquake has brought about 69226 people dead, 374643 people wounded, 17923 people missing.

2) Direct loss: about ¥840,000,000,000 RMB

3) Indirect loss: business interrupt; cultural heritage destroy; etc.
(2) The characteristics of earthquake disasters

1) Strong destruction, wide range.
2) Large casualty and loss.
3) Right-beneath-city-type.
4) The seismic faults all-conquering.
5) The seismic geological disasters are very serious.
6) The destroy of infrastructure is serious.
1) Strong destruction, wide range.
3) Right-beneath-city-type.
4) The seismic faults all-conquering.
5) The seismic geological disasters are very serious.
6) The destroy of infrastructure is serious.
彭州小鱼洞桥
(3) The distribution of the earthquake intensity
The epicentral intensity reached XI. Yingxiu in Wenchuan county and Beichuan county were two centers.
The region over Ⅸ level is close to the earthquake fault and formed the shape of long bar along the fault; the border of Ⅹ and Ⅸ level is influenced by Longmenshan Mountain fracture dislocation.
Thanks

For more information, please visit

www.cea.gov.cn