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四川汶川8级地震地应力异常——来自压磁频率应力测量系统的记录 [点此下载全文](#)

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摘要:

2008年5月12日四川汶川发生8级特大地震, 我们利用压磁频率测量系统在1000多公里以外记录了这一震惊世界的自然灾害。汶川地震发震前94天, 地应力出现大幅度快速变化的短期地震前兆, 三个受力元件分别受压633.5 Pa、1512 Pa、4561.4 Pa。临震前几小时指向震中方向的元件出现4次脉冲式突跳的临震异常, 然后大地震发生了。距离震中1000多公里的中国辐射防护研究院台站(简称: 中辐院台)完整地记录了大地震前表层剧烈形变的力量加强过程, 这验证了李四光先生1973年提出的“在较大范围内、不同的活动断裂上, 不同的地点可以获得相同的应力状态”的论点。本测量系统具有灵敏度高、动态性能好的优点, 它抗干扰能力强, 克服了采用电压、阻抗、电感信号传输的测量系统长期测值不稳定的干扰因素。该压磁频率应力测量系统不仅可安装在山地岩石中, 也可应用于广大平原地区。可测量到快速变化的地震面波, 能获取短临地震前兆信息, 传感器安装在土层或岩层中, 都能起到预报地震的效果, 因而具有非常广阔的应用前景。

关键词: [8级地震](#) [地应力异常](#) [临震预报](#) [压磁频率地应力测量系统](#) [汶川](#) [四川](#)

Anomalous Earth Stress of the MS 8 Wenchuan Earthquake in Sichuan, China——Recording from Piezomagnetic Frequency Measurement to the Earth Stress [Download Fulltext](#)

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Abstract:

When the MS 8 earthquake occurred in Wenchuan County of Sichuan on 12 May 2008, our piezomagnetic frequency measurement system about 1000 km away from the focus recorded the world shaking natural disaster. Ninety days before the earthquake, the earth stress changed in a great magnitude, being indicative of the earthquake. Three mechanical components received 633.5 Pa, 1512 Pa and 4561.4 Pa, respectively. A few hours before the earthquake, the component directing the focus presented four pulsive anomalies immediately following the great earthquake. The platform can at the China Academy of Radiation and Protection Research, which is more than 1000 km far away from the focus, recorded the process of energy accumulation and surface deformation before the earthquake. This verifies the idea that the same stress state can be collected to a large extent at different sites of different faulting zones. This system is of high sensitivity, good performances and anti interference ability, all these overcome disturb factors of this system employing pressure, resistance and inductance. The piezomagnetic frequency stress measurement system, which is not only installed on rocks of mountains but also in plain, is used to monitor rapidly changing S wave and acquire boding information of earthquake so as to achieve the goal of forecasting earthquake. Therefore, the system of this kind will be of promising application.

Keywords: [MS 8 earthquakes](#) [anomalous earth stress](#) [the earth stress measuring system of digital piezomagnetic frequency](#) [earthquake forecast](#), [Wenchuan](#), [Sichuan](#)

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