Geophysical Research Abstracts,
Vol. 11, EGU2009-9680-1, 2009
EGU General Assembly 2009

Areal strain changes induced by remote triggering of Wenchuan earthquake of 12 May 2008

C.-Y. Chen (1), J.-C. Hu (2), and C.-C. Liu (3)

(1) Central Geological Survey, MOEA, Taiwan, (2) Department of Geosciences, National Taiwan University, Taiwan (jchu@ntu.edu.tw) , (3) Insititute of Earth Sciences, Academia Sinica

project of monitoring of the fault activity using 3-component Gladwin Tensor Strainmeter (GTSM) was initiated by the Central Geological Survey of Taiwan in October 2003. These instruments are intended to supplement the deformation observations from the continuous GPS arrays as part of a systematic program of plate boundary observation across Taiwan orogenic belt. These instruments are installed at a depth of approximately 200 meters at 13 sites of 4 clusters which provide 3 component strain data on both crustal strain accumulation and transient strain variations induced by environmental change such as meteorological effect and earthquakes. The Mw 7.9 Wenchuan earthquake of 12 May 2008 was the most devastating earthquake in China in the past 30 years in terms of human losses and property damage. The main shock ruptured with about 9 m of slip along the Longmen Shan fault zone located the boundary of Tibetan plateau and Sichuan basin. About 5-6 m maximum vertical offset was identified in the field survey after the earthquake. Nine borehole strainmeters installed at western Foothills in Taiwan orogenic belt captured significant step-like variation of areal strain. The areal strain increasing was observed from 0.01 to 0.2 microstrain at five boreholes located in Chiayi area southwestern Taiwan and Hisnchu area northwest Taiwan. The areal strain decreasing was also observed from 0.05 to 4 mricostrain at three boreholes located at Hisnchu and Taipei area of northwest Taiwan. We attribute these step-like transient variations of areal strain to the dynamic triggering of the Wenchuan earthquake.