



The auspice gravity signals of the Wenchuan earthquake based on the superconducting gravimeter data

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Scientists pay great attention on various pre-signals of different physical fields before earthquakes, especially before large earthquakes. Various studies demonstrate that some times the gravity anomalies could be observed by absolute gravimeters through several days to several hours before large earthquakes. In the present study we focus on detecting the auspice gravity signal (AGS) before a large earthquake based on the superconducting gravimeter (SG) data. The Wenchuan earthquake ($M_w = 8.0$) occurred in the afternoon on the 12th of May, 2008, in the western area of China. Using the data recorded in 2008 by two superconducting gravimeters located at Hsinchu, Taiwan, we found the AGS. We separated the original SG data into the gravity tides and gravity residuals. Based on Hilbert-Huang transform (HHT) the gravity residuals were decomposed into various spectra. The spectra analysis demonstrates clearly that there existed the continuous AGS around 40 hours previous to the Wenchuan earthquake. The period of the AGS is between 5 s and 10 s. The same results were obtained by using wavelet analysis. Hence, we may conclude that the SG data might be the significant information source in “forecasting” the large earthquakes. Further investigations are in process. This study is supported by National 863 Project of China (Grant No. 2006AA12Z211) and Natural Science Foundation of China (Grant No.: 40637034; 40574004).