



The application research of GNSS technology in Shanghai land subsidence monitoring

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Land subsidence is harmful to urban roads and bridges, municipal pipelines and tall buildings, etc. As an international metropolis with rapid development, it is very important to find a real-time and efficient method to monitor the land subsidence. The GNSS technology, based on the Shanghai Continuously Operating Reference System (SHCORS), can be used to accurately and contiguously monitor land subsidence. In this work, we analyze the land subsidence tendency of Shanghai area by the space geodetic post processing software QOCA, based on the vertical deformation time series of the ten CORS stations from 2007 to 2010. We use loading models to remove the vertical deformation caused by the geophysical factors, such as the atmospheric pressure, the mass load of snow covers and soil humidity, the non-tidal oceanic mass load, rock's thermal expansion and shrink and so on, then study the possible factors, which cause land subsidence, such as the over pumping groundwater activities etc.