

Crustal Movement Observation Network of China and its Phase II Project

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China is a country with serious earthquake hazard. To monitor crustal deformation and predict earthquakes using GPS, we established the Crustal Movement Observation Network of China (CMONOC) during 1997-2000. The network has 27 continuous GPS stations to serve as fiducials, and more than 1100 campaign mode stations distributed all over the Chinese continent with a relatively higher density around tectonically active fault zones and the area surrounding Beijing. The continuous stations have been observed since 1998, and seven of them are serving as IGS tracking stations. The campaign mode stations were observed completely 3 times in 1999, 2001, and 2004, respectively. In each campaign, stations were occupied continuously for at least 4 days. Because all the concrete monuments were uniformly designed with forced-centering GPS antenna mount and the campaigns were well organized on a large scale with more than 80 sites occupied simultaneously with the same type of GPS receiver and choke-ring antenna, the data quality was well guaranteed. Using the CMONOC data we derived a crustal movement velocity field of China that clearly demonstrate the characteristics of crustal movement and deformation of various tectonic regions in the Chinese continent, especially the deformation pattern in and around the Tibetan Plateau. The kinematic information from the velocity field provides vital constraints on modelling of continental dynamics. In order to monitor the crustal deformation with a higher resolution both in space and time and provide a nationwide infrastructure for multiple applications such as GPS meteorology, networked RTK, space weather research, and so on, we are now preparing to launch the phase II of CMONOC, and planning to expand the amount of continuous GPS stations to 260 and add another 1000 campaign mode GPS stations to the network. In addition, a nationwide gravimetric network will be added to complement the continuously observed GPS fiducial network. Proposal of the phase II project has been approved by the National Science and Education Council of China, and the project is expected to start in later 2006.