

A Local Absolute Gravity Network in Western Yunnan Province of China - Results (2005-2007)

Wenke Sun[1]; Hui Li[2]; Shuhei Okubo[3]; Chunguang Li[4]

[1] ERI, Univ Tokyo; [2] IOS, CEA; [3] ERI, Univ. Tokyo; [4] YEI, CEA

The pressure of continued northward motion of the Indian continental mass caused large sections of Plateau crust to fold, then rise on east-west trending deep seated thrust faults. The huge mass of Asia to the west and north blocked movement of Tibetan crustal material in these directions as India pushed into Asia. As a result, northward motion on the deep seated thrust faults was transferred to east and southeast strike slip motion. As shown by Wang et al. (2001), the western Yunnan region is undergoing an average velocity of 6 to 11 mm/year with respect to stable Eurasia. This continuum deformation, however, seems to be limited to the plateau itself. Rigid block-like motion appears to characterize deformation of the regions to the north, northeast, and east, and there are zones of concentrated contraction at both the north and south margins of the plateau. Therefore it is interested to observe how gravity behaves in such a contraction areas. It is expected that gravity increases due to the contraction with increasing density beneath crust.

To monitor the gravity changes caused by the increasing density and the seismic activity, and to investigate the tectonic structure at the edge area of Tibet plateau through gravity changes caused by the movement of the large scale fault system, a local gravity network is designed in the south margin of the Tibet plateau; the Dali county of Yunnan province. This project is cooperated by Earthquake Research Institute, the University of Tokyo, the Institute of Seismology and Yunnan Seismological Bureau, China Earthquake Administrations. The first observation champion was performed in September of 2005, and repeated in 2007. The observed gravity values can serve as standard for future measurement and can be used to compute gravity anomaly and to inverse the inner structure and the fault movement. The gravity network is composed of four absolute and 40 relative stations. The four absolute stations are Midu, Dali, Eryuan and Jianchuan located in Dali county of Yunnan province, China. The four stations were measured by Micro-g Solutions FG5 #212 absolute gravimeter in 2005 and re-occupied by FG5 #232 in 2007. This presentation reports the observed gravity results in the last two champions (2005 and 2007).