



Geodynamic changes of the Tibetan Plateau based on the time-variable gravity

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Tibetan Plateau, one of the most active tectonic units in the world, has been uplifted under earth dynamics process. Accompanied with surface strongly eroded or deposited in weathering and complex water circulation system resulting in migration and redistribution of materials, its dynamic changes are considered as the most complex and representative problem. The GRACE (Gravity Recovery and Climate Experiment) satellite mission could capture the time-variable gravity of the Tibetan Plateau. The gravity signals observed by GRACE reflect the temporal and spatial mass changes in the Tibetan Plateau region. The terrestrial water (glacier, lake, permafrost, groundwater, etc.) mass changes could be estimated through satellite altimetry/imaging technology, hydrological model and meteorological data. The crustal movements can be measured and modeled by GNSS (Global Navigation Satellite System). After corrections of the above surface mass changes and crustal movement, we apply the residual time-variable gravity signal to estimate the geodynamical and tectonic process of the internal plateau. We inverse the internal material flow (channel flow) of Tibetan Plateau and quantitatively analyses crustal thickening and uplift of the plateau.

Key words: Tibetan Plateau, Mass Transport, Geodynamic, GRACE, Tectonic Process