Geophysical Research Abstracts
Vol. 15, EGU2013-609, 2013
EGU General Assembly 2013
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# Soil organic carbon under different land uses and its storage in two typical watersheds of the Loess Plateau, China

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Soil organic carbon distribution and soil organic carbon storage were estimated in two classical small watersheds that based on 163 samples under different land uses and slope positions. Land use conversion would alter land cover, which results in carbon stock changes in biomass as well as in the soil. After the Grain for Green project initiated in 1999, most land of China's loess plateau has been completed vegetation restoration as same as the comprehensive managed watershed (Shanghuang) which with spread vegetation-covered area and lower slope farmland. However, it is not clear how effective the newly initiated project will be. In this study, we found a reference area, original and untreated watershed (Sidigou). It is an area which has not any restore vegetation projects that kept primitive farming management. We found that there were significant differences between two study areas either soil organic carbon concentration or its distribution. The soil organic carbon content in the comprehensive managed watershed (Shanghuang) was higher than the untreated watershed's (Sidigou). As the soil depth increases, the soil organic carbon content gradually decreases. Soil organic carbon concentration and distribution were significantly influenced by land uses and slope positions. More specifically, the soil organic carbon for the shrub land and natural grassland were significantly higher than for the other land uses. In different slope positions, valley's soil organic carbon content was greater than that for the top of mound crests and mound slope. The total soil organic carbon storage of untreated watershed and comprehensively managed watershed were 20099.42 t and 46527.12 t, respectively. The area proportion of land uses is the significant reason for income gap of two study areas. Land use conversion from farmland to shrub land and manmade grassland in Shanghuang watershed played an important role in ecological restoration. It was found that vigorously developing Grain for Green project is of benefit for the Loess Plateau.