



Investigation of Fluvial terraces in Tai-Yuan Basin and Its Implication

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Tai-Yuan Basin is located in the actively uplifting southern Coastal Range of eastern Taiwan, which is caused by the ongoing arc-continent collision between the Eurasian plate and Philippine Sea plate. The prominent landform in Tai-Yuan Basin is fluvial terraces and meander. The drainage basin of the Mawuku river consists of the north-south trending North River and the South River, and several mainly east-west trending smaller rivers, almost all of them developed many river terraces and meander. This research is to investigate the timing and mechanism of forming the fluvial terrace landforms in the Tai-Yuan Basin.

Investigation area contains Mawuku River, North River, South River and Madajida River which is one of the tributaries of South River. The range of relative height in Mawuku River is about 3-60 m. In the North River, the average of alluvium above terraces is about 4-12 m in thickness, 6-7 m in South River, 13-14 m is the thickest in downstream of Mawuku River, and 5-6 m in Madajida River. Based on the relative height and the age results from radiocarbon dating, terraces can be divided into four groups, the relative height and age are 40-50 m (9000 cal. y BP), 30-40 m (6600-5800 cal. y BP), 20-30 m (4500-3000 cal. y BP) and around 10 m (1200 cal. y BP).

From our data, the incision rate of Mawuku River is about 5-6 mm/yr, compared this rate to the uplift rate of about 6.7 mm/yr near the river mouth, which is based on research of marine terraces, these rates are on the same order. Therefore, forming of fluvial terraces in the southern part of the Coastal Range could be mostly attributed to the tectonic uplifting in the area. Although the discrepancy between the incision rate and uplift rate is small at < 2 mm/yr, further investigation is needed to determine whether the discrepancy is caused by other mechanisms that affect terrace forming.

Keywords: Taiwan, Tai-Yuan Basin, fluvial terrace, terrace correlation.