利用地形計測指標和河階去調查嘉義台南地區地貌構造的演化

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摘要

台灣位於歐亞板塊與菲律賓海板塊的交界處，其造山帶前緣正逐漸向西擴展，將驅使下陷盆地隆起為山麓區，則地貌發生變化，進而影響流域系統。本研究位於嘉義台南地區，介在濁水溪和曾文溪間，東至大尖山-觸口斷層。由大地測量結果顯示其縮短率為每年 20 毫米，因此了解此區域的活動構造十分重要。本研究會採用地形計測指標去作調查。從地貌上及地質圖中觀察到三個有趣的訊息，一、在地質圖中觀察到逆衝斷層將中新世岩層推置上更新世岩層上。二、地貌上存有殘餘的大型沖積扇，但目前並沒有找到可能的源頭，表示其源頭可能因構造活動而遷移。三、許多地形面被抬升後遭河流棄置，顯示活動構造可能尚未被測繪。因此我們計畫藉由調查河流系統以及地形面的變化去找出地貌上異常的指標，再去判別指標與構造的相關性，進而推估構造的演變。地貌的發育受控於不同的表面地質作用，其中河流系統為最主要驅使地貌改變的因素，當河流受構造影響時，會快速調整其河流剖面、河道坡度及河流彎曲度，導致遷急點或河階的生成，或兩者都有，因此可視為異常的指標。

關鍵字: 彎曲度、遷急點、河流剖面

Investigating the morphotectonic evolution of Chiayi-Tainan area based on geomorphometry and fluvial terraces

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Abstract

Taiwan is situated on the collisional boundary between the Eurasian plate and the Philippine Sea plate. The deformation front of the orogenic belt progressively propagates westward. Under this condition, the landscape morphology will change, with the subsiding basin area becoming an uplifting foothills area, thereby impacting the drainage system. Our study area is in Chiayi-Tainan, between the Choshui River and the Tsengwen River, east of the Tachienshan-Chukou Fault. Geodetic observations show a significant average shortening rate of 20 mm/yr across this area. So, it is very important to understand active tectonics in this region. We will use geomorphometry in this study. We observe some interesting characteristics from the geological map and geomorphology. First, thrust faults brought Miocene rocks on top of Plio-Pleistocene formations. Second, there are remains of large alluvial deposits, that are not currently connected to an appropriate source, suggesting that the rivers probably have migrated due to tectonic activity. Third, several geomorphic surfaces are abandoned and uplifted showing that there are active structures that may be incompletely mapped. So, in this study, we plan to investigate the drainage system and geomorphic surfaces to find anomalies in the landscape, correlating with structures then determine the evolution of morphotectonics. Landscape is formed by many surface processes for which fluvial systems are the most important driver. A river under tectonic activity will rapidly respond by adjusting its river profile, channel slope and sinuosity, leading to the formation of knickpoints and/or river terraces. Therefore, these can be regarded as indicators for tectonic activity.

Keywords：Sinuosity、knickpoint、river profile