

## 嘉南平原燕巢區車瓜林斷層活動特性研究

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### 摘要

潛移活動斷層的破壞對於大眾交通建設結構物相當不利，而大都市具有諸多交通網絡與公眾建設結構物，很可能遭遇活動斷層，因而確定活動斷層的位置與特性非常重要。然而目前嘉南沖積平原區域的地質構造特性與位置卻仍一無所知。另一方面，傳統定義最大層位落差之主斷層位置，不一定是發生地表破裂或變形的活動線(active line)位置，前人研究顯示如池上斷層 (Mu et al., 2011)、車籠埔斷層 (Ma, 2006; Lee, & Chan, 2007)、龍門山斷裂帶 (Kuo, et al., 2018)、Alpine Fault (Toy. et al, 2015,2017)等對於活動線的寬度、位置與活動性已有深入研究，但較少研究著重於活動線之時空演化，因此選定燕巢區域一處線型結構物受潛移斷層破壞的案例，利用精細的地質、地形、測地學等資料，建構長期與短期時間尺度的活動線在空間與時間上的變化特性。

本場址由地質調查結果證實座落於車瓜林斷層寬廣的強烈剪切帶之中(約 300 公尺寬)，而監測資料看出之變形帶與強烈剪切帶有高度相關。本案例之中，活動斷層的活動帶不但與完整岩石、剪切帶的邊界有關，也需要考慮整個強烈剪切帶的影響。

## **Characteristics of active lines of active fault in alluvial plain area, southwestern Taiwan**

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### **Abstract**

Surface rupture or deformation of active fault were very unfavourable for public transits when active line intersect with structures because the difficulties and huge money for maintenance. Furthermore, MRT system, freeway and railways were well developed in Metro city like Kaohsiung city, however fault system extend from western foothill area remains unknown under alluvial plain area. Therefore, a case study is urgent for preventing mass geohazard. Active line research has been documented where is not fit to fault scarps such as Chishan Fault(Mu et al., 2011), Chelungpo Fault (Lee, & Chan, 2007), Greendale fault (Quigley et al., 2012; Duffy et al., 2013), etc. However, only a few studies discuss how active-line developed and evolved through different time scale and space. The Chekualin Fault(CKLF), is the case we provided for excellent chance to exploring the evolution of active line (zone) for extensive detail site investigation, geological data and geodesy data. Long-term and short-term time scale were both included to build complete time spectrum of the active line of active fault via temporal and spatial variation.

Study site was identified which located within highly shear zone which extend ~300m wide of Chekualin Fault in alluvial plain. Active deformation zone is highly relative to the shear zone, which was not only related to the boundary between the shear zone and the intact part, but also fit to entire shear zone. The deformation characteristics might be a thrust fault record by geological data, but turn into a strike-slip fault nowadays measured via geodetic data.