

## 中央山脈下方快/慢地震活動之監測與分析

近年來在孕震區更深部的下部地殼，慢地震(slow earthquakes)家族的發現，將我們對斷層活動方式的理解推入了新紀元。這種慢速滑移活動介於一般地震(快地震)數十秒的快速破裂、和數年的緩慢蠕變(creeping)之間，其錯動位移有限、錯動歷時長，以至於僅有非常弱的地震波輻射，難以從地震波分辨，慢地震家族的其中成員-長微震(tremor)具有以下特徵：(1)貌似雜訊(2)主頻率 2-8 Hz (3)無明顯 P 波、S 波到時(4)能量持續時間長、數分鐘到數月不等(5)能在相距數公里至數十公里不等的測站具近乎一致之到時；在地震連續紀錄監測上因此比大地測量的連續變形紀錄更為敏感、可行。在台灣中央山脈南段發現的快地震(群震事件)和慢地震(長微震事件)除了空間相近，其時間的演化也具高度相關，為此，這個區域的連續觀測紀錄提供我們絕佳的機會，以充分理解不同滑移型態的地震特性和控制因子。此暑期研究欲利用加密的地震網建立更完整的快-慢地震目錄，分析其時空特徵、震源機制和互相之誘發關係，以釐清快-慢地震的物理機制和孕震構造的連結性。

### **FAST/SLOW EARTHQUAKES UNDERNEATH SOUTHERN CENTRAL RANGE**

Slip on a plate boundary can be seismic or aseismic, complementing each other in time and space to accommodate the long-term plate motions. They result in different seismic behaviors that have varying rupture durations. In the seismogenic zone, ordinary earthquakes experience rapid slip on a fault with a few ~ tens of second durations. While below the seismogenic zone, slow rupture propagation and/or low slip rate can be also taking place with a wide range of duration from minutes to days, called slow slip events. Southern Central Range of Taiwan, a place where deep-seated tectonic tremors (a proxy of slow slip) and earthquake swarms are closely located in space and highly correlated in time, provides rare opportunity towards the understanding of physical mechanisms governing different style of slip. The goal of this summer program is to explore the origin and physical connection with the fast slip event.