斷層活動性觀測研究第四階段(4/4)

Active Fault Observation and Research on Earthquake Potential, fourth phase (4/4)

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摘要

本年度利用野外地質調查、空拍與地電阻測勘等方法，針對崙後斷層與口宵里斷層，進行活動斷層特性精細調查。其次，完成梅山斷層、車瓜林斷層與小崗山斷層補充地質調查，共計進行了 11 個剖面及獲取 1,500 公尺的鑽井岩心。本計畫亦依據「地質法」公告梅山斷層活動斷層地質敏感區。

此外，運用 GPS 定期性測量、精密水準測量、GPS 連續追蹤站、PS-InSAR 持久性散射體的合成孔徑雷達差分干涉資料觀測斷層的活動性外，配合地質調查、數值分析等方法，建構三維塊體數值模型，由 GPS 所觀測到的地表變形結果進行運動學分析，計算各區域內斷層的滑移速率及再現週期，分年分區（依中北南東順序）評估斷層的活動潛勢，最後完成 33 條活動斷層的潛勢機率圖繪製，本年度完成東部 8 條活動斷層(26 米崙斷層、27 嶺頂斷層、28 瑞穗斷層、29 奇美斷層、30 玉里斷層、31 池上斷層、32 鹿野斷層、33 利吉斷層)之震源參數彙整。

今年除持續辦理定期性觀測外，每日透過網路與觀測站連線，不斷地接收、處理、解算和分析觀測站資料，加密並補強觀測網，透過彙整各觀測站的資料，分析斷層的活動特性，對觀測資料同步異常情形進行分析與評估，希望藉由本計畫的觀測工作，評估斷層之活動潛勢。

此外，持續彙整活動斷層調查與觀測資料，在網路上公開活動斷層相關資料，方便民眾於網路直接查詢獲取相關資訊，也期望這些成果可作為活動斷層地質敏感區劃定的參考，並提供防、減災的重要資訊，減低地震來臨對社會造成的災害。

We utilized aerial photography and geological survey along the Lunhou fault and Kousiaoli fault to explore the detailed characteristics of active faults. Other than that, we had completed geological surveys of Meishan fault, Chegualin fault and Hsiaokangshan fault, and completed the drilling of three sites along the Meishan fault with total of six boreholes, and four sites with eight boreholes in the Chegualin fault, and four sites with seven boreholes along the Hsiaokangshan fault. The total 1,500 meters of drilling data, thirty sets of C14 dating. The delineation and announcement of geologically sensitive areas for the Meishan Fault was completed.

This project integrates several geodetic methods including observation by continuous/campaign-mode GPS stations, leveling measurement and PS-InSAR, respectively. The results are expected to contribute to the probability analysis of active faults in Taiwan.

In the 2020 project, we focused on the improvement of fault parameters and earthquake probability assessment of the eight active faults (26 Milun fault, 27 Lingding fault, 28 Rueyshui

fault, 29 Chimei fault, 30 Yuli fault, 31 Chihshang fault, 32 Luyeh fault, 33 Lichi fault) in Eastern Taiwan. The logic trees of these faults were also been renewed according to experts' comments.

We analyze the geodetic data from the island-wide continuous and campaign GPS network, precise leveling lines and PS-InSAR to provide the surface velocity field in this project. We also invert the surface velocities to estimate the slip rate deficit and optimized fault geometry parameters by adopting the fault models. The surface velocity field and the derived fault parameters will help to assess the probability analysis of major faults and to delineate the geologically sensitive areas of active faults.