



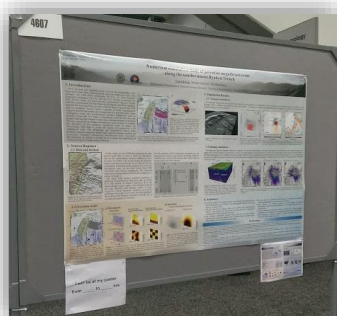
2014 參與 AGU 心得報告

林姿綺

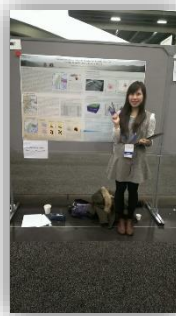
2014 參與 AGU 心得報告 - 林姿綺

12 月 15 日至 12 月 19 日為 AGU 秋季會議時間，會議結束後藉地理之便順道參訪西岸名校，柏克萊加州大學(University of California, Berkeley)以及加州大學洛杉磯分校(University of California, Los Angeles)。

會議期間，我以李憲忠副研究員所指導的題目「Numerical simulation study of potential megathrust event along the southernmost Ryukyu Trench」以海報的方式呈現，在海報展示期間，許多學者對於我的研究內容給予建議也進行了許多討論，這些研討的內容，對於我下一步要進行的研究方向十分有幫助。此外，也留下了彼此的連絡方式，方便日後透過信件來往，做更深入的探討。

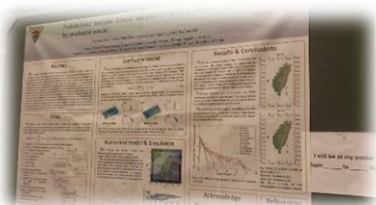


圖一、海報展示剪影。

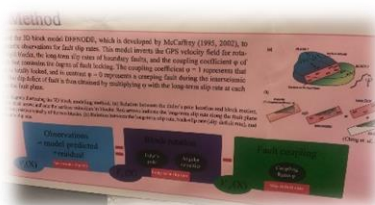


圖二、海報口頭報告剪影。

除了自身研究的展示外，也積極聆聽他人的海報以及演講，了解與自身題目相關的研究成果，像是下圖所示之海報，其題目為「Probabilistic tsunami hazard analysis (PTHA) of Taiwan region by stochastic model」，藉由統計分析來了解各地區未來可能發生的海嘯波高，透過會議期間之學術交流，能夠幫助我了解他人對於相同問題的不同想法以及做法，激盪出更不一樣的思維。

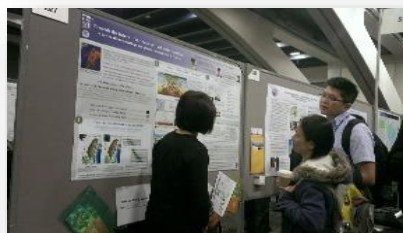
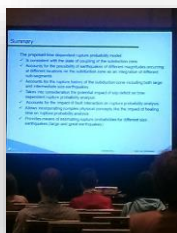
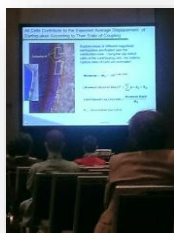


圖三、與自身題目相關的海報。



圖四、與 Backslip model 相關的海報。

由於研究中使用到 Backslip model，而會議期間有相關人員使用此 model 進行不同的資料分析與處理也以海報展示，透過與作者討論，了解到此 model 的可行性以及發展性。此次會議，深刻的感受到學者們對於研究的熱忱，令我對於研究這條路有更大的興趣繼續學習和成長，這趟對於我來說，收穫良多、不虛此行。



圖五、討論及聆聽演講之剪影。

Numerical simulation study of potential megathrust event along the southernmost Ryukyu Trench

Tzu-Chi Lin¹, Shiann-Jong Lee², Shu-Huei Hung¹

¹ *Department of Geosciences, National Taiwan University*

² *Institute of Earth Sciences, Academia Sinica*

Over the past one hundred years, several big earthquakes with magnitude larger than 9 had occurred along the subduction zones. For example, the 1960 Chile earthquake (M 9.5), the 2004 Sumatra-Andaman earthquake (M 9.3), and the 2011 Tohoku earthquake (M 9.0). In this study, we focus on the southernmost Ryukyu Trench offshore northeastern Taiwan where the Philippine Sea Plate subducts beneath the Eurasian Plate at a rate of 80–85 mm/yr. Once a megathrust event hit this area, the ground shaking and tsunami would cause extreme disaster in northern Taiwan, especially the Taipei metropolitan area. Interseismic GPS data in northeast Taiwan shows a pattern of strain accumulation suggests that the maximum likely magnitude of a potential future large earthquake along the southernmost Ryukyu subduction zone is probably about Mw 8.7. In order to evaluate the influence of this potential megathrust event, we analyze the ShakeMap and ShakeMovie from different rupture scenarios based upon spectral-element method. Tsunami simulations based on coseismic deformations of seabed are carried out to evaluate the amplitudes of tsunami along the coastal areas of Taiwan. In addition, we apply the interseismic GPS data to invert the source slip pattern on a 3D subduction zone. We also discuss the influence of dynamic rupture process on the seabed coseismic deformation and tsunami generation. These numerical simulation results can provide physics-based information of megathrust earthquake scenario for the government and emergency response agency to take the appropriate action before the really big one occurs.

Key words: the southernmost Ryukyu Trench, megathrust earthquake, tsunami and shaking simulations