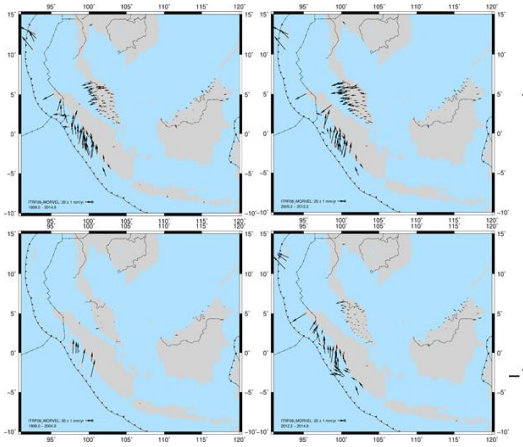
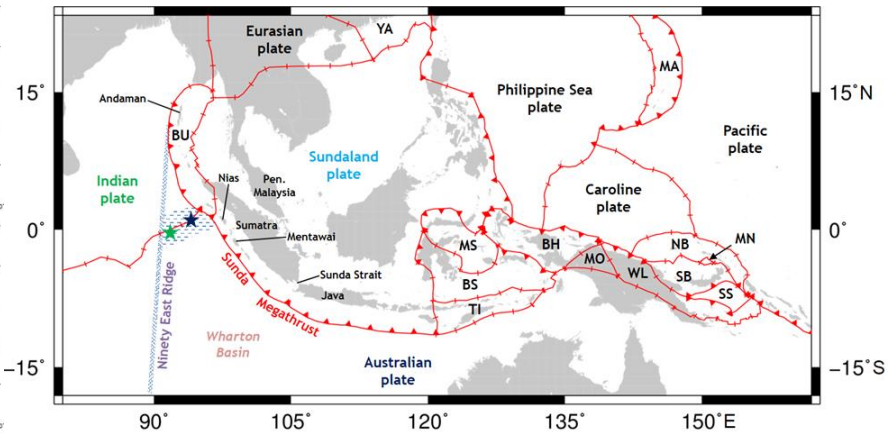
# Consequence of 2012 Mw 8.6 northern Sumatra earthquakes towards Sundaland plate


***Yong Chien Zheng***

***PhD Candidate, School of Surveying***





**Abstract:** The impact of postseismic decay has been concerned mostly with the edge of plate boundaries. But great earthquakes (larger than M8.0) can cause widespread postseismic decay in areas well beyond any recognised plate boundaries. The Mw 8.6 and 8.2 northern Sumatra doublet earthquakes occurred on 11 April 2012, near the intersection of the Indian, Australian and Sundaland plate, have caused an extensive coseismic offset and postseismic decay over the region. In this study, the long-term GPS time-series (1999 – 2014) suggests that the postseismic decay associated with the 2012 doublet earthquakes have had a significant effect on the eastern boundary of the Sundaland plate up to the western region of Peninsular Malaysia. Before the 2004 Mw 9.1 Aceh and 2005 Mw 8.6 Nias earthquakes, the average velocity of continuous GNSS sites in Peninsular Malaysia is moving 31 ± 2.1 mm/yr southeast relative to ITRF2008. The postseismic decay of these two great earthquakes have caused Peninsular Malaysia to slightly deviate into the south-southeast direction with a lower average velocity by 10 ± 5.5 mm/yr. After 2012 northern Sumatra earthquakes Peninsular Malaysia returns to its original course of motion before the 2004 and 2005 earthquakes, with slightly lower average velocity at 25 ± 2.4 mm/yr. In this presentation, the GPS network and availability of data are summarised. Next, the GPS processing strategies and deformation analysis used in this study are discussed. The presentation then focuses on the impact of coseismic and postseismic deformation of the 2012 Mw 8.6 and 8.2 northern Sumatra earthquakes towards Sundaland plate vectors. Lastly, a new rotation vector for Sundaland plate is defined in ITRF2008 by using 10 selected cGPS sites that are assumed to be located in the stable block, based on the 1999 – 2004 time-series data.


**12:00 noon, Thursday, 21 April 2016**

**L1 Lecture Theatre**

**School of Surveying**

**310 Castle Street**

School of Surveying
Te Kura Kairūri

University of Otago
Te Whare Wānanga o Otāgo
New Zealand