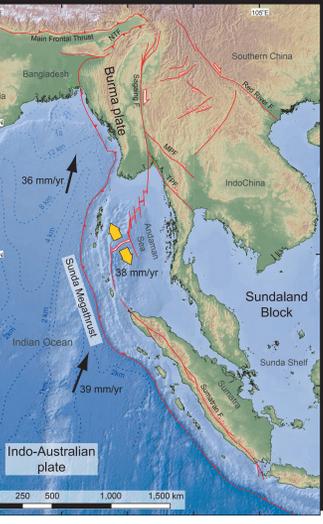
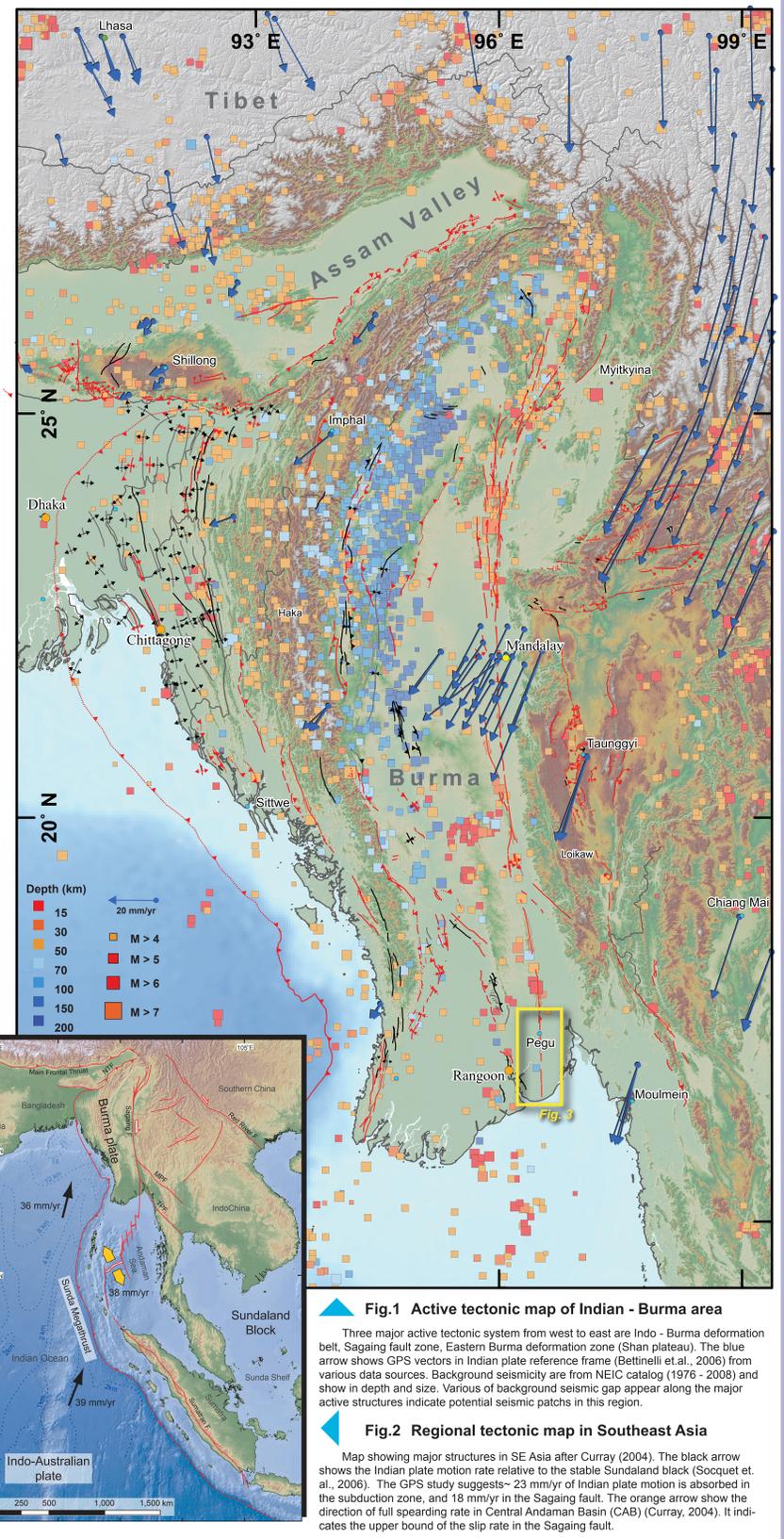


Offset ancient city-wall in the Sagaing fault, Burma (Myanmar)

— Plausible slip rate and historical events

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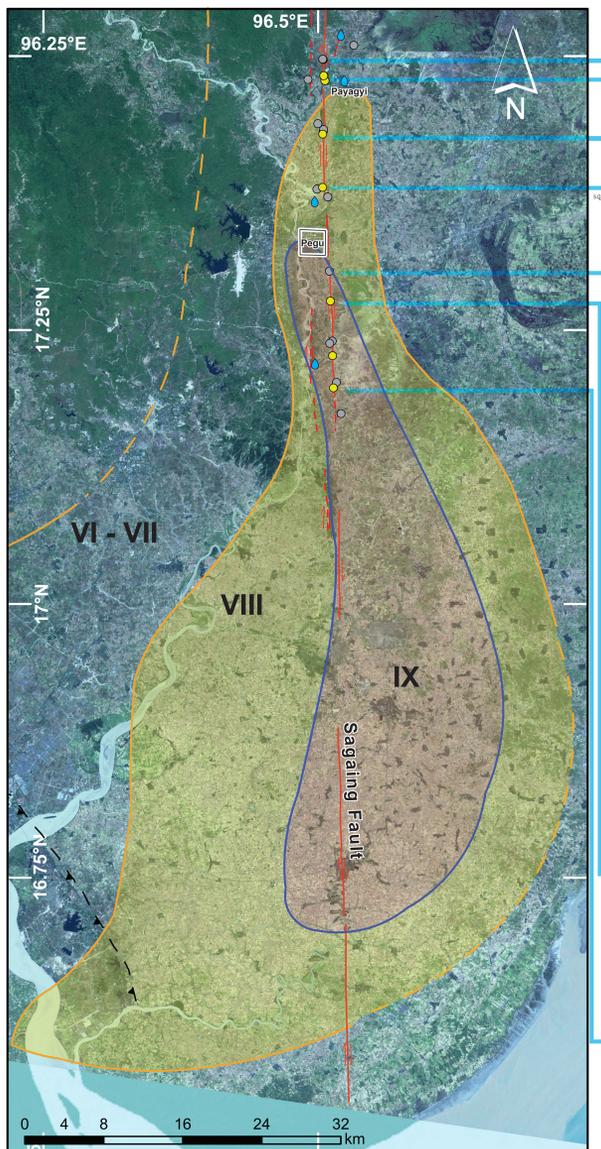
¹ Tectonics Observatory, California Institute of Technology ² Myanmar Earthquake Committee, MES ³ Department of Meteorology and Hydrology, Myanmar ⁴ Earth Observatory of Singapore, NTU



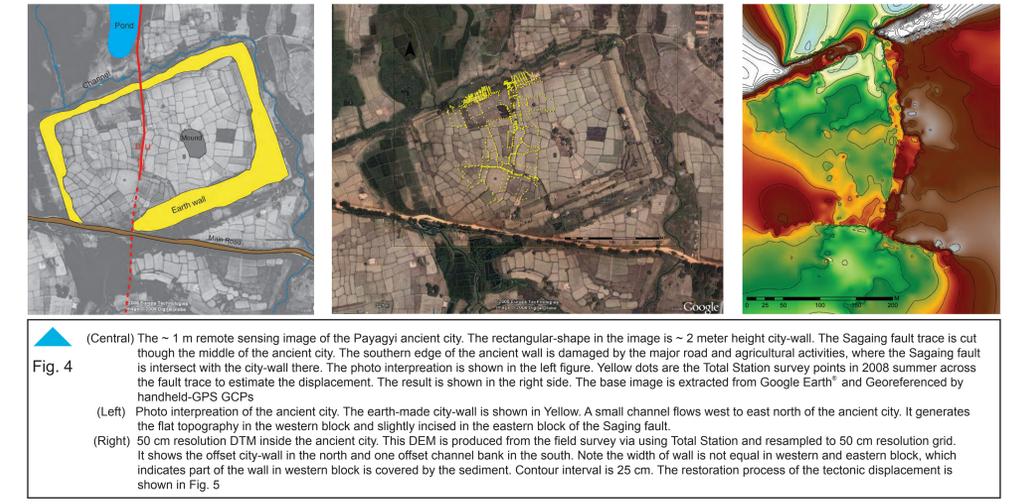
This study focus on the southern Sagaing fault in the lower Burma, where the latest destructive event is the Pegu earthquake (M = 7.3) in 1930. Buddhist documents from ancient Pegu record 34 strong earthquakes in the past 2.3 millennia.

We found its fault trace cuts through and offsets an 440 years old ancient city-wall. The city wall's age is indicated from the descriptions in Burmese history. The offset on the city-wall is 6 m after accounting geomorphologically for the differential sedimentation. This result yields a 14 mm/yr approximate slip rate along this right-lateral fault, which is close to the rate estimated from previous GPS and geolical studies.

The number of earthquakes involved in creating the 6 m offset is currently unknown. Candidates include historical earthquakes in 1582, 1644, 1768, 1830, 1888, 1913 and 1917 C.E. Paleoseismic excavations within the ancient city may well yield evidence of discrete offsets that we will be able to ascribe to specific large earthquakes in the historical record.

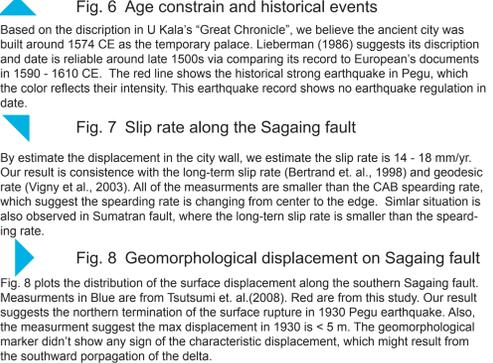
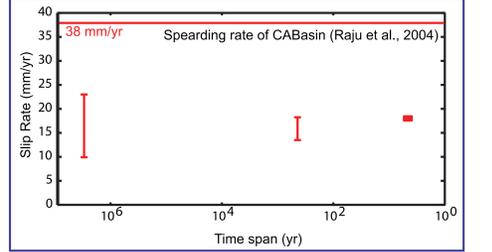
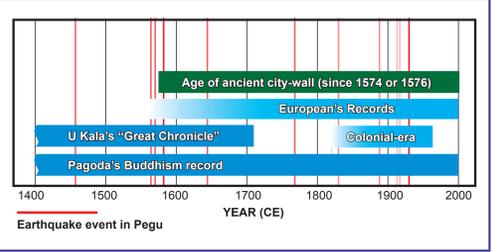
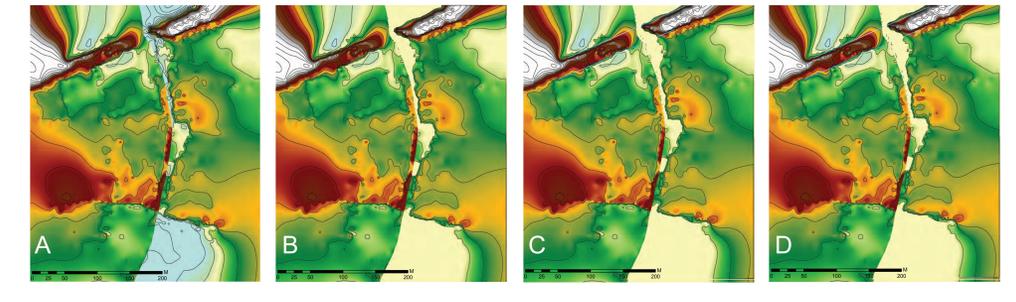


Offset City-Wall



In order to estimate the amount of offset on the city-wall, we use the forward simulation to model the differential sedimentation in eastern side. We first minimize the vertical displacement in two block by subtracting the height of fault scarp to the eastern block. Fig.5A shows the subtracting result in 50 cm resolution DTM. Fig.5B, demonstrate the result when we fill the sediment into the sink. The fill-up level is assigned to the elevation in the outer edge of the city-wall in the western block. After minimized the elevation difference between two blocks, the width of the city-wall in both side become similar to each other, which support our idea of vertical displacement.

Fig. 5 The Fig.5C and Fig.5D shows the result of restoration for the right-lateral displacement by using 6 m and 8 m offset. Our result suggest the total displacement on the city-wall is 6 to 8 meter by using only the topography evidence. This result need to verify via the field excavations, which is proposing in the Spring-2009.



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