Geophysical Research Abstracts, Vol. 9, 02114, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02114
© European Geosciences Union 2007

Paleoseismology of blind fault in the Eastern Taiwan: the Central part of Longitudinal Valley Fault

I. Yen (1), N. Hwung (1), W. Chen (1), C. Yang (1), S. Sung (2) and C. Lin (3)

(1) Departmen of Geosciences, National Taiwan University, Taipei, Taiwan, (2) Oil and gas E&P department, Formosa Petrochemical Corporation, Taipei, Taiwan, (3) Central Geological Survey, MOEA, Taipei, Taiwan

The paleoseismic trench excavation in the Dafu area of the eastern Taiwan provides data on the late Holocene rupture history of the Rueisuei segment of central Longitudinal Valley Fault. The 1951 earthquake ruptured through the Dafu site, which is characterized by several of terrace raises with latest Holocene sediments uplifted by westward thrust fault. Trenches across the northwest-facing fault scarp exposed sediments interpreted as fluvial and alluvial deposits. Nearly all 23 radiocarbon dates on samples of detrital charcoal are in correct stratigraphic order. These dates constrain the ages of the individual faulting events and indicate that the recurrence interval is not periodic but is quite irregular. Based on stratigraphic ordering and a statistical comparison of radiocarbon dates using the OxCal program, we estimate (at a 95ćM-confidence level) that two pre-1951 earthquake surface rupture at the Dafu site occurred at A.D. 1800-1870, A.D. 1600-1650. Through the correlation of three trenches across the Longitudinal Valley Fault, we are able to provide evidence of at least three earthquake events with moment magnitude about 6.8 to 7.3 for the past 350 years before 1951, and including the 1951 earthquake. Furthermore, based on the radiocarbon dates, the recurrence interval is about 175$\pm$25 years and the minimum vertical uplift rate is 11.4$\pm$0.1 mm/yr.