

**Report
on
Visit to ERI, University of Tokyo from 01-28 June, 2012**

by

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This was my second visit to ERI and again got a chance to work with Prof. Kenji Satake. The visit from 01-28 June 2012 was quite fruitful. One of the aims of this visit was to conduct a field visit in the area affected by Tohoku earthquake and tsunami, and compare the sediment stratigraphy and land-level change data from Andaman Islands. However, due to constraints in visiting the area several discussion/meetings were held with Prof. Satake and his research team. My visits to AIST, Geological Survey of Japan, Tsukuba, and having discussions with Dr. M. Shishikura and Dr. Yuki Sawai were extremely useful. I had an opportunity to discuss the findings/results they got from the recent mega-event in Japan. The sediment succession studied from the 11 March, 2011 Tohoku earthquake helped in knowing the pattern of tsunami effects, associated land-level change, and the sedimentation pattern in the area. The sedimentary features were compared with the sediment succession recorded from Andaman and Nicobar Island. The data collected (sediment stratigraphy) from Andaman Islands was analyzed and appropriate interpretations were made. Our preliminary interpretations are given below.

Sediment stratigraphic studies from the west coast of southern Andaman Island provides signature of paleo-tsunami and paleoseismic events. Two major earthquakes during past 1000 yrs have been identified. Event I, caused coseismic uplift and followed by tsunami. The tsunami deposit as much as 30 cm thick marked four sub-units with alternate layers of coarse sand + shell fragments and plant debris, and poorly sorted gravel made-up of assorted fragments with coarse sand + shell matrix were identified from two geoslice sections at a depth of 2 m. The sub-units is marked by inverse and normal grading, sharp-erosive contact with underlying laminated tidal-marsh deposit. The overlying peaty layer indicated change in environment from tidal-marsh to marsh, an possible uplift of ~1 m is inferred during Event-I. The finer silty-clay deposit overlying peaty layer indicates that the area went to deeper sub-tidal environment. Sharp contact with underlying peaty unit in few geoslice sections and liquefaction suggests sudden change in environment and strong ground shaking, Event II (?) was probable coseismic marked by subsidence of about the similar amount as during uplift. Gradual change in environment from deeper (sub-tidal) to shallower (tidal) is suggested based on the coarser silty-sand deposits overlying the silty-clay. Inter-seismic uplift has been inferred, which allowed the formation of peaty unit. Finally the area subsided during 2004 Sumatra-Andaman earthquake accompanied with tsunami. Based on AMS and OSL dates, we infer that the Event I occurred during A.D. 1200-1300, marked by uplift and tsunami. Event II (?) represent probable coseismic subsidence probably correlates with A.D. 1679 identified from east coast around Port Blair by Malik et al., (2011). Inter-seismic uplift occurred between A.D. 1600 and 2000 before the area subsided during 2004 event. The events those occurred between this period might also have contributed to uplift of the area. Considering these events a recurrence of about 400-500 yrs can be inferred for large earthquake in Sumatra-Andaman arc area.