

# Evidence of Past Sea Level Change and the Formation of Recent Coastal Alluvial Deposits in Peninsular Malaysia

GEOTECHNICAL ENGINEERING TECHNICAL DIVISION



reported by  
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Photo 1: Professor Tjia Hong Djin presenting his talk at Wisma IEM.

On 24 March 2016, Professor Tjia Hong Djin (Photo 1), Professor Emeritus of Geology at Universiti Kebangsaan Malaysia, presented the evening talk on Evidence of Past Sea-Level Change and the Formation of Recent Coastal Alluvial Deposits in Peninsular Malaysia at the Tan Sri Ir. Prof. Chin Fung Kee Auditorium, Wisma IEM, Petaling Jaya. The talk started at 5.30 p.m. and had an attendance of 35 participants.

Prof. Tjia pointed out that the landmass of the peninsula had been stable, elevation-wise, for the last 20,000 years with no earth crustal movement, so any indication of sea levels along the coastline represent the true sea levels threat.

He used paleoshoreline indicators like abrasion benches and marine-life fossils such as oysters, molluscs and barnacles as markers of past sea surface levels. Radio metric dating was used to establish the age of the shoreline indicators. There are more than 80 such datings. Land surfaces above sea level would experience erosion.

Along the coast, the sea would carve into the rocky cliff and leave erosion features which indicated whether the sea level had been at a constant level for a long period of time or otherwise.

Prof. Tjia said that 18,000 years BP (Before Present; with zero year BP = 1950 AD) the sea level was at its lowest, 130m below the present day sea level) and after which had risen to the maximum of about 5m above the present day level 4,400 years BP as shown in Photo 2. Thereafter, the sea subsided in 2 quick episodes before rising again to the present level about 400 years BP.

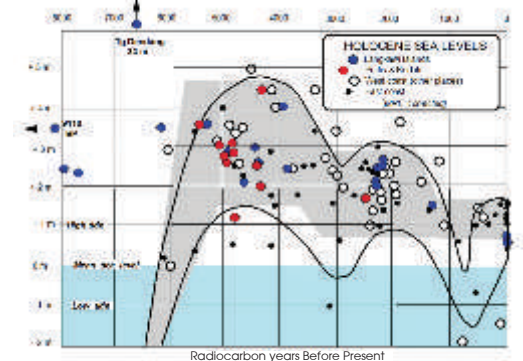


Photo 2: Past 8,000 year sea levels.

The industrial revolution/age, which marked the beginning of large scale human related emission of greenhouse gases, dated back to just 1,800 years AD (less than 200 years BP) yet the sea level had been rising long before this.

Changes in sea level causes the shoreline to change and changing shorelines are indicative of climate change. Prof. Tjia left it to the audience to judge for themselves if human activities had caused the changes in the climate and sea level.

He also presented the graph of sea level variations up to 800,000 years from present (Photo 3). It showed cycles of sea levels

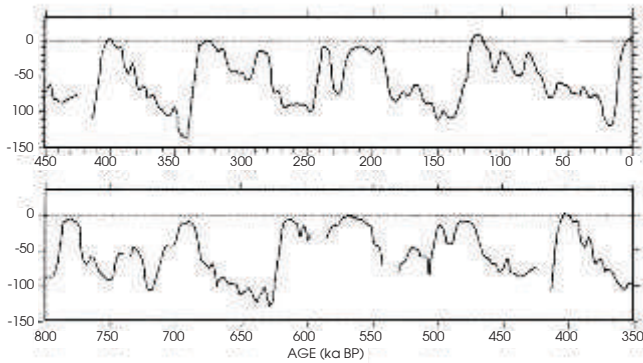


Photo 3: Past 800,000 year sea levels.

dropping to the lowest and rising to the highest about once every 110,000 years. The sea levels always rose considerably faster than the descending rates.

Previously dry land surfaces which were inundated by the sea, would be buried over by marine sediments from the sea water.

About 5,000 years ago, the sea submerged all the current coastal plains of the peninsula. The presence of marine sediments along coastal plains is the result of this submergence.

Such sediments present considerable challenges to construction activities and completed facilities.

After his talk, Prof. Tjia was engaged in a very enthusiastic discussion with the audience. However, he declined to comment on the possible connection between global temperature changes and sea level changes, saying that it was outside his field of expertise.

To conclude the evening's event at 7.20 p.m., Dr Ooi Teik Aun presented a certificate of appreciation and a memento to Prof. Tjia on behalf of IEM. ■

*(Prof. Tjia passed away in his sleep on 9 June 2016).*

## REFERENCE

Tjia, H.D and Syed, S.M.A. (2013). Sea Level Changes in Peninsula Malaysia: A Geological Record. Penerbit Universiti Kebangsaan Malaysia.