Geophysical Research Abstracts
Vol. 17, EGU2015-4824-1, 2015
EGU General Assembly 2015
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Sea level rise along Malaysian coasts due to the climate change

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Malaysia consists of two major parts, a mainland on the Peninsular Malaysia and the East Malaysia on the Borneo Island. Their surrounding waters connect the Andaman Sea located northeast of the Indian Ocean to the Celebes Sea in the western tropical Pacific Ocean through the southern East Sea of Vietnam/South China Sea. As a result, inter-annual sea level in the Malaysian waters is governed by various regional phenomena associated with the adjacent parts of the Indian and Pacific Oceans. We estimated sea level rise (SLR) rate in the domain using tide gauge records often being gappy. To reconstruct the missing data, two methods are used: (i) correlating sea level with climate indices El Niño-Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD), and (ii) filling the gap using records of neighboring tide gauges. Latest vertical land movements have been acquired to derive geocentric SLR rates. Around the Peninsular Malaysia, geocentric SLR rates in waters of Malacca Strait and eastern Peninsular Malaysia during 1986-2011 are found to be 3.9$\pm$3.3 mm/year and 4.2 $\pm$ 2.5 mm/year, respectively; while in the East Malaysia waters the rate during 1988-2011 is 6.3 $\pm$ 4.0 mm/year. These rates are arguably higher than global tendency for the same periods. For the overlapping period 1993-2011, the rates are consistent with those obtained using satellite altimetry.