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Late 18th to early 19th century sea-level history and inter-seismic behavior along the western Myanmar plate boundary belt recorded by coral microatolls

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Along the western Myanmar plate boundary belt, the Indian-Australian plate is subducting obliquely beneath the Burma micro-plate at a rate of about 23 mm/yr. Although information about the 1762 Arakan earthquake, the only major historical event occurred along this plate boundary belt, has been delineated recently from uplifted coastal features, constraints on the inter-seismic behavior of this belt is still very limited, due to the lack of high resolution instrumental records in the area. Therefore, we utilized coral microatolls to analyze relative sea level history, in order to obtain potential information of land-level change along the western coast of Myanmar. Our sample was collected from northwestern Ramree Island, approximately 80 km away from the trench. Previous studies suggest that the coral was uplifted and killed during a local earthquake event in 1848, and recorded relative sea level history of ∼80 years prior to that event. Since the highest level of survival (HLS) of coral microatolls is constrained within a few centimeters of the lowest tide level of the area, the patterns of annual growth bands of the coral microatoll in x-radiograph provide us yearly record of relative sea level, and we used U-Th dating technique to constrain the age of the coral. Our results show that this coral microatoll may have recorded the inter-seismic subsidence of northwestern Ramree Island, punctuated by several climatic events that produced die-down records of the coral growth bands. We hope the data obtained from this coral microatoll, combined with previously reported information of the area, will enable us to further understand the seismic behavior of this major plate boundary belt.