

Holocene crustal movements and the timing of co-seismic event in the Sanriku coast relating to uplift processes of the fore-arc

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The coastal areas of fore-arcs in plate convergence boundaries are characterized by a flight of late Quaternary marine terrace repeatedly uplifted by co-seismic crustal movements. We demonstrated a dynamic diagram of inter-seismic subsidence and co-seismic uplift to explain the emergent process in the Sanriku coast of the Honshu arc, Northeast Japan, using Quaternary and geomorphological methods. The obtained results are as follows.

1. Pleistocene marine terraces are recognized along the coast, but Holocene ones are not distributed.
2. The ^{14}C dates and lithofacies of geologic cores indicate the tendency of successive subsidence and the maximum subsidence rate of 3 mm/yr in Holocene. Recent tidal data show faster subsidence rate of 5 to 9 mm/yr in the past 50 years.
3. The sedimentological situation has abruptly changed in mid Holocene, from bayou or lagoons to shallower beach or river beds.
4. The recent rapid subsidence in rate of 5-9 mm/yr results from the drag of the overriding plate by the coupling of Pacific plate and Eurasia plate. Comparatively, the seeming subsidence rate in Holocene is remarkably lower than that in the last 50 years. We discuss whether the co-seismic uplift episodically reduced the essential Holocene subsidence by the coupling of plates.