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Developmental processes of Holocene barrier system based on borehole data for a case of Akkeshi bay area

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A Holocene barrier system is situated around Akkeshi-ko lagoon separated from Pacific Ocean by two sand-spits. There is a tidal inlet between lagoon and sea, and also a typical tide flood delta with modern oyster reef in the center of the lagoon. However, the developmental processes of the Akkeshi barrier system during the Holocene transgression have not well understood, because the postglacial sea-level research has stalled in this area since Maeda et al. (1992). In cooperation with the Hokkaido Regional Development Bureau and Akkeshi Town, we tried to compile Holocene borehole data from coastal lowland areas and also analyzed the offshore drilling cores taken in February 2009 and 2010 by using sedimentological methods, spectrometry measurement, grain size analysis, pH and EC measurements, radiocarbon dating and paleontological techniques. We were able to get some new knowledge about development processes of the barrier system.

A transgressive surface recognized at -50m below sea level around Akkeshi Bay estimated to have been formed about 11,000 years ago. Moreover, thick sandy deposits upper than the horizon of -16m below sea level suggest that barrier sand spitst began to be formed about 7,000 years ago by longshore sediment transport around Akkeshi Bay, The tidal flat deltas was also generated during the establishment of this barrier system.

Keywords: eastern Hokkaido, Akkeshi bay area, Holocene, barrier system, sea level change