

Sedimentological studies of the relationship between human activities and environmental changes, northern Okinawa.

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The beginning of agriculture in Ryukyu Islands goes back to the 10th-12th century (Takamiya and Itoh, 2011). As usual in many parts of the world, historical deforestation in Japan's main islands were associated with crop cultivation, e.g. rice, wheat, barley, and millet, which accelerates soil flowage into water systems. Particularly in closed bays, finer-grained clastics can remain sub-merged for long periods, resulting in adverse in fisheries

In this study, we obtained sediment cores from Hanechi inner bay, north-western Okinawa Island, to reconstruct the past environmental changes and human activities. Hanechi inner bay is surrounded by the Yagachi Isl. and the Okubu Isl. Its maximum water depth is ~10m with the area is 10km². The bay is connected to the East China Sea at its northern and eastern parts. The coral reef develops around Yagachi and Okubu Islands. In the, Nasata River flows into the bay.

The cores were obtained from the center of Hanechi inner bay in 2010. The 286-cm long core, is mainly composed of clay, with shell fragment layer at the 100-cm, 190cm and 230cm depths. The ¹⁴C age of a plant fragment at the 253-cm depth is 1810 +/- 40 yr BP.

Subsamples were corrected from the core at an 2.3-cm interval for measurements of organic elements (CNS) and magnetic susceptibility. A change in magnetic susceptibility was recognized from 150cm to 40cm in depth. It is considered that the change was caused by an increased inflow of finer-grained clastics around the Hanechi inner bay. From CNS analysis, TOC slightly decrease from 150cm in depth, suggesting that the deforestation induced by agricultural activities began since 1000 yr BP in this region.

Keywords: Hanechi inner bay, CNS analysis, magnetic susceptibility, human activity