

Visualization of coastal seafloor by multibeam echosounder: from coral reefs to naval battle site

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The coastal seafloor at depths shallower than ~130 m was subjected to alternating subaerial erosion and sedimentation during Quaternary sea-level change. However, the coastal seafloor is rarely visualized and discussed in conventional geomorphology. A wideband multibeam echosounder (MBES) was introduced to our laboratory through a JSPS KAKENHI in 2010 to observe high-resolution (1 to 2 m grid size) bathymetry of seafloor from 1 to 400 m depth. We have conducted MBES surveys in Ryukyu Islands and successfully obtained one of the highest resolution seafloor information in the world. In this presentation, we discuss the novelty and possibilities of coastal seafloor geomorphology based on case studies from around the world and research materials of our group.

In this presentation, we introduce the possibility of visualization of shallow coastal seafloor based on our researches: coral reefs in the Ryukyu Islands, submerged tropical karst features and abundant living corals discovered in Nagura Bay on Ishigaki Island, Yarabeoki underwater site which contains iron grapnel anchors and early modern Okinawa ceramic jars (16-19th Centuries) off the western coast of Ishigaki Island, a battleship USS Emmons that sank in 40m of water off Okinawa Island due to inability to navigate after kamikaze attack at the end of World War II.

Coastal zones have always had a close relationship with the human society since the beginning of human civilization. However, there is very little scientific knowledge on coastal areas despite their closeness to human settlements. It is a field where advanced research can be promoted by collaboration between geoscience and archeology.

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