Three dimensional morphological changes and ^{137}Cs dating in the Yellow River (Huanghe) delta during 1976-2012

*Liangyong ZHOU[1], Jian LIU[1], Yoshiki SAITO[2,3], Jiandong QIU[1], Maosheng GAO[1]

1.Qingdao Institute of Marine Geology, China, 2.Geological Survey of Japan, 3.Univ. of Tokyo

The Yellow River (Huanghe) is a major sediment supplier to the Bohai Sea and the Yellow Sea. Since 1976 the river's channel has been located on the east side of delta complex and has built out broad sedimentary lobe. To understand the sedimentation of the subaqueous delta, extensive bathymetric and high resolution seismic profiles, vibrocores and a borehole core in the survey lines were collected in 2012. The morphological change along with ^{137}Cs profiles of cores were used to establish the present sedimentary frame of delta front slope and to examine sediment dispersal in the west of Laizhou Bay in this study. Sedimentation and morphological change in the area were examined on the basis of (1) the morphological change between 1958/1976 and 2012 and (2) analyses of sediment cores including radionuclides (^{137}Cs and ^{210}Pb), sediment structure and texture. The morphological change shows the distribution of sedimentation since 1976, and this also was validated on basis of analysis of cores. About 80% Yellow River-derived sediment deposits in the subaqueous delta during 1976-2012. The morphological change also reveal the present morphology of subaqueous delta that exceeds previous estimated boundary, and this also was validate on basis of analysis of ^{137}Cs in cores. The ^{137}Cs onset depths corresponding to the depths of lithological changes and morphological changes indicate that it can be a proxy to track the dispersal of Yellow River-derived sediments in the study area. Synthesis of bathymetry, seismic profiles, ^{137}Cs profiles and surface sediment pattern show that a depocenter occurs in the south frank of Yellow River delta in the west of Laizhou Bay. The deposition probably results from the headland eddy that formed with the morphological change.

Keywords: Morphological change , Sediment cores, Cs-137

