Geophysical Research Abstracts
Vol. 13, EGU2011-1641, 2011
EGU General Assembly 2011

Chirp acoustic profiles and physical properties of late Quaternary sediments in the southeastern Yellow Sea

Dae Choul Kim, Gwang Soo Lee, Young Kyo Seo, Hi Il Yi, and Sungho Bae
Pukyong National Univesity, Exploration Engineering, Busan, S. Korea (dckim@pknu.ac.kr)

Chirp acoustic profiles and sediment coring have been carried out to investigate the stratigraphic units and depositional history of late Quaternary deposits in the southeastern Yellow Sea. Another purpose of the research was to define the sedimentary units using acoustic and physical properties of sediments. Approximately 1060 line-km data of high resolution survey (chirp and sparker profiles) were performed. About 3 m long sediment samples were cored at 15 stations using piston corers independently. The study area is covered dominantly with the Holocene mud deposit. The late Quaternary deposits in the study area can be divided into three sequences (Unit A, B, and C, from oldest to youngest). The lowermost Unit A, overlying the acoustic basement, shows irregular inner reflectors and incision-fills thickening slightly toward southwest. Unit B is dominated by sandy sediments and characterized by parallel reflectors . The characteristically homogeneous Unit C includes acoustically transparent and/or subparallel reflectors . Some acoustic turbid layers also found at Unit C indicating the occurrence of shallow gas.
Core samples were analyzed for sediment texture (grain size, sand, silt and clay contents), physical properties (porosity, water content, bulk density, grain density and shear strength), and acoustic properties (compressional wave velocity and attenuation). Electrical resistivity was also measure to compare with other physical and acoustic data. Similar compressional wave velocity were reported in the Unit B in the sediment core and some sandy beds which is believed to be exposed by erosion. Other physical and electrical properties also support the result. Further study is needed to strengthen the idea of definition of sedimentary units using sediment physical and acoustic properties.