



A big hiatus found in a piston core from the Korea Plateau of the East Sea: Geological and Tectonic implications

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A piston core was collected from the Korea Plateau, East Sea of Korea showed distinctive lithological changes, composed of hemipelagic with slight turbiditic upper layer (Unit II) and coastal sandy lower layer (storm reworking) (Unit I). Further, Unit I was subdivided into Unit I-a and Unit I-b: Unit I-a is composed of shallow carbonate sediment, while Unit I-b is a mixture of shallow carbonate and volcanoclastic matters including bivalves. Based on the oxygen isotope of foraminifera and comparison with previous work, the age of upper layer (Unit II) reaches about 32ka (MIS 8). Whereas, $^{87}\text{Sr}/^{86}\text{Sr}$ isotopic initial ratio of the bivalves and planktonic foraminifera exhibits 0.70881 to 0.70884 and 0.70879 to 0.70883 in Unit I-a which corresponds to middle Miocene (13~15Ma) when compared with previous results. Furthermore, $^{87}\text{Sr}/^{86}\text{Sr}$ isotopic initial ratio of the bivalves and planktonic foraminifer in Unit I-b exhibit 0.70882 to 0.70887 and 0.70883 to 0.70898, respectively. Therefore, these data probably indicate that the bivalves were formed during middle Miocene (11~14 Ma), and planktonic foraminifera in 6~13 Ma. Furthermore, this area indicatively belongs to coastal shallow environments until at least 11 Ma. A practical test of $^{87}\text{Sr}/^{86}\text{Sr}$ isotopic initial ratio in planktonic foraminifera in Unit II shows 0.70913 to 0.70915 corresponding to about 1 Ma even though oxygen isotope result shows about 30 ka at the bottom of Unit II. Therefore, it is assumed that there were, at least, 5 Ma unconformity between Unit I and Unit II, suggesting that significant tectonic event or continuous subsidence of Korea Plateau had taken place in East Sea. More detailed tectonic data including bottom profile from deep seismic may confirm this big hiatus and tectonic history of the East Sea.