

Reconsideration of paleomagnetism for sediment cores from Southern Basin, Lake Baikal

Masae Horii[1], Hideo Sakai[2], Kenji Kashiwaya[3], Takayoshi Kawai[4]

[1] JAMSTEC, DEEPSTAR, [2] Earth Sci., Toyama Univ., [3] Earth Sci., Kanazawa Univ., [4] NIES

Lake Baikal is located in the Baikal rift zone, southeastern Siberia, and is the deepest and the oldest lake in the Earth. Its sediments have recorded the climatic and environmental change since middle Miocene. Data from Lake Baikal are particularly valuable as successive information of continental climate over a long time period. In 1993, two cores (BDP-93-1, BDP-93-2) were drilled at the Buguldeika saddle in front of Southern basin, Lake Baikal. The core BDP-93-1 is 102 m long and the core BDP-93-2 is 93 m long.

BDP members estimated the sediment age in the preliminary report of BDP-93 mainly by the correlating magnetic susceptibilities with the marine oxygen isotopic curve. In the settings near a river mouth such as Buguldeika site, however, effects for fluvial activity must be taken into account, because magnetic properties may respond to climatic change differently from in hemipelagic sediments. We conducted a paleomagnetic study and granulometric analyses on the BDP-93 cores. The remanent magnetization of the cores shows dominant positive inclination, indicating that the cores are included in Brunhes normal chron (~780 ka BP). Some geomagnetic excursions were found in both cores. Referring the age scale with carbon isotope ages and the regression, they are estimated to be 100 ka BP, 120 ka BP (Blake event), 310 ka BP and 340 ka BP (Calabrian ridge 1 event). These geomagnetic events possibly include double excursions respectively. Rock-magnetic mineralogy and dry density of the sediments suggest a change in sedimentary environment at 40 m depth, which is passively related to a shift of sedimentary source. We applied the same measurements on the BDP-96 cores at Academician ridge, central Baikal; however, we could not identify such the change in rock-magnetic and/or the physical properties. These results suggest that the sedimentological environment of Buguldeika saddle is influenced by the local sedimentary conditions.