Clay minerals in the Nankai Trough accretionary sediments as a function of depth

HOSHINO, Koki1*; KANAGAWA, Kyuichi1

1Department of Earth Sciences, Chiba University

We investigated how clay minerals in the Nankai Trough accretionary sediments change in content with depth from 950 mbsf (meters below seafloor) to 3030 mbsf at IODP Site C0002 off Kii Peninsula. Quantitative XRD analyses reveal that the content of smectite relative to total clay minerals decreases with depth from 76 wt% to 40 wt%, while those of illite and kaolinite increase with depth from 10 wt% to 30 wt%. Borehole temperature measurement at this Site revealed the temperature at 900 mbsf to be 38 °C, while the temperature at 3000 mbsf has been estimated to be 100 °C based on the temperature and heat flow data at 900 mbsf and logging-while-drilling bit resistivity data. Thus the observed changes in contents of clay minerals likely reflect a temperature increase with depth.

Keywords: clay minerals, accretionary sediments, Nankai Trough