R004-09
D 会場 ： 11/26　AM1（9:15-10:45）
9:30〜9:45:00

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Paleointensity-assisted chronostratigraphy of a sediment core from the Southern Ocean

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Information of variations in the geomagnetic field intensity in the past (relative paleointensity, RPI) is important for better understanding of the geodynamo. As an application, RPI can be used as a tool for age estimation of sediments by correlating to templates such as stacked RPI curves and/or geomagnetic-field models. We present RPI estimations of a sediment core KH-19-6-PC7 of about 12.6 m long taken from the east of the South Sandwich arc-trench system. The water depth of the coring site, about 4400 m, is deeper than the CCD, and hence oxygen-isotope stratigraphy is difficult to be applied. It is known that in the Southern Ocean magnetic susceptibility variations often mimic the variation patterns of eolian dust flux recorded in the Antarctic ice cores, and this has been utilized for age estimations of sediments. This coincidence suggests that eolian dust is the main source of magnetic minerals in Southern Ocean sediments. Osanai (2024, Master Thesis) conducted a paleoceanographic study of the core, and proposed increased productivity associated with a southward shift of the Antarctic Circumpolar Current at the Antarctic Isotope Maximum (AIM) 2 (˜24 ka). The age model of the studied core was constructed based mainly on magnetic susceptibility and Fe content derived from an XRF core scanner, which were correlated to the EDML ice core dust record through correlation with the magnetic susceptibility record of core MD073134 in the Scotia Sea. The age model shows that the core covers the last ˜26 k.y. and that the sedimentation rate suddenly decreased at ˜16 ka. The correlation to the EDML dust record was, however, not straightforward in the studied core; some spikes of magnetic susceptibility uncorrelatable to the EDML record hampered confident correlation. The susceptibility ”noises” probably reflect volcanic ashes because the site is located leeward of the Sandwich volcanic arc. When this age model is used, on the other hand, RPI variations obtained from best-fit slopes on NRM-ARM demagnetization diagrams are consistent with the predictions from the geomagnetic models SHA.DIF.14 for the last 14 ka and GGFSS70 for an older period. This observation supports the age model. This is a good case for successful application of PRI-assisted chronostratigraphy. The paleomagnetic record of this core will also be useful for refining geomagnetic-field models because the number of available records in the Southern Ocean is still limited.