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Stratigraphic study and sedimentary facies analysis of deep drill core in coastal area, Horonobe, Hokkaido

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Coastal area of Horonobe town in Hokkaido is a demonstration field to develop the evaluation methodology of a characteristic deep geological environment on the coastal region in Japan. Horonobe town locates in the Teshio plain where the basin subsidence is remarkable. Comprehensive geological structure of the Teshio plain has been understood by a large-scale geophysical exploration. The drilling site locates in the dune developed along the coast of the Teshio plain and the subsurface geology is composed alluvium (about 85m in thickness), Sarabetsu Formation (Pliocene to lower Pleistocene) and Yuchi Formation (Pliocene). However detail geology is not clarified because of any deep drilling has not been done at all in the coastal region of Horonobe town. We are carrying out the deep drilling survey to the depth of 1,004m in the site and the laboratory analysis of the core. From the result of analysis, it is cleared that geology is composed Sarabetsu Formation in which the cycle of gravel and sand rocks to mud repeats at a 30 to 50m cycle at thickness until 470m and Yuchi Formation in which sand or mud rocks at depth between 470m and 1,004m. In Sarabetsu Formation, sedimentary facies are classified several types such as shallow marine, lagoonal and fluvial deposits, and Upper part of Sarabetsu Formation is mainly composed of lagoonal and fluvial deposits. Yuchi Formation is mainly composed of shallow marine deposits in which repeated cycles of fining-upward succession are considered. From the cyclic succession of rock and the long-term change of sedimentary facies, it is suggested that geological environment of the site has been changed regionally from marine to fluvial environment with the sea level fluctuations.

Keywords: Coastal area, Deep all core drilling, Stratigraphy, Sedimentary facies, CNS elemental analysis