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Description and environmental monitoring in Hokkai Cave, southwestern Hokkaido

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The Hokkai-cave is newly-discovered cave in 2006 in southwestern Hokkaido. The cave had been conserved under natural condition. This poster reports the results of Speleological study of the cave conducted during 2006-2009, including geomorphological survey, monitoring of the interior air temperature and ground water currents. The Hokkai-cave was surveyed in 2006, revealing that the cave is the longest cave in Hokkaido (total 479.8 m). The cave has zigzag corridors and small speleothems are found in the cave. The cave floor is mainly made of clay and breakdown gravels. There is a small underground-river in the cave. Interior air temperature (IAT) was monitored during 2007-2009. The air temperature at the inner part of the cave was stable through the year (7.5~7.7 °C), On the contrary, air temperature in the vicinity of the entrance was unstable because of the influence of the outside air temperature (OAT). Air current is driven by the air temperature gradient between the inside and outside of cave. When the IAT exceeds OAT, the current flows from ent.U (upper) to ent.L (lower) and from ent.U to deep zone. On the other hand, when OAT exceeds IAT, the current flow from ent.L to ent.U and from deep zone to ent.U. Hydrological monitoring was done during 2007-2008 in the cave. The underground-river in Hokkai cave usually dried up except during the events of heavy rainfall (about over 40 mm per a day) or snow melting season. Sources of the water may be allogenic recharge from surface streams and dispersed infiltration. The difference of water sources may cause the different type of hydrograph for each water flow event. Recently, it has been popular to reconstruct paleo-climate from cave stalagmite. To study plaeo-climate from stalagmite in Hokkai-cave is important because Southwestern Hokkaido is the northern limit area of East Asia Monsoon which characterize East Asian climate and culture. The results of this study should be valuable basic data for that.

Keywords: cave, speleothem, East Asian Monsoon, temperature monitoring, underground river, Hokkaido