TOC and stable carbon isotope in surface deposit at Tanegashima mud volcanoes

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A submarine mud volcano is a mound that ranges in size from several ten meters to several kilometers in diameter created by mud diapirs caused by high pressure of pore water, and it has been found worldwide on continental shelves and slopes of accretionary wedges under compressional tectonic regime (e.g. Henry et al., 1990; Milkov et al., 2010). Mud volcanoes are considered to provide some materials under seafloor together with mud to the surface, thus those are important for considering the matter cycle between the sea and deep underground. Many mud volcanoes have been found off Tanegashima Island (Nakayama et al., 2010; Kitada et al., 2018) and we investigated these mud volcanoes in KH19-5 cruise in 2019. We collected surface sediments (under to 25cm depth) near the top of two mud volcanoes, named MV#2 (non-active?) and MV#3 (active?), and analyzed TOC, TN and δ^{13}Corg.

The TOC of the sediments at both MV#2 and MV#3 shows range from 0.47 to 0.76%, TN shows from 0.09 to 0.12%. The relatively low TOC may reflect the influence of underground mud erupt from mud volcanoes. Both TOC and TN tend to decrease as it gets deeper. Both TOC and TN at MV#3 slightly higher than those of MV#2. The difference of TOC and TN between MV#2 and MV#3 may be caused by a colony of *Calyptogene* observed at MV#3 or other differences such as a timing or a scale of an eruption each mud volcanoes.

The values of δ^{13}Corg in the sediments of MV#2 and MV#3 show relatively low, from -25 to -23‰, and there is no difference between MV#2 and MV#3. The relatively low δ^{13}Corg values are considered the influence of thermogenic methane included in the deep mud erupted from mud volcanoes. The δ^{13}Corg also tend to decrease as it gets deeper at both MV#2 and MV#3, especially around 10cm depth. The sharp decrease of the δ^{13}Corg under to 10cm may be caused by hemipelagic sediment or organic matter originated methane oxidation.

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