

## Geochemical study of diversity and distribution of ecosystem sustained by hydrothermal and cold seep discharge fluids

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In contrast to abyssal zone where is believed vast, desert-like habitats i.e., quite low diversity and biomass, deepsea hydrothermal vents and cold seeps sustain huge population of characteristic and endemic benthic organisms. Those benthic community, called chemosynthesis-based community, has been supported primarily by chemosynthetic and methanotrophic microbial production, which use some reduced chemical species and methane emitting from the vents and seeps as energy source. Especially at hydrothermal system we usually focus on venting hot fluid as sole energy source for such benthic community, however, benthic animal community is sometimes spreading widely far from the vents. In addition some common benthic organisms observed usual deep seafloor can be found slight densely around the vents and seeps. Those common organisms may be also supported by the chemosynthetic and/or methanotrophic microbial production. It means that such fluid discharge zone, i.e., hydrothermal vents and cold seeps, possibly support larger biomass once expected. In order to clarify how and what support the common benthos and chemosynthesis-based community observed around deepsea vents and seeps, we conducted geochemical analysis using stable isotopes of C, N, and S composed soft tissues of organism samples. As a result, many common benthic organisms observed around the vent fields rely on chemosynthesis-based products and some vent and/or seep endemic species have secondary energy and food sources other than primary energy source, venting or seeping fluids.

Keywords: TAIGA, Chemosynthesis-based animal, Stable isotope