

Biogeochemical Feedbacks of Marine Methane Seeps in Aotearoa / New Zealand

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In the past decade, thousands of sites of seafloor fluid expulsion have been identified around the world. The marine environment of Aotearoa / New Zealand features a diversity of such features, which form dynamic environments with varied influence across vertical and horizontal spatial scales[1,2]. This includes hydrate-fuelled cold seeps, coastal gas seepage and hydrothermal venting. With focused studies within the Hikurangi Margin and the Taupō Volcanic Zone we have explored the fate of methane in the benthic-pelagic system across a gradient of environmental conditions. In this talk, we will: (i) investigate the fate of these fluids, including contributions to ocean acidification, deoxygenation, and atmospheric carbon reservoirs; (ii) identify how varied flow regimes manifest in different biogeochemical feedbacks; and (iii) consider how these processes may change under future climate scenarios. As climate change and human disturbance continues to impact ecosystem function and biogeochemical processes in the ocean realm [3,4,5], it is essential that we understand the inherent variabilities and sensitivities of the marine methane system.

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