



## Comparative Analysis of Vertical Geochemical Profiles in Methane Charged Marine Sediments

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Shallow, high-resolution porewater geochemical profiles in coastal sediments collected from the mid Chilean Margin, the Gulf Coast of the United States, and the Hikurangi Margin, New Zealand are compared to investigate differences in apparent fluid and gas fluxes between the regions. The data presented is the result of geophysical surveys and research cruises conducted over the last 5 years as part of an effort to combine seismic and shallow sediment geochemical data to survey coastal sediment methane hydrate distributions in both active and passive margins. Data includes porewater (headspace) methane, sulfate, dissolved inorganic carbon (DIC), and sulfide profiles. Considering the physical and biological factors such as such as sulfate reduction associated with and independent of anaerobic methane oxidation (AOM) that control shallow sediment porewater profiles, rough estimates of apparent fluid and methane fluxes are made for each site. These results are coupled with additional analysis of methane source(s), shallow sediment carbon source(s), and sediment organic carbon composition. These biogeochemical data are combined with heatflow data and seismic profiles to assist in the interpretation geochemical profiles and to assist in identifying the factors controlling variations in the vertical fluid and methane fluxes between the different locations. These data will provide information on biogeochemical pathways utilized during in situ methane and organic carbon oxidation, methane gas flux and export rates in sediments and assist with interpreting seismic and thermal conductivity data.