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Carbon isotopic signatures in benthic foraminifera bio- and tanathocenosis from methane-soaked sediments in Guaymas Basin, Gulf of California

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Recent results from an extensive ROV-based exploration along the NE transform margin of the Guaymas Basin in the Gulf of California unveil at least two patterns of carbon isotopic assimilation into the benthic foraminiferal tests along known gradients of present methane venting. Cores were retrieved from: a (i) vigorous methane venting site visible by a continuous emanation of gas bubbles from the seafloor at 1,582 m depth of water, (ii) beds of living calyptogenid clams, (iii) white bacterial mats, commonly found on exposed strata on the flanks of the basin, and (iv) background sites at the same depth in the neighboring slopes of Guaymas Basin. Oxygen and carbon isotopic ratios were determined from Rose bengal-stained and non-stained specimens of *Uvigerina peregrina*, *Planulina w¸llerstorfi*, *Globobulimina pacifica*, and *Bulimina mexicana*. Dissolved inorganic carbon isotopic values measured in several pore water samples extracted from sediments range between -2.9% to -35.85%. The most depleted values indicate that while some methane derived carbon has entered the authigenic DIC pool within the seafloor sediments during early diagenesis, there is no record of the assimilation of this carbon on the calcitic shells of living benthic foraminifera. Here we will further compare the carbon isotopic composition of stained (living) foraminifera shells and non-stained tests to show the patterns of carbon assimilation and early diagenetic imprint of both assamblages. These results question the extent to which strong carbon isotopic depletion signals in the geological record are features recorded by living foraminifera or the result of a posterior diagenetical imprint.