

Dissolved B-vitamins in coastal marine sediments of San Pedro Basin, CA

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The suite of B-vitamins are essential across all domains of life for both central and secondary metabolism including such critical processes as external electron transfer, carbon fixation, DNA repair, and methyl transfers. Despite this, their distribution in the marine environment remains relatively unconstrained. While some organisms can synthesize their B-vitamin requirements other must scavenge them from the environment, and in some regions of the surface ocean they have been shown to be limiting [1]. Additionally large portions of the surface ocean are below dissolved detection limits [2]. In contrast some of these vitamins have been found in fairly high concentrations in marine sediment [3] and thus understanding their distribution and production in marine sediments is essential to understanding biogeochemical cycles. Here we present data from sediment cores collected from San Pedro Basin (SPB), in the California Borderlands in September 2014 and show dissolved pore water concentrations of B-vitamins measured via high performance liquid chromatography paired with a triple quadrupole mass spectrometer (LCMS). We compare the B-vitamin profiles to a set of geochemical parameters including dissolved organic carbon (DOC) measured via TOC-V which match well with previously measured concentrations (0.5-1.0 mM) as well as a set of dissolved trace metals measured on ICP-MS which fell within expected ranges for Fe (65-160 μM) and were exceedingly low for Mn (30-300 nM). Our results demonstrate the dynamic nature of B-vitamins and their putative connections to important sediment microbial processes.

[1] Bertrand and Allen (2012) *Fron Microbiol* **3**, 1664-302X.

[2] Sañudo-Wilhelmy *et al* (2012) *PNAS* **109**, 14041-14045.

[3] Monteverde *et al* (2014) *Fron Microbiol* in review.