

Nitrogen-fueled Chemoautotrophy in the Dark Ocean

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Abstract

The sun is the primary source of energy that fuels microbial foodwebs in the surface ocean. But in the dark ocean below, many microbes make a living by harnessing chemical energy from reduced compounds and using that energy to fix inorganic carbon into biomass. One of these chemoautotrophic processes is nitrification, which includes the microbial oxidation of ammonia and nitrite. Recent reports of high rates carbon fixation in the deep ocean are at odds with the rates of nitrogen supply to the deep ocean. I will synthesize available data about the rates of nitrification in the deep ocean and its relationship to sinking material flux in light of these recent findings to explore the constraints on chemoautotrophy in the deep ocean.