

Microbial control of carbon flux in the meso- and bathypelagic zone

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Prokaryotes (bacteria and archaea) play important roles in major carbon flux of the meso- and bathypelagic zone. Previous studies have revealed that patterns on prokaryotic production and biomass in the meso- and bathypelagic zone displayed strong regional variation consistent with sinking particulate organic matter flux variations. In general, the prokaryotic organic carbon consumption accounted for 50 — 100 % of the sinking POC fluxes (Yokokawa et al. 2013 *Limnol Oceanogr*). However this prokaryotic mediated flux of carbon have yet to be incorporated explicitly in carbon flux models. Incorporation of prokaryote processes to carbon flux models has been partly hampered due to the paucity of large-scale, high-resolution geographical variation data regarding prokaryotic abundance and production distributions in the oceans. Here I present some highlights from my previous studies examining the variation in prokaryotic production and biomass across oceanic regions. I also discuss novel approaches for determining activities of a specific functional group of prokaryote.

Keywords: prokaryotic community, carbon cycle, microbial oceanography