



## **Complexity of grow-out experiments: further iron stimulation of planktonic communities from the iron fertilized mesoscale patch in the western sub-Arctic Pacific**

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Complimentary studies associated with the SEEDS-II iron enrichment experiment in the western subarctic Pacific Ocean indicate that the resultant ambient phytoplankton community remained iron-limited, despite the presence of elevated dissolved iron concentrations ( $> 0.5$  nM) from infusions. The growth potential of the planktonic community was monitored using deck-board incubation "grow-out" experiments conducted aboard the R/V Kilo Moana where both strong and weak iron-complexing ligands were employed, and the photosynthetic capacity and efficiency of the resulting communities were assessed using short-term, photosynthesis versus irradiance (PE) experiments. Multi-day grow-out experiments were designed to consider: (1) if additional iron would allow for additional and/or accelerated biomass accumulation, and (2) if altered forms of the iron-ligand complex added to the community would change the Fe-enhanced phytoplankton community structure. Our experiments indicated that the community in the iron-infused patch remained iron-limited throughout the entire in-situ, mesoscale experiment. Addition of iron in shipboard grow-out flasks alleviated the iron stress, presumably in a fashion not chemically identical to the re-addition of iron in situ. We also consider how the resulting grow-out communities varied physiologically both as a function of time, and in relation to the in-situ community. In other words, did iron infusion merely influence biomass accumulation, or were more dramatic changes in cell physiological state and community composition discernable

during the > 30 day mesoscale enrichment experiment?