

Preliminary experiment of ocean acidification in the western North Pacific

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Responses of marine phytoplankton to ocean acidification is reported from an on-board manipulation experiment in the western North Pacific (March 9, 2015; 41.9N, 146E). In this experiment, it is suggested that an increase in nano-/pico-phytoplankton and a decrease in diatoms under high pCO₂ conditions (1420 and 2850 μ atm; 1420 μ atm corresponds to Y2150 of AR5 RCP8.5 scenario), respectively. In this study, we parameterized the responses of phytoplankton to acidification, and conducted a simplified ocean acidification experiment using a 1D ecosystem model, MEM (Shigemitsu et al., 2012) at the Station A04 (42.15N, 145.07E). The results showed a potential of delay in spring bloom with decrease in the magnitude, and an importance of acidification on not only calcifiers but also on general phytoplankton.

Keywords: Ocean Acidification, Ecosystem Model, western north Pacific