

Poster Presentation

THE INFLUENCE OF A LARGE DIATOM (*Coscinodiscus wailesii*) VARIABILITY AND THE NUTRIENT CYCLE IN COASTAL WATER, THE SETO INLAND SEA, JAPAN

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The large diatom *Coscinodiscus wailesii* (160 μm -350 μm) is often observed and it becomes dominant when sea water temperature is low in the Seto Inland Sea, Japan. *C. wailesii* is also one of the harmful species that causes serious damage to Nori (*Porphyra*) culture, because *C. wailesii* depletes nutrients which are available for Nori.

In this study, we investigated the seasonal variations of *C. wailesii* biomass, its chemical components (carbon, nitrogen, phosphorus, silicon and chlorophyll *a* content) and evaluated the influence of *C. wailesii* bloom on the phytoplankton assemblage in spring after the low temperature period.

The cell density became a maximum in late winter and at that time the nutrient concentrations were lowest in the year. On the other hand, *C. wailesii* nearly disappeared from water column in other seasons. C:N:P:Si ratio of *C. wailesii* resulted 103:15:1:52. Our result suggested that *C. wailesii* has higher silicon content (about 3.5 times) compared to other diatoms (106:16:1:15, Brzenzinski 1985). Moreover the measurement of Chl *a* content of *C. wailesii*, it was estimated that *C. wailesii* could account for 0 to 67% of the Chl *a* standing stock in the water column. Actually, the decrease of Si(OH)₄: DIN ratio was observed after the *C. wailesii* bloom. Moreover, in the culture experiments, pico-plankton (0.2-2.0 μm) size which were consist of small flagellates became dominant under low Si/N ratio. As the resulted, the Si:N ratio of particulate matter in the experiment showed lowest value (0.52) relative to other experiment district (Si=N: 0.74, Si>N: 0.93).

These results suggested that *C. wailesii* has a great role on phytoplankton biomass and nutrient cycle of the coastal water, particularly in late winter. The phytoplankton community is replaced by small flagellates and size distribution would be small, when *C. wailesii* become dominant. These changes may effect to predators of higher trophic revels in coastal ecosystem.