

Phytoplankton group-specific size structure and primary production in the Kuroshio waters by satellite observation

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Phytoplankton group-specific chlorophyll abundance, quantum yield of photosynthesis, primary production and cell size were analyzed using earth observation satellite data. Monthly climatology over 1998-2007 of these variables suggested that haptophytes were relatively abundant than diatoms and cyanobacteria in Kuroshio and surrounding waters. According to our analysis, primary production of diatoms in the waters were more regulated by its abundance than its quantum yield of photosynthesis whereas the production of cyanobacteria varied with its quantum yield than its abundance. The production of haptophytes was influenced by the both factors, showing a seasonal dependence. When the group-specific cell size was compared with the group-specific production, the largest primary production of diatoms tended to occur at its model cell size, whereas the largest production of haptophytes and cyanobacteria did not.

Keywords: Kuroshio, Phytoplankton, Primary Production, Satellite, size