

國立臺灣海洋大學
海洋環境與生態研究所 專題討論

題目：海洋擾動對夏季熱帶貧營養鹽海域之基礎生產力的影響

Effects of ocean disturbances on primary production in the tropical oligotrophic ocean in summer

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報告日期：09/21/2022

Abstract

Ocean primary production (PP) is an amount of organic carbon that phytoplankton transform inorganic carbon into by photosynthesis in the euphotic zone. Primary production not only can be used as an indicator of fisheries because of providing energy and nutrient to food chain, but also can fix carbon dioxide from the atmosphere and store in the deep ocean through biological pump to regulate global climate. However, physical mechanisms such as eddies and typhoons would disturb the ocean, and then affect PP and biological pump. In order to understand which size of phytoplankton lead PP and the effects of disturbances in the oligotrophic ocean, in summer of 2021/8/28-9/03, we conducted a survey of PP of total and small phytoplankton distinguished by 20 μ m size in the tropical Northwest Pacific Ocean where often occurs large-scale ocean disturbances. According to the results, total PP in the euphotic zone is between 142.95 and 245.98 mgC m⁻² d⁻¹, with an average of 182.65 \pm 39.27 mgC m⁻² d⁻¹, of which PP of small phytoplankton account for about 85%. Furthermore, the relation between total PP and the mixed layer depth has strong positive correlation, shows that the stronger the ocean disturbances, the higher the primary production.