

國立臺灣海洋大學
海洋環境與生態研究所 專題討論

中文題目：馬祖海域矽藻群聚組成的時間變動並著重在 *Pseudo-nitzschia* 藻華

英文題目：Investigating Temporal Dynamics of Diatom Communities in the Matsu Archipelago, with emphasis on *Pseudo-nitzschia* blooms

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Abstract

Diatoms, which are unicellular eukaryotes that perform photosynthesis, and have the ability to convert CO₂ into organic carbon. The diatom genus *Pseudo-nitzschia* may produce domoic acid, which has the potential to impact human health. The Matsu Archipelago is situated in an eutrophic estuary off the Minjiang River, where harmful algal blooms (HABs) frequently occur. The objective of this study is to explore the variations in diatom communities over time, with a focus on *Pseudo-nitzschia* blooms, in the Matsu Archipelago by employing both 18S rRNA V4 amplicon (qualitative method) and microscopic observation (quantitative method), and to understand the mechanisms underlying bloom formation. Sampling was conducted 91 times from August 2021 to June 2022. The maximum diatom abundance was observed in early June 2022, reaching 4.3×10^5 cells L⁻¹, and the predominant genera were *Chaetoceros* and *Pseudo-nitzschia*. Another diatom bloom was observed at the end of September 2021, with *Pseudo-nitzschia* accounting for 88% of the total diatom abundance. The 18S rRNA amplicon data identified *P. cuspidata* as the dominant species in September, while *P. pungens* was dominant in June. *Pseudo-nitzschia* were more prominent in the 3-20 μm size fraction compared to the 20-200 μm size fraction. Canonical correlation analysis (CCA) demonstrated that the abundance of *Pseudo-nitzschia* in both size fractions correlated strongly with light.