

Temporal and spatial variability in photosynthetic parameters of phytoplankton: a FRRF study

Research article (work in progress)

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We investigated the variability in photosynthetic parameters during a number of 13h tidal cycles at different stations and during different times of the phytoplankton bloom dynamics in the Dutch Western Wadden Sea (Marsdiep basin). Results show that, although temporary stratification exist in this highly turbid tidal basin, Chla and photosynthetic parameters obtained using FRR-fluorometry did not vary with depth. A tidal signal was sometimes observed. Horizontal variability in biomass was observed, suggesting that the Marsdiep basin is not a homogeneously stirred basin. Horizontal variability in photosynthetic parameters was limited, apart in May when station 6, located near the Afsluitdijk and above a depositional area rich in fine sediments and silt, clearly had higher rates of specific photosynthesis parameters. The results show that a good estimate of the phytoplankton activity can be obtained from the Jetty, but that upscaling of primary production obtained from the jetty requires knowledge about the spatial distribution of phytoplankton.