

DYNAMICS IN DIATOM POPULATION ABUNDANCE AND ACTIVITY INFERRED FROM STABLE ISOTOPE LABELING OF PHOSPHOLIPIDS FATTY ACID BIOMARKERS IN THE DUTCH WADDEN SEA

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Marine diatoms are major players in carbon sequestration; it is therefore important to understand how planktonic diatom communities change with fluctuations of environmental parameters. To explore community changes, we used ¹³C stable isotope labeling of phospholipids derived fatty acids (PLFA). Fatty acids are ubiquitous in living organisms, and due to their biological specificity, they can be used as biomarkers for marine primary producers and as tracers of organic carbon in estuarine food web.). Planktonic diatom communities were studied in the Dutch Wadden Sea at different temporal scales (tidal and seasonal: February, March, May and September 2010) and also spatial scale, 5 different locations were sampled. Objectives of this study were (1) to follow changes in natural diatoms abundance and activity resulting from changes in environmental parameters, and (2) to characterize quality food resource for higher trophic level. In general, results showed that diatom was a major and most productive group in the entire phytoplankton community. Overall, no tidal effects were observed in diatoms populations. Spatial and seasonal variability in environmental parameters suggested a major role of temperature and had an impact on the activity of enzymes PLFA desaturase and elongatase. Increase of abundance and C incorporation are found in diatoms through the year.