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Effects of Si limitation on cellular carbon fluxes and frustule composition in the marine diatom *Skeletonema marinoi*

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Si limitation applied on the marine diatom *Skeletonema marinoi* entailed a decrease of the whole lipid, protein and carbohydrate pools and affected exopolysaccharides excretion while the β-1,3 glucan pool which corresponds to the main energetic organic carbon stock was not modified. Contrary to the biochemical pools, the carbon fluxes estimated by using ^{14}C labelling were weakly influenced by the limitation. The composition of the frustule was studied in more details. The frustule was divided in three fractions as a function of dissolution properties and the carbon composition and fluxes were followed in these different fractions. Protein contents and carbon fluxes were modified due to the limitation. An increase of the protein content was measured in the most labile fraction of the frustule under the limitation. These results indicate a reorganization of the carbon matrix of the frustule in parallel with a decrease of BSi. Such regulation may affect the frustule resistance against grazing as well as the properties of remineralisation and preservation of Si and/or C pools.