

Effect of increased CO₂ and dissolved iron on primary productivity and inorganic carbon uptake during a bloom of the coccolithophore *Emiliana huxleyi*

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Net primary production (NPP) and inorganic carbon uptake were analysed during a bloom of *Emiliana huxleyi* in mesocosms. The experiment lasted 25 days and was carried out in the Raunefjord off Bergen (Norway, June 2012) in order to investigate the interactive effects of increased CO₂ and iron availability on the phytoplanktonic community. For this purpose two different partial pressures of CO₂ corresponding to present (390 ppmV) and predicted levels for year 2100 (900ppmV) (LC and HC respectively) were used. The siderophore desferoxamine B (DFB) was added to half of the mesocosms to create two different iron conditions (+DFB and -DFB). Three mesocosm bags were used for each treatment. NPP was estimated using short-term ¹⁴C uptake assays. The isotope disequilibrium assay (ID) was used to determine the relative fraction of HCO₃⁻ and CO₂ uptake in concentrated cell suspensions. Short-term cellular ¹⁴C fixation was monitored during a transient disequilibrium between ¹⁴CO₂ and H¹⁴CO₃⁻ in solution, and so, the fraction of HCO₃⁻ uptake (*f*) and the rate of extracellular CO₂: HCO₃⁻ interconversion (*α*), as a measure of extracellular carbonic anhydrase activity (eCA), were calculated. Further details will be discussed.