

## Effect of increased CO<sub>2</sub> and iron levels on the marine plankton food web during a mesocosm experiment

Segovia M, Lorenzo MR, Maldonado MT, Larsen A, Lázaro FJ, Iñiguez C, Palma A, García-Gómez C, Berger SA, Mausz M, Simonelli P, Tsagaraki T, Ray J, Fernández JA, Gordillo FJL, Egge J.

A mesocosm experiment was carried out in the Raunefjord (Norway) during 25 days, to investigate the interactive effects of increased CO<sub>2</sub> and iron availability on the plankton community. The seawater carbonate system in the mesocosms was manipulated to achieve two different CO<sub>2</sub> levels, corresponding to the present (390 ppmv, LC) and to levels predicted for year 2100 (900 ppmv, HC), in combination with ambient and increased dissolved Fe (dFe) concentrations in a full factorial design. We observed a shift in the plankton community structure, initially dominated by picoeukaryotes and small nanoeukaryotes, changing to an *Emiliana huxleyi* dominated bloom. *E. huxleyi* and *Synechococcus* were the most sensitive organisms to changes in CO<sub>2</sub> and Fe levels, being negatively affected by increased CO<sub>2</sub> and favoured by high dFe levels. Picoeukaryotes, large nanoplankton, viruses and ciliates abundances were not affected by changes in CO<sub>2</sub> or dFe levels. Bacterial abundance showed a significant positive response to high CO<sub>2</sub> but it was unaffected by dFe. Total mesozooplankton abundances did not change significantly. The relevance of these results within the global change scenario will be discussed.