

Interactive comment on “Phytoplankton dynamics in contrasting early stage North Atlantic spring blooms: composition, succession, and potential drivers” by C. J. Daniels et al.

Anonymous Referee #1

Received and published: 12 February 2015

This is a well-written manuscript that provides and interprets a comprehensive in-situ dataset of phytoplankton production and species composition (including microzooplankton) from two different sites in the North Atlantic during pre-bloom conditions. These data complement and acknowledge the importance of the comparison with larger-scale satellite-derived data. The availability of the full dataset from Pangaea.de is particularly valuable (although I was not granted access despite being logged in to Pangaea?) to the wider scientific community and should allow the data to be used further e.g. comparison with other 'pre-bloom' datasets (cruises; time-series stations); modelling carbon fluxes, trophic cascades. The authors use and exploit a wide range of literature and explain the various theories behind the onset of the spring phytoplank-

C187

ton bloom well, particularly in the North Atlantic. However, I recommend the authors include and consider the net heat flux (NHF) as a trigger for the spring bloom (e.g. Smyth et al 2014 Ocean Net Heat Flux influences seasonal to interannual patterns of plankton abundance. PLoS ONE 9(6): e98709). Does the NHF explain the shifts in productivity and composition of the different size fractions in this study? The authors enumerated ciliates and dinoflagellates and refer to the microzooplankton as potentially important grazers of the phytoplankton and I suggest more could be made on the importance of grazers (micro- and mesozooplankton) in controlling (or otherwise) the onset and composition of the spring bloom.

Specific comments: Methods section 2.1: can the authors state how many times the two stations were sampled and negate the use of 'repeatedly'? Methods: General suggestion that where possible state how many replicate samples were taken e.g. 13C, Chla, PIC etc Section 4.4, p115, L6: spelling mistake 'out' should be 'our'

Interactive comment on Biogeosciences Discuss., 12, 93, 2015.

C188