

**Authors reply:**

We would like to express our thanks for the overall positive and very helpful comments of the three reviewers. We carefully considered all suggestions made and altered the manuscript accordingly, which we trust greatly improved its overall quality.

Our paper represents the first field experiment addressing ocean acidification effects on iron chemistry. All reviewers stressed the validity of the work despite obvious problems that a multidisciplinary large scale mesocosm experiment brings with regard to trace metal cleanliness for a study addressing iron chemistry. In our revised version we now expanded the methods section and clarify that all iron chemistry sampling and sample processing was performed using appropriate trace metal clean protocols. However, the dimension of the overall mesocosm experiment did not allow for keeping the complete mesocosm system, composed of nine enclosures (9.5 m deep, 2 m diameter), trace metal clean and resulted in an iron input into the incubations. Nonetheless, the study was not conducted in iron limiting conditions and as the reviewers point out our results are significant, showing clear trends that allow for interpretation as effects of the CO<sub>2</sub> treatments.

The observations of increased dissolved iron and Fe(II) concentrations during and after phytoplankton blooms in the high CO<sub>2</sub> treatments raise further interesting questions that can not all be addressed in this paper. Especially, the roles of reactive oxygen species, hydrogen peroxide, as well as phytoplankton derivatives for Fe redox cycling at different seawater pH need to be addressed in specifically designed laboratory experiments. Likewise, we can only speculate on the role of organic Fe(III) complexation versus small iron colloid formation on dissolved Fe concentrations at low seawater pH. It is plausible that phytoplankton derivatives differ among the treatments to a larger extent than biomass does. At this stage we do not know what actually caused the increase in dFe concentrations, but given the bloom situation it seems most likely that changes in dFe concentrations are at least strongly affected by biological processes. However, based on the reviewers' comments we now revised our introduction and discussion including these topics where possible.

Detailed replies to all the reviewers' comments will be submitted along with the revised version.