

Answers to comments from M. van Hulten:

Could you add a figure of the satellite-observed phytoplankton blooms, such that it is at the beginning of the manuscript more or less clear what the effect of the eruptions is?

We added the following figure to the revised manuscript:

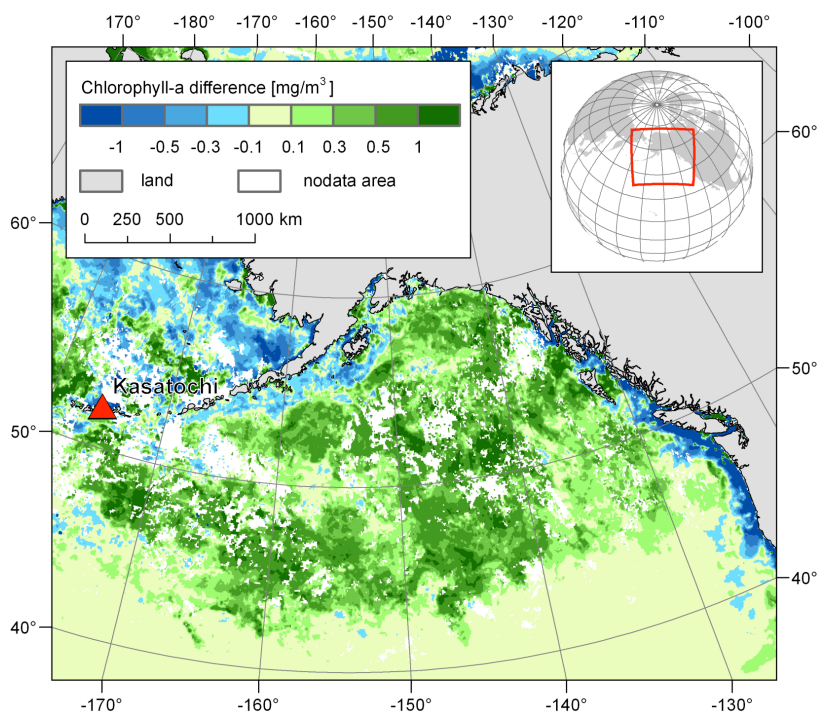


Fig. 1. (Fig. 1 of the revised manuscript) MODIS Aqua chlorophyll-a [mg/m³] in the NE Pacific: August 2008 monthly mean minus average monthly mean 2002-2007.

From the captions in figs. 4, 5 and 6 it is not clear whether these are simulated/ modeled concentrations or observations. Of course these are modeled concentrations since it describes two experiments, but please note this in the caption.

Added to the figures caption.

Also I would like to see some visual comparison between model and observations. Would this be possible for Fig. 4?

This is not possible, as measured vertical profiles of phytoplankton are not available. But we included a figure to the revised manuscript comparing monthly mean MODIS Aqua chlorophyll-a measurements with model results from the first 10 m of the surface ocean:

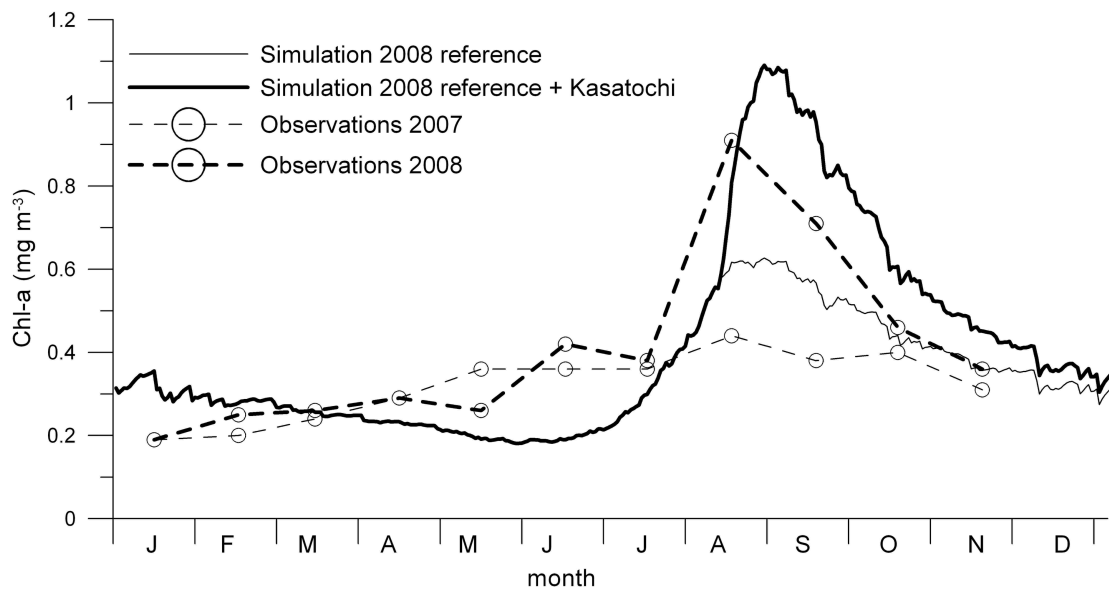


Fig. 2 Comparison of observed Chl-a concentrations at Papa for 2007/2008 (Hamme et al., 2010) and simulated Chl-a concentrations for 2008 with and without iron fertilisation in August 2008.

In Fig. 8, could you add model results from the experiment without iron fertilisation?

This dataset is already presented in the original manuscript in Fig. 10 as part of the sensitivity study with different iron supply rates. We think that Fig. 10 is more suitable for this dataset than Fig. 8, because in Fig. 8 measurement data for 2007 and 2008 are presented and model results for 2007 are not available.

References:

Hamme, R. C., Webley, P. W., Crawford, W. R., Whitney, F. A., DeGrandpre, M. D., Emerson, S. R., Eriksen, C. C., Giesbrecht, K. E., Gower, J. F. R., Kavanaugh, M. T., Pena, M. A., Sabine, C. L., Batten, S. D., Coogan, L. A., Grundle, D. S. and Lockwood, D.: Volcanic ash fuels anomalous plankton bloom in subarctic Northeast Pacific, *Geophys. Res. Lett.*, 37, L19604, doi:10.1029/2010GL044629, 2010.