

Interactive comment on “The role of airborne volcanic ash for the surface ocean biogeochemical iron-cycle: a review” by S. Duggen et al.

Anonymous Referee #2

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Referee comment on “The role of airborne volcanic ash for the surface ocean biogeochemical iron-cycle: a review article” by Svend Duggen et al.,

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General comments - This manuscript submitted by Duggen et al is a review article of the work that have been done on the interaction of volcanic ash and ocean sea water since it was initiated by Frogner et al., (2001). A review article of the work is needed as this research field is important for a better understanding of the biogeochemical iron-cycle. I thus welcome this article after a minor revision in the Journal of Biogeosciences. The manuscript is well written, informative and will be of use to scientists from a wide range of disciplines. I have a few minor suggestions and comments, which are detailed below.

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Specific comments Section 4.1.2 - Hekla erupted on February 26th 2000 and the ash was falling like snow when the samples were collected. My experienced colleagues Niels Oskarsson, Karl Grönvold and Freysteinn Sigmundsson helped me in finding a suitable sampling location 11 kms NNW of the summit of the volcano. It was sub zero degrees which preserved the ash and the ash layer sampled was thick enough to avoid contamination from the snow below. The proximity in time and location of the eruption of Hekla meant that the sampling conditions were optimal. The ash was not a snow-ash mixture and it had most likely not served as nuclei for ice growth. It is thus a misunderstanding that the high release of Fe in Frogner et al (2001) is to be interpreted as due to contamination of snow which is suggested by Svend Duggen and co-authors. It is very important that this is corrected in order to get a fair report of high quality in this review article. I agree with Svend Duggen and co-authors that the number of pristine volcanic ash samples currently tested are extremely few. That means an apparent problem in the statistic basis in order to discuss which level of Fe release, if any, is deviant. I think this fact could be stressed more in the review article.

Yours sincerely Paul Frogner Kockum

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