

Interactive comment on “High variability of dissolved iron concentrations in the vicinity of Kerguelen Island (Southern Ocean)” by F. Qu  rou   et al.

Anonymous Referee #1

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General comments: This manuscript shows the concentrations of dissolved ($<0.22 \mu\text{m}$) Fe in the water column (up to 1300 m) of the Kerguelen Island (covering coast to off-shore waters). The authors attempt to explain the high variability of Fe concentrations found in this part of the southern ocean. Although dataset is valuable I think that the author do not provide enough insights to demonstrate the sources and reasons for the variations of Fe concentrations. Although most of the hypotheses presented could be perfectly valid, they are hardly demonstrable with the data presented. For example, the higher concentrations measured close to the seafloor are justified by resuspension of sediments and porewater release, however other potential sources such as hydrothermal vents existing in the area are not considered in this case. As indicated

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by the authors since particulate Fe concentrations were not measured it makes difficult to confirm this hypothesis. Although I agree that biological uptake was probably the main responsible of the temporal decreasing of Fe above the plateau, other aspects influencing the concentration of Fe such as the presence of krill and/or whales (eg. Tovar-Sanchez et al. GRL 34 L11601, 2007; Nicol et al. Fish and Fisheries 11, 2010) should be, if possible, considered or discarded. Authors include atmospheric inputs as additional source, however the study only includes backward trajectories air masses without providing any chemical aerosol measurement. In the conclusions section the authors state that atmospheric inputs were negligible during KEOPS2 cruise however this paper does not present any data that confirm this fact. In summary, I believe that the authors present a valuable data set that could provide important information about the biogeochemical cycle of Fe in this part of the southern ocean, however I think that additional data (some of them are presented or under evaluation in separately papers as part of the special Issue) are necessary to support the main findings presented here.

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