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Comment

## ***Interactive comment on “Sourcing the iron in the naturally-fertilised bloom around the Kerguelen Plateau: particulate trace metal dynamics” by P. van der Merwe et al.***

### **Anonymous Referee #2**

Received and published: 22 October 2014

[General comments] The authors present data on particulate Fe (pFe), Mn (pMn), Ba (pBa) and Al (pAl) in seawater, sediments and sinking particles, and then try to clarify possible transport routes of pFe in seawater around the Kerguelen Plateau. Through their careful evaluation of the data, they conclude that there are the several transport routes including sediment resuspension, glacial/fluviol inputs etc.. The paper is well written and the arguments made are well thought out. I have only a few suggestions. I recommend publication with minor revision. The authors digested filter samples using only HNO<sub>3</sub>. On the other hand, they use HF in addition to HNO<sub>3</sub> to decompose sediment samples. If HF is not used even in decomposition of filter samples, lithogenic fraction seems not to be completely digested. That is seemingly true for the measure-

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ments of the certified reference material, BCR-414, and the analytical precision for Al is extremely poor. When the authors aim to identify the possible transport routes of pFe in seawater, they rely on the elemental ratios of filter, sediment and sediment trap samples. Thus, I think that they should discuss the influence of the difference in digestion method between filter, sediment and sediment trap samples on their interpretation about the sources of pFe in seawater.

[Specific comments] (1) Line 19 on page 13400: The reference of upper crustal ratio of Fe to Al is needed here. (2) Lines 27-28 on page 13403, Lines 1-2 on page 13404: Which sample ratios do "the unique ratios" indicate? The ratios at station R-2? If so, I couldn't understand the part regarding "a combination of extremely high pFe and pAl supply over the Kerguelen Plateau.." because the R-2 station is located hydrographical upstream of the Kerguelen Plateau. (3) Lines 15-16 on page 13405: I recommend the authors to show each metal ratio of upper crust and basalt. (4) Lines 23-25 on page 13406: Do the authors measure particulate phosphorus of their samples for the calculation written here? (5) Lines 19-21 on page 13407: How can the author calculate the fraction of authigenic sediment within each sample by the calculation method written here? I think that the amounts of Mn and Al of sediments added to suspended particles are mixed with other components Mn and Al, which seems not to allow the authors to use the method. (6) Lines 14-18 on page 13410: Before this part, the authors state that pAl is stripped out preferentially with settling lithogenics (Lines 16-17 on page 13408), but here that kind of thing is not referred to. Why?

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