

## ***Interactive comment on “Little Ice Age climate and oceanic conditions of the Ross Sea, Antarctica from a coastal ice core record” by R. H. Rhodes et al.***

**Anonymous Referee #2**

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I have read with great interest the paper of Rhodes et al. on “Little Ice Age climate and oceanic conditions of the Ross Sea, Antarctica from a coastal ice core record” submitted to CPD. The MS shows an incredible amount of data obtained with modern sampling methods (melting device for discrete aliquots) and state of the art analytical techniques, especially for trace elements determination. However despite the great effort to obtain the results it seems to me that much more could have been done in the interpretation, using more appropriate statistical techniques (and not simply a Pearson’s correlation) such as PCA and so on. I think that this would strongly improve the quality of the MS, allowing to obtain additional (hidden) information from the data set. This may improve the interpretation of the LIA part of the core. Most of the TE data

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are in fact not used at all. I would suggest to upload the full data set in order to have it accessible by other researchers. ICPQMS is used for the determination of a suite of ca 30 elements in the snow/ice samples. It is one of the very few times that I see Antarctic samples quantified by using a quadrupole instrument and I was wondering about the detection limits, since TE concentrations in Antarctica are incredibly low. I would suggest a careful comparison of this method with the one used in literature by using ICP-SFMS. While looking in Table 1 I see for instance that the procedural blanks for Ti and MS- (detected with IC) are 0.00. This has no sense from an analytical point of view. It should be reported as < dl. A few records of trace elements (and isotopes) in Antarctica have been produced by Korean, Italian and French groups. These are supposed to be the only reliable results so far obtained for TE in Antarctica. I would recommend to make a comparison with the literature data, whenever possible. I strongly recommend the authors to improve the manuscript according to the suggestion above

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