

Interactive comment on “A new device to mount portable energy dispersive X-ray fluorescence spectrometers (p-ED-XRF) for semi-continuous analyses of split (sediment) cores and solid samples” by Philipp Hoelzmann et al.

Anonymous Referee #1

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General Comments: The manuscript describes a new device for on-site analysis of split sediment cores by x-ray fluorescence with portable state-of-the art instruments to which it appears to be easily adaptable. The authors convincingly illustrate that such a simple adaptor may be very useful in many field studies of geo-archaeological investigations. This justifies publication in a journal devoted to Geoscientific Instrumentation.

Specific Comments: Prior to publication, some clarifications and changes are recommended: The present version seems to be the instrumental section of a more general publication in Quaternary International, in this text referred to as “Klein et al. (2016 in

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press)”. It is recommended to clearly state the relation to that article in the introduction. It may be helpful also in the sense that, in case some of the used terms and/or abbreviations are not explained, a more detailed description/explanation may be found there.

Besides the close link to the article in press “Klein et al., 2016” which is about the geoscientific research result in more general and basic terms, the manuscript presented here should be a contribution on “its own”, by which it is meant that it should be inherently consistent. For that purpose a few explanations should be included which one only finds mentioned in the reference (Klein et al., 2016) and not here, like:

1. define b.s. (below surface?) or below sea level?,
2. define TOC (Total organic carbon?),
3. define TIC (Total inorganic carbon?).

Additionally:

4. Since the exact arrangement of most likely stacked foils for use as appropriate filters for different element regions of the periodic system of the elements is perhaps not revealed by the NITON company, at least a general description of the choice of filter and voltage combination to enhance certain elements or groups of elements should be added to the description of the XRF measurements. Because of the rather sophisticated filtering for enhancing different elemental groups extracting concentrations, as given e.g. in Fig.5, may not be straight forward.

5. A description of how the other elements, not detected by XRF like C, are determined, is missing here in the manuscript, but given in (Klein et al., 2016), at least a word must be said about it.

Technical corrections: 1. The authors should find a way to avoid stating the “German industrial property right No. etc.” in all detail repeatedly.

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2. There should be a common way to give a reference, it appears to be as (author et al.,year). It should be used consistently, not varying. If “in press” has to be added, it may be sufficient to add this comment once, in the list of references.

3. p.2, line 12: instead of “ca.” use “approximately”.

4. P.7, line 24: “higher than in units I and II. . .” sounds inconsistent under the subtitle 3.1.1. Unit I.

5. p.10, line 18: relatively.

Final remark: In their conclusion the authors may add, as kind of an outlook, that this simple adapter for a p-XRF may easily be computer controlled with a stepping motor (even on-site) to simplify the scanning step-by-step in 1-cm steps over 35 hours (time given in the manuscript).

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., doi:10.5194/gi-2016-33, 2016.