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Interactive comment on "OCTOPUS: An Open Cosmogenic Isotope and Luminescence Database" *by* Alexandru T. Codilean et al.

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Dear OCTOPUS authors,

Thanks for your great initiative.

Unfortunately, I became a little bit too late aware of this manuscript and the ongoing open discussion. Besides, I received several announcements about the existence of the database, and I played with the system some weeks ago. So here some brief last-minute thoughts on the manuscripts and the system'. I am mainly based in the luminescence dating community; hence I will focus only on this part.

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Discussion paper

1 The OCTOPUS system

1. I found it surprising that I could not access all information by only using the web interface. Regarding luminescence age information, e.g., Study ID 'L101' returns:

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OCTOPUS ID: L119TL014
Sample ID: W1944
Study ID: L101
Author:  Tooth
Year:  1997
Reference ID: PhD_Thesis
DOI: NA
Published Age (ka):  43.6
Age Uncertainty (ka):  -999.999
Method:  TL
Mineral:  Q
```

   This extract above is the full dataset shown. Even the developers of the database are not responsible for the data quality or the information given in first place, such dataset is not helpful beyond 'someone did some dating work in that area'. In particular, if I would be interested in the age information, I probably would have difficulties to find the cited PhD thesis, since the given reference is incomplete. I see the point that with an existing DOI the problem disappears, however, if no DOI exits such reference would not meet basic citation standards. I have no idea how much effort it would take to complete the entries (or how many are affected), but I guess you have all data at hand and I can only encourage you to make an effort and provide more complete references. Apart from it, I see the benefit having dates included that are not accessible otherwise, and I appreciate it.

2. I have to admit that I am not in favour of the concept that I can only access

the full dataset by downloading the data (even such option should doubtlessly exist). I see two problems: (1) In the first place, I thought that the dataset shown in the web interface is complete; that the download option provides additional information is not apparent. Maybe you can show the full record for each entry? (2) On page 6, (line 32) you wrote that "Entered information is stored in a log file permanently.". This is some kind of subscription model, without a subscription fee though, but it should therefore not be called 'open'. Nevertheless, the first reviewer commented already on this aspect, and I strongly support his comments. Maybe you could state what you are going to do with the collected information and why it is indispensable to collect these data and store them permanently. I am sure you have your reasons, but the reader (and the user) should know about it. Side note: since you are offering your service to EU citizens your data storage has to comply with the General Data Protection Regulation, after a period of transition the law became fully implemented on May 25th, 2018. I recommend double-checking your personal data storage policy against this background.

3. I saw no IRSL (or post-IR IRSL) data in your database, or maybe I did overlook them. Perhaps you can elaborate a little bit why you have chosen to limit your database (for the moment) on OSL and TL data only? Same applies to other luminescence dating techniques.

4. The information given for the luminescence data do not allow a comparison of ages for various reasons, but this is a problem of missing reporting standards in the luminescence dating community. You stated this somehow in the manuscript; perhaps you can stress it again in the conclusion section.

2 The manuscript

2.1 Introduction

- Although the OCTOPUS database has, to my knowledge, the most beautiful web interface, the concept (regarding luminescence ages) is not new (Burke et al., 2013; Lancaster et al., 2015). So, what I do miss in the introduction is that you discuss why you start (another) database? What are you going to do better? What are the differences of the concept etc.? I don't think a long paragraph or even an own section is needed, but it would be good to draft a few conceptional thoughts, to explain your rationales to the reader.
- Did you used data from the 'AustArch3' database?
- I suggest rephrasing of the sentence "This delivers the potential to harness old but valuable data that would otherwise be 'lost' to the research community.". I see your point, but this statement is a little bit exaggerated given the online availability of most journals these days.

2.2 Sec. 2.2 'Luminescence dating of sediment'

This section is a little bit odd and probably need modifications.

- Your references have a strong bias towards studies in Australia, I suggest to keep it more general. Citations in this section should refer to methodological work published in, e.g., Quaternary Geochronology or Radiation Measurements; if needed at all. For example, I cannot see why you need five citations to prove that young events can be dated if you have cited Aitken (1998) before.

- Wildfires have indeed a potential to be dated by TL; however, I would not call it a typical application for this method
- Page 4, line 27: what are 'fine mineral grains'?
- In the last paragraph of the section (line 31 onwards) you talk first about multi-grain aliquots (you wrote 'multiple grains' which could mean something different), and then you started arguing with the need for age (dose) models to asses partial bleaching of grains. So far I cannot see why do you need this paragraph. It comes a little bit out of the blue and is more confusing than helpful. What should the reader do with this information? Even you state which model was used in the database, it will not help to asses the quality of the luminescence age without knowing the raw data and the parameters used for the models. I suggest removing the entire paragraph.
- You state in line 34 that pairing luminescence dating and C-14 dating can be of advantage. This statement neglects the different temporal ranges of luminescence, and C-14 dating and show be removed (or rephrased if you want to keep it).

2.3 Further thoughts/questions

- Maybe you can add a few lines on the future of the project. I am sure the readers will be interested to know what are you planning and what are your mid-term and long-term goals. For instance: Do you have any plans to allow user contributions and comments (e.g., audit data quality)? Are there any plans for an API?
- Is the code basis of the project available or do you plan to license it under an open-source licence?
- Are there any copyrights to consider while reusing the provided data?

- Figure 7: While the maps give a good impression about the distribution of the data so far collected, I am struggling to understand the scientific reasoning for the lower figure with distribution plots. The plots look very nice, but why do you want to draw kernel density plots for discrete events (here TL and OSL dating)? Moreover, what does the graphic tell about the data in the database? Such plots have a potential for meta-studies, e.g., the correlation of luminescence age production and granted funds for dating, but I cannot see what do you want to show to the reader.
- Your final statement is: "Ultimately, OCTOPUS will ensure that CRN and luminescence data are reusable beyond the scope of the project for which they were initially collected". At least given the luminescence data, this is an ultimate, but not yet accomplished goal. Which is not the author's fault, but I suggest to tone down this conclusion a little bit (means, be more critical).

In summary, a lovely work, but the scientific manuscript should perhaps deal a little bit more critically with the system and its limits so that others can learn from your initiative, e.g., and maybe even help to improve the system.

All comments given above are meant to be constructive. I know that setting up such system is hard work and with none of my comments I want to play down the efforts you have undertaken.

Best regards,

Sebastian Kreutzer

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