



Doctoral thesis review

Evaluated doctoral thesis “A study of the behaviour of selected metals in affected environments using an isotopic approach” by Rafael Santos Baieta is a well written work. The thesis is based on three original papers. They were published in scientific journals with high quality review process (mainly Geoderma). Topic of thesis is highly actual especially in rapidly developing mining and smelting regions of Africa.

The literature review contains 13 pages and author use relevant scientific papers, however, I would suggest to use original literal sources and not summarizing works (e.g. Kabata-Pendias, 2010). Some parts can be written more precisely (e.g. page 3 end of second paragraph: What about Roman era lead mining activities in Europe?, page 10 third paragraph “window into past” should be generally “near past” for most plant species, please discuss during thesis defence) and figures should be of higher quality.

I would like to acknowledge that scientific hypothesis and aims are well defined and clearly presented.

Most of methodology is well presented, however, a detail description of collected samples (horizon, soil type, soil water regime, nevertheless, it is presented in tables and papers in appendix) should be partly added to main text. Moreover, statistical tests or procedures are missing. Please discuss advantages and disadvantages of sampling procedure based on soil horizons versus soil depth.

Results and discussion parts contains about 25 pages and this part is the most important as it represent the core of scientific work of doctoral student. Data and collected results are presented in graphs, maps and photos (should be in larger size for better reading).

The fact of changing isotopic ratio changing during forest fires seems to be a very useful information. However a determination of forest fire temperature according to lead isotopic ratios seems rather disputable to me.

Is there any difference between risk of releasing risk elements during fire in African countries and contaminated localities in The Czech Republic (for example potential fire near Příbram)?

Is there any more suitable method or more detail one for analysis of tree ring record than you used in your work?



Main observations were described precisely in conclusions. Could you please suggest suitable remediation technics and discuss whether they could be implemented in studied localities?

Stylistic errors and typos have not much occurred in the presented thesis despite the above-mentioned insufficient sizes of figures.

Candidate Rafael Santos Baieta demonstrated in his thesis and in published work that he can collect, analyze, discuss and present data in a scientific way. Moreover, he proved that he can be an useful member of research team and draw meaningful conclusions.

I do evaluate this thesis as a suitable for defence and after successful defence I propose to award student with the Doctor of Philosophy degree (Ph.D.).

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