

## ***Interactive comment on “Factors controlling the geochemical composition of Limnopolar lake sediments (Byers Peninsula, South Shetland Island, Livingston Island, Antarctica) during the last ~ 1600 years” by A. Martínez Cortizas et al.***

**M.A. de Pablo Hdez. (Referee)**

miguelangel.depablo@uah.es

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The article provides an excellent description of the results from a wide variety of analyses done to a core from the sediments on the floor of the Limnopolar Lake in Byers Peninsula, Antarctica. Authors also provide a discussion about the possible origins of the elements and minerals existing at different depths in the sampled sediments layer, and correlate them with the volcanic and glacial episodes during the last 1600 years. The article is fluent and clear and concise, so I strongly recommend its publication because it reinforce the results obtained by others (mainly Toro et al., 2013) in the same

C310

lake of Byers Peninsula, but also from other lakes of the same peninsula as well as other sites in Antarctica. However, i recommend to the authors to clearly explain in the text what is the main contribution of their work with this core respect the results provided by Toro et al., 2013. In the text, the authors clearly say that they do not include the results and discussion related to some elements described by Toro et al., 2013. But if a further comparison is provided, it will be clear the differences and how much important is the contribution of the authors to the knowledge of the geochemical, climatical and volcancical events in the area. At the beginning of the section 4, you say “There are only a few studies dealing with the elemental composition of rocks, soils and lake sediments of the Byers Peninsula.” I believe that because of the remote location and protected character of this peninsula. For that reason, may be it could be interesting to list all (or most of) those papers to provide a complete overview of the work already done what will help to know the important role of your research on the understanding of the soils, rocks and sediments of this area, filling one of the gaps of the previous researches. It could be done here or at the introduction. It is only a recommendation, because the paper, from my point of view could be published mostly as it is. In that sense, may be you could correlate, in paragraph 2 of section 4.1., the content on some metals and elements (Fe, Cu, Mn) with the content in the soils of the Limnopolar Lake basin (Otero et al., 2013). Plant communities as a key factor in biogeochemical processes involving micronutrients (Fe, Mn, Co, and Cu) in Antarctic soils (Byers Peninsula, maritime Antarctica). Geoderma, 195-196. 145–154.) because may be it could help you in your discussions, at least for the higher (shallower) levels of your core’s sediments. Again, it is only a recomendation. Small issues: Page 765, line 24: “Modets” should be “modest” Page 765, line 25: When you say “a non-permanent Research Camp in Byers Peninsula” a distance from limnopolar lake could be provided to compare with the distant from JCI and Ohridski stations. It could reinforce the conclusion of no effect of the station as a source of pollutants. Page 775, Line 1: “Taken together, the data on metals do not point to signifiñcant eñfects from recent anthropogenic pollution in Byers Peninsula.” Why not? Could you shortly explain it before to

C311

support your conclusion with the results of other research teams in other sites of the planet? Page 778, line 4: "Decpetion" should be "Deception"

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Interactive comment on Solid Earth Discuss., 6, 761, 2014.

C312