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## ***Interactive comment on “Co, Cr and Ni contents in soils and plants from a serpentinite quarry” by M. Lago-Vila et al.***

### **Anonymous Referee #1**

Received and published: 30 December 2014

#### General comments

The paper submitted by Lago-Vila et al is interesting and it is under the scope of Solid Earth. However, despite this, the paper needs to be strongly rearranged. The paper introduction needs to be reorganized. There is a lack of references that supports the ideas presented by the author. Other important question is the number of samples and the analytical methods. The number of samples it is not enough to represent a site and in addition, composite samples, can mask the results obtained. I think that the samples should be analysed individually and not mixed. The paper can be considered for publication if the authors provide a good explanation. It is very likely that the authors used this methodology previously. In this case they should explain clearly why samples were mixed, especially considering that soil spatial variability can

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be high. The statistical analysis should be better explained and some results need to be better discussed.

### Minor comments

Please put the full names of the chemical elements in the title

Page 2 Abstract Line 1: Drop some lines about the study background. Line 6: phytostabilization of these areas or these heavy metals? Line 7-8: Which elements? Line 8-9: Which soils?, Please provide the information in the abstract Line 9-10: Change “Co, Cr and Ni” by “Cobalt (Co), Chromium (Cr) and Nickel (Ni)” Line 10: Which guides?

Introduction Line 22-23: provide a reference to this idea. Line 24-26: What thesis you refer. Please explain it and provide the citation for this.

Page 3 Page 1-2: Soil erosion and pollution are a part of soil degradation. Delete soil erosion and pollution, or delete soil degradation. Line 4-6: Stressefull environments to whom? To plants? If yes please write it. Line 4: Change “offer a stressful environment” by “are stressful environments” Line 7: Change “5%” by “Five %” Line 7-9: Provide a reference that supports this idea. Line 9-14: Provide a reference that supports these arguments. Line 14-24 This should be placed in materials and methods (site description). Not in the introduction. Line 24-28: You write “Spolic Technosols from this quarry”, however, none of the references provided studied the spolic technosols from your study area. Please clarify it.

Page 4 Line 4-5: Provide a reference that supports this argument Line 6-11: Delete this. You already spoke before about soil pollution and degradation. Please order the introduction. Line 12-16: Provide a citation or citations that support this idea. You have to have a criteria when yu are writing the chemical elements name. Or you write the abbreviation, or the full name. If possible do it as I suggested you before. Line 17: The total content of what? Of soil heavy metals? If yes, please write it. Line 17-21: Rewrite this sentence. In the current form it is not understandable. Line 22-25: The available

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content of what? Of metals? Please show the large number of factors. Line 26-26: Where this methods were applied? In which studies

Page 6: Line 5: change “the aims of this study were” by “the aim of this study is”

Materials and Methods Line 18: Describe in the table 1 the slope inclination in % and linked it to the text. Line 21-27: Three samples per sub-areas are too little to be representative of each place. In addition you mixed the samples. What is not understandable is that after sieve the soil you divided again in three different samples. My question is, would not be easier to analyse each sample individually and do not mix them. From this point I have many doubts about these results. Maybe you used this methodology in previous works. However in my point of view it is not correct. If you used before, please cite it.

Page 7 Line 2-3: Did you use the Munsell color Chart. If yes please write it Line 15 and 19: Write the full names of the chemical elements. If is the first time that you mention it in the text, write the abbreviation in parenthesis. Line 12: Did you test data normality previous to ANOVA analysis? Please show the type of ANOVA carried out. Line 14: At which level, significant differences were identified? At  $p < 0.05$ ? If yes, please show it in the text. Line 16: At which level, significant correlations were identified? At  $p < 0.05$ ? If yes, please show it in the text.

Page 10: Line 1-4: Discuss better these results. Linking it to the tables is not enough, neither clear to the reader. Line 13-14: Provide a reference that supports these arguments Line 18-25: You do not need to refer the values, they are in the table. Use the same criteria when you are describing the results. Line 20: What is the level for the soils be consider “hypermagnesic”. Line 20-21: Provide a reference that supports these arguments

Page 11: Line 2: Change “Ni” by “Nickel” Line 5: What do you mean by “higher plants” Line 15: Please show the implications of this. Line 18: Can you specify the “doses”? Line 10: Change “Cr” by “Chromium” Line 18-19: Delete it. Line 22-25: This seems

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to be evident, so why you studied the reagent extractions? Line 27: Please provide a reference that supports this idea.

Page 12 Line 15: Please discuss these results. Why some extraction methods were best than others. Line 19: Explain here the data of the table 4 (Metal extracted from the soils).

Page 13: Line 1-8: Please describe the results. Do not repeat information. Line 15: You write several authors, but you cite only one. Please clarify it. Or you add more authors or you delete several authors. Line 17: What mechanisms?

Page 14: Line 10-11: Please explain why. Line 13: Change “Nickel” by “Ni”

Page 15: Line 3-4: The total content of what? Please provide a reference that supports this idea. Line 25-27: Why this happens? Please explain it. Line 12-14: This should be placed in the materials and methods not here.

Figures Figure 1: Change “Study zone” by ‘Study area” Figure 2: Please do the figures in colour. What means the hanging bars? Write it in the figure caption

Tables Table 1: Provide the reference of the soil classification and the % of species distribution. Table 2 and 3: What is the value that you have in brackets? Please write it in the table caption. Add a column with the ANOVA results and the p value. In the table 3 write the full name of all elements. To use the same criteria, do it also in the rest of the tables. Table 4: Provide the results of ANOVA . The table were you present the results of the metals extracted from the soils and the plant metal content should be separated. Please write the table caption accordingly. Table 5: Show the number of samples used to calculate the coefficient of correlation ( $N=...$ ). Please substitute “Correlation is significant at level 0.05” by “Correlation is significant at  $p < 0.05$ ”. Do the same for 0.01. Table 6 : What is the value that you have in brackets? Please write it in the table caption. Add a column with the ANOVA results and the p value.

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Interactive comment on Solid Earth Discuss., 6, 3361, 2014.

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