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Comment

***Interactive comment on “Application of soil quality indices to assess the status of agricultural soils irrigated with treated wastewaters” by A. Morugán-Coronado et al.***

**A. Morugán-Coronado et al.**

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We would like to thank reviewers for the thorough feedback to the manuscript. Below find the detailed responses to all comments and suggestions.

Anonymous Referee #1 Received and published: 19 December 2012 Page 1486-1487: Reduced freshwater availability is not only a consequence of overexploitation, but also of climate. Done as suggested.

Page 1487, line 20: Please add after "under semi-arid conditions", where the precipitation is less than the potential evaporation.. We rephrased this.

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Page 1487, line 27 Please substitute "could" for "may" Corrected as suggested.

Page 1487-1488, line 1: Please mention what soil properties Done as suggested: organic matter, aggregate stability and enzyme activity

Page 1488, line 15-20: Please provide some reference this idea. Citations added for Caravaca et al., 2002

Page 1490, line 17: The soil or the model? Sentence rephrased, The soil will be equilibrated if residuals are near 0 or inside confidence intervals of the models (95%)

Page 1493, line 1: The result of kolmogorov test showed that data was normal or not? At what p level? We rephrased this. The fitting of the data to a normal distribution for all properties measure was checked with the Kolmogorov-Smirnov test at  $P < 0.05$

Page 1494, line 1 and 2: Delete "The major differences observed due to the irrigation with wastewater for the studied properties were in the soils from Biar 2 site". You mentioned already in the page 1493, line 14

Page 1496, line 1 and 2: You refer "many studies", but you mentioned only one study.. Citations added for Caravaca et al., 2002

Page 1496, line 9-12: This should be placed in the introduction to justify the importance of this work. Done as suggested

Page 1496, line 14: the high residuals observed in B2R may be also attributed to the variability of the studied elements in soil due the quality wastewater treatment. Sentence rephrased. Fig. 2. Please explain in the caption the mean of "a" and "b" Different letters indicate significant differences between means at ( $P < 0.05$ ) after T-Student test. Error bars denote standard deviation.

R. Zornoza (Referee) Received and published: 26 December 2012 P1486/L5-6. Delete "the equilibrium reached". You have not explained anything about equilibrium and it is difficult to understand what you mean Done as suggested

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P1486/L10. Include, after “regressions.” The following sentence “These indices represent the balance reached among properties in “steady state” soils”. Done as suggested

P1486/L10-11. Rewrite as follows “This study was carried out in four study sites from SE Spain irrigated with wastewater”. Done as suggested

P1487/L12. Delete the comma after “world” Done as suggested

P1487/L16. Rewrite as follows: “: : :is soil degradation. In some cases: : :” Done as suggested

P1488/L15. Rewrite as “quality index” Done as suggested

P1490/L2. Rewrite as “all analyses” Done as suggested

P1490/L6. Rewrite as “: : :undisturbed forest soils in SE Spain, representing the relationships between soil parameters at “steady state”. Sentence rephrased P1491/L5. Write “p” from p-nitrophenol in italics Done as suggested

P1491/L6. Write “P” of phosphorus without italics since in this way it can be read as P-value P1491/L20. Delete “de” Corrected as suggested

P1492/L15-16. Replace “,” by “.” after (Gee and Bauder, 1986) and after (1934). Statistical analysis. If you developed a T-Student there is no need for a post-hoc. Thus, rewrite as follows: “: : :a T-Student test was developed at  $P < 0.05$ . All statistical analysis was: : :” Corrected as suggested

P1493/L10. Rewrite: “Table 3 shows” Done as suggested

P1493/L15. Rewrite: “: : :soils irrigated with wastewater showed significant highest contents of soil carbon, phosphatase activity and available phosphorus. In addition, a significant decrease in pH was observed in this area compared with its control site.” Sentence rephrased P1493/L20. Add a comma (,) after “: : :of irrigation applied” Done as suggested

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P1493/L23. Replace “,” by “;” after “: : irrigated with fresh water” Done as suggested

P1494/L5-6. Add a dot (.) after 88 g kg<sup>-1</sup>. Delete “also the”, so that there is a new sentence starting with “EC has increased: : :” Done as suggested

P1494/L11. Is the expression “In not one of the “ correct? I am not English speaker and never saw it before. Check. Corrected as suggested. “In not none of the . . .”

P1495/L11-13. Rewrite as follows: “: : :with treated wastewater; although at the moment of sampling this value was not high, it could be a risk in the long-term for soil, as it indicates an increase of the saline concentration. As a consequence, electrical conductivity: : :” Sentence rephrased.

P1495/L20-21. Delete the sentence “that was as a consequence of the: : :of the wastewater”. It is evident and previously reported, no need to include it in here. We removed the last sentence of this paragraph.

P1496/L27 – P1497/L9. However, Biar2 showed a different pattern. Could it mean that alteration in this site is more severe? I would encourage the authors to further discuss about the best option of using SQ1 or SQ2 for each situation, using the sites studied here to support the arguments. I see that these results confirm that SQ1 more clearly evidences severe state of degradation, while SQ2 is more adequate to indicate initial or fast perturbations in soil. We modified this paragraph where we discuss the indices implications.

Table 1. Rewrite table title as: “Study sites, irrigation methods, climatic parameters and soil characteristics”. The values of sand, silt and clay do not make 100%; revise values so that the sum makes 100%. In OM column, use the same decimal digits for all sites. Sentence rephrased.

Table 3. In table foot, do not write “P” indicating phosphorus in italics Done as suggested

Fig 2. Add at the end of caption “Different letters indicate significant differences be-

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tween means at  $P < 0.05$  after a T-Student test. Error bars denote standard deviation.”  
Done as suggested

Fig 3. Add at the end of caption “Different letters indicate significant differences between means at  $P < 0.05$  after a T-Student test. Error bars denote standard deviation.”  
Done as suggested

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/4/C737/2013/sed-4-C737-2013-supplement.pdf>

Interactive comment on Solid Earth Discuss., 4, 1485, 2012.

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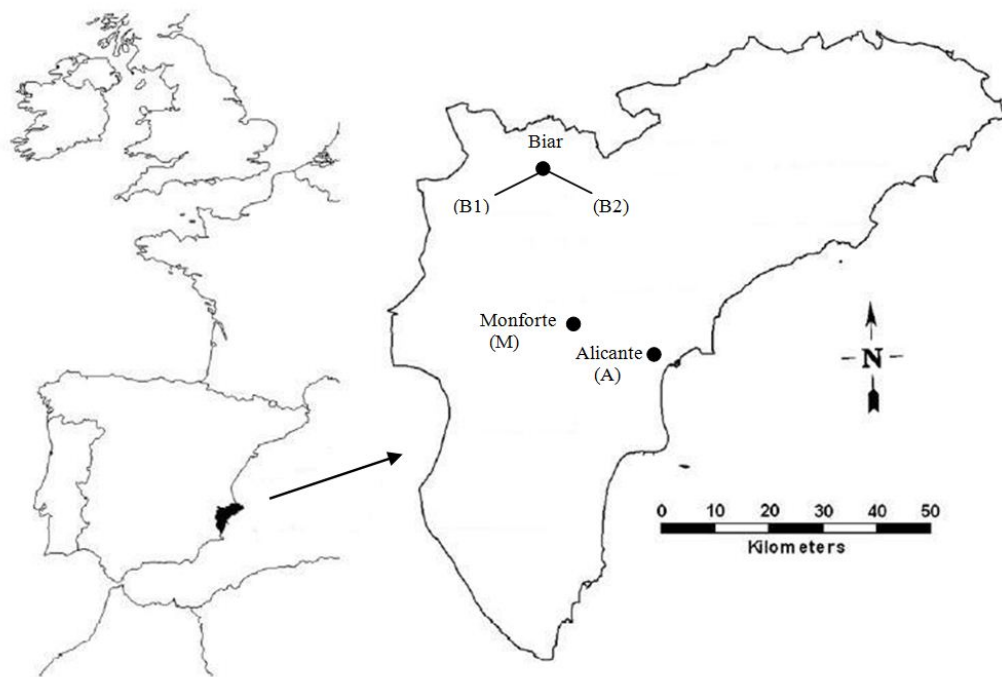


Fig. 1.

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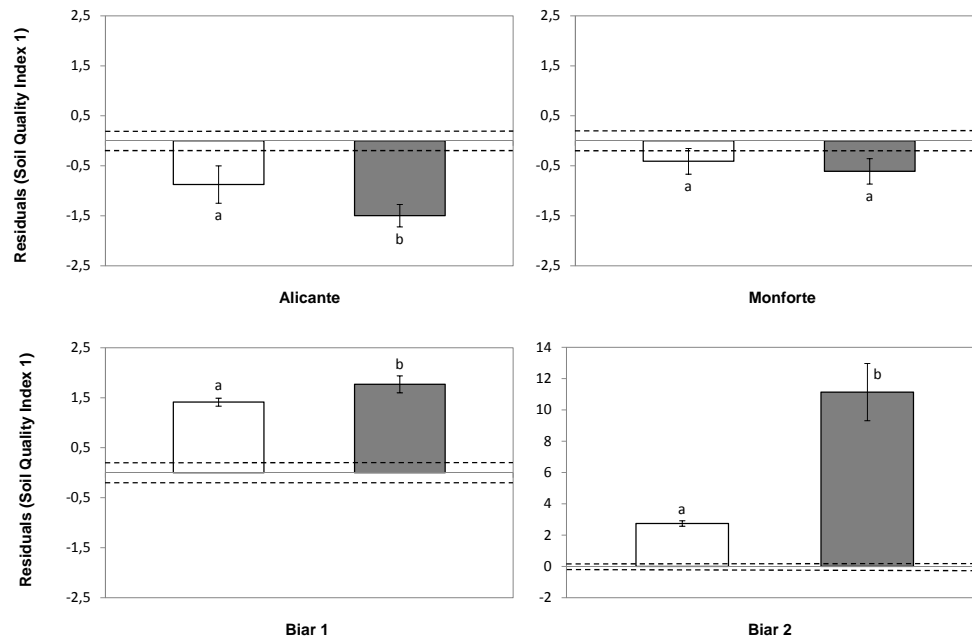


Fig. 2.

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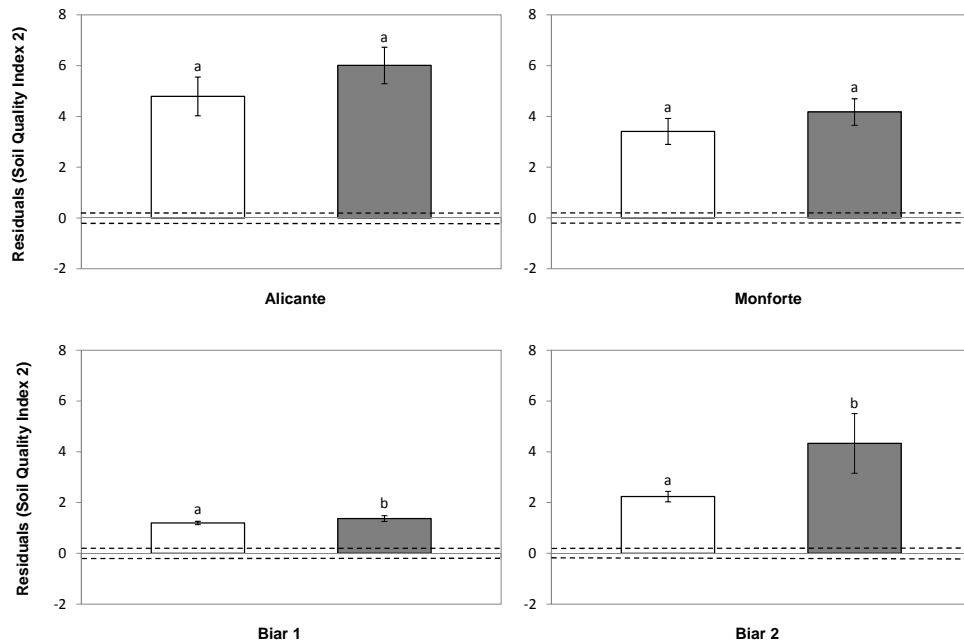


Fig. 3.

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