

Interactive comment on “Vegetation Cover Change Detection and Assessment in Arid Environment Using Multi-temporal Remote Sensing images and Ecosystem Management Approach” by Anwar Abdelrahman Aly et al.

Anonymous Referee #1

Received and published: 15 March 2016

I thank to SE Editorial Board for the request to review the manuscript “Vegetation cover change detection and assessment in arid environment using multi-temporal remote sensing images and ecosystem management approach” (see below my review report).

Comments to the Authors The paper presents an interesting topic about land use/cover changes focused on the detection of spatial and temporal changes of vegetation cover using remote sensing technology with potential interest and importance to examine the linkage between land cover changes, natural processes and anthropogenic activities. A consistent work was done with different methodological approaches using the

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participatory rural appraisal, fieldwork by collecting soil and groundwater samples for salinity analysis and processing Landsat images using GIS techniques. The paper is well written and structured. The objectives are clear and the results are well interpreted. Although the aims of the manuscript are studied in previous studies as it is reported in the introduction, the manuscript present a good approach to understand the main drivers responsible for the vegetation cover changes in Al-Kharj agroecosystems (Saudi Arabia) identifying the environmental problems in the study area during the period 1987 – 2013 mainly linked to soil and groundwater salinization and sand dune encroachment. However, some questions are needed to improve the manuscript. Please find below the review comments:

Specific comments: Lines 17 – 19 Please revise the sentence. “A multi-temporal set of images was processed . . .Landsat8 2013 to investigate the drivers responsible for the VC pattern and changes which are linked to both natural and social processes”

Line 51 become more complicated? Authors should provide more information about this statement

Lines 67 Please complete the sentence with the location of the study of Setiawan and Yoshino (2012)

Line 102 I suggest to include the population of the two mentioned large towns to include a more detailed information about the study area

Line 105 The authors could provide an estimation of the number of springs in order to provide the magnitude of this source of water

Line 180 using electrical conductivity (EC) meter

Line 186 Please include both abbreviations in the text distinguishing between EC measured on groundwater samples (EC_w) in line 180 and EC measured on soil samples (EC_e) since these abbreviations are used in lines 273 – 294. I suggest including the soil-water ratio of prepared saturated paste extracts in line 186.

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Lines 207 – 212; Lines 220 – 221 Authors mentioned the purpose of using PRA approach and the characteristics of this method. This paragraph seems to correspond to Materials and methods.

Line 226 Revise sentence

Lines 227 – 242 This is a major result and it should deserve a bit more discussion. I might recommend the authors to include references, examples or data.

Line 268 Figure 8 What type of kriging did the authors selected to model the spatial distribution of EC?

Line 279 Please revise the sentence “the ecosystem showed more vulnerable soil conditions for soil degradation” / “the ecosystem was more vulnerable for land degradation”

Line 294 Please specify in which sites

Lines 304 – 311 This paragraph is a description of the three date palm fields studied that it should be included in Materials and method section.

Lines 310 – 311 “A 5TE (Decagon devices) soil moisture . . . at each field” is repeated in lines 187 – 188.

Line 314 “therefore the E_{Ce} (measured in saturated soil past extract) is presented (Fig.11)” can be removed

Lines 331 – 335 According to the objective iii) in line 93. The proposed interventions should be discussed in more detailed.

Figures and Tables

Figure 4 there is no a full view of the shape for the year 2013

Figure 5 sampling points of soil samples (n=50) can be included

Figure 8 replace less and above by “<, >” symbols

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Figure 10 caption: Salinity of selected soil samples (n=33)

Table 3 descriptive statistics of EC (ds/m) of soil and water samples. Please include the number of soil samples (n=50) and groundwater samples (n=180) as in Table 4.

Table 4 replace Mini. by Min; use the same abbreviations for standard deviation and median in Tables 3 and 4 and place a table note with the abbreviations i.e. St.Dev: standard deviation Vari: variance? and Swe: skewness

Technical corrections

Please ensure that the references are listed first alphabetically and then chronologically (e.g. see lines 39, 49, 52, 57, 58, 63,131,209)

Line 100 delete “and”

Line 120 (Aly, 2007; Reed et al.,2009)

Line 169 A and B in lowercase letter and include A and B letters in Figure 3 as in Figure 2.

Line 186 “sample” instead of “samples”

Line 228 salinization

Line 339 in addition to

Line 263 findings

Lines 268, 271 and 287 Figs

Line 289 replace waters by water samples

Appendix Environment – replace “is” by “it”; Forget and Lebel, 2001.

Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-31, 2016.

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