

Interactive comment on “Impacts of inhomogeneous landscapes in oasis interior on the oasis self-maintaining mechanism by integrating numerical model with satellite data” by X. Meng et al.

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Interactive comment on “Impacts of inhomogeneous landscapes in oasis interior on the oasis self-maintaining mechanism by integrating numerical model with satellite data” by X. Meng et al.

Anonymous Referee #1

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C3259

Summary:

This paper investigates the use of satellite derived soil moisture, land-use types, and veg frac compared to default values in MM5, on the oasis effect. Only a very short period is considered, during which there was apparently a field campaign, however, the authors do not use any of these observations in this paper. The very short simulation period, without any model spin-up, raises serious questions about the validity of the results. The discussion and presentation of results is rather poor and the authors fail to link their results with the rest of the literature. The paper shows very little evidence of proof reading, and there are numerous grammatical errors. Overall, i do not believe this paper is adding anything significant to our overall understanding of land-atmosphere feedbacks.

Major Comments:

In the introduction, end of first paragraph, the authors claim that surface heterogeneity can even have "global impacts". I do not agree with this statement. Several studies have shown that while land-use change has significant regional impacts, the global impact is rather small or restricted to the region of LCC. The jury is still out on whether land-use change has statistically significant "global" impacts. This needs clarification. Answer: This has been clarified. Please see Page3, Line 11.

The authors initialise the model on 4th July 2004 at 1200 UTC and end on 5th of July 2004 at 1200 UTC. This is too short a simulation period! At the very least, the authors should allow for some model spin-up, which is usually two weeks. I do NOT have confidence in such a short simulation with no spin-up. Answer: Spin-up has been considered in the revised manuscript. According to other works on the oasis-desert simulations, spin-up is set to 30 hours. Please see details in Page 9, Line 17-19.

The authors describe observational datasets in section 2.2, but NONE of this is used in any of the analysis. Why is it mentioned in the first place, if it is not used? In fact, it appears that most of these observations were used in a previous paper. Answer:

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Observations have been used in the revised manuscript for validation of the model results. Please see Section 4.1 in Page 10-11.

The authors should plot the difference between the two, MOD-EXP. They talk about differences between the two experiments, but which one is closer to reality? Comparisons with observations would have been useful here. Answer: Statistics and time series of observations versus simulations have been added in the new manuscript. Please see Table 1, Fig.4, and the documents in Section 4.1.

Fig. 5, the authors compare 2 contour plots with interval 0.2. But both graphs need to have the same maximum and minimum contour levels to enable comparison. The contour labels should be the same on both plots, e.g., only show contour intervals from 1.6 to 4.8, with increments of 0.2 or 0.4. The graph is difficult to interpret. The higher density of contours on the EXP plot may just be due to the contour levels chosen. The same applies to all the other plots. Answer: The figures have been plotted with identical contour levels. Please see Fig.8 to Fig.12.

The authors do not relate their results to other papers on the subject matter. There are 2 references used at the start of section 4.2, and then none until the end of the paper! This is not adequate. What do these results mean in the broader scheme of things? Answer: We have related the factors of oasis self-maintaining mechanism of other papers to our results. We described the related factors in the start of Section 4.2, and then did the analysis factor by factor using the model results from Section 4.2.1 to 4.2.4. Please see Page 11 to Page 19.

The use of proper English grammar is overall very poor and not good enough for publication. The authors need to have their manuscript proof read by a native English speaker. Answer: The English writing has been improved in the paper, please see the revised manuscript.

Minor Comments:

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Page 1980:

1. Abstract, lines 2-3, replace "oasis self-maintaining" with "oasis self-maintenance". Also on line 2, replace "budget of the oasis" with "budget of oasis environments". Answer: "oasis self-maintaining" has been replaced by "oasis self-maintenance" in the revised manuscript. Please see Page 2, Line 3 in the abstract and other places in the revised manuscript.

2. Abstract, line 3, replace "influence" with "the influence". Answer: "Influence" has been replaced by "The impacts". Please see Page 2, Line 3.

3. Abstract: It makes more sense to describe the control experiment first, i.e., with default MM5 settings, and then the one with satellite derived land-use type, veg frac, soil moisture. Answer: The control simulation has been described first and then the other experiments. Please see Page 2, Line 5-8.

4. Abstract, line 9, replace "and then be used specify" with " and then used to specify". Answer: This sentence has been deleted. Please see the revised manuscript.

5. Abstract, line 10, replace "a real" with "a realistic". Replace "run" with "experiment". Answer: The words "real" and "experiment" in the abstract have been removed. In other parts of the manuscript, "real" has been replaced with "realistic"; "run" has been replaced with "experiment", please see the revised manuscript.

6. Abstract, line 12, replace "relative uniform" with "relatively uniform". Answer: The words have been removed in the abstract. And it has been replaced in other places in the revised manuscript, Page 10, Line 8 etc.

7. Abstract, line 15, remove "a" from "a stronger". Line 16, remove "will". Answer: "a" has been removed (Page 2, Line 16). "will" has been removed.

8. Abstract, line 18, replace "the simulation of homogeneity" with "the control simulation". Answer: The abstract has been revised, and this has been removed. Please see the revised manuscript.

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9. Abstract, line 19, replace "relative lower" with "relatively lower". Answer: The abstract has been revised, and this has been removed. Please see the revised manuscript.
10. Line 24, sentence starting with "Flying over a". This sentence is not saying anything useful about the science and should be removed. Answer: It has been removed. Please see Page 3, Line 7.
11. Line 14, remove the "et al" and there is one too many quotes for "glacial wind". Answer: It has been removed; please see Page 4, Line 1.
12. Line 23, replace "rapid growth of population" with "rapid population growth". Answer: It has been replaced; please see Page 4, Line 11.
13. Line 26, remove "the" from "the oasis-desert". Answer: It has been removed; please see Page 4, Line 14.
14. Line 28, replace "several studies have been done to investigate" with "several studies have investigated". Answer: It has been replaced; please see Page 4, Line 17.

Page 1981:

1. line 2, "similar to" not "similar as". Answer: It has been replaced; please see Page 4, Line 1.
2. line 3, "are called as the non" - change this to are "referred to as". The authors use too much colloquial english! It's getting a bit tiresome to fix all of these! Answer: It has been replaced; please see Page 4, Line 21. Others have been revised in the revised manuscript; please see the revised manuscript.
3. line 4, "in the field experiment", which one??? if you are making a general statement, it should be "observed in field experiments" or "observed in the field". Answer: It has been replaced by "observed in the field"; please see Page 4, Line 22.
4. lines 5 to 10 - switching from present to future tense here! Do not use "will". Answer:

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It has been revised. Please see Page 5, Line 1-6.

5. line 9, "these processes are totally called" - ? colloquial english again! "these processes are referred to as". Answer: It has been revised. Please see Page 5, Line 6.
6. line 10, "the oasis interior is very", NOT "are". Answer: It has been revised. Please see Page 5, Line 7.
7. line 10, "constituting with water" - replace with "constituted of" Answer: It has been revised. Please see Page 5, Line 7.
8. line 16, replace "numeric simulations" with "numerical simulations" ! And why do the authors need so many references to back-up such an obvious statement? Answer: It has been revised. Please see Page 5, Line 15. And some of the references have been removed; please see Page 5, Line 17.

There are way too many grammatical mistakes in this draft, i have stooped fixing all of these from here onwards as it is too time consuming and utterly frustrating! Answer: The writing has been improved; please see the revised manuscript.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/9/C3259/2012/hessd-9-C3259-2012-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 1979, 2012.

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