**Hydrology and
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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 #3**

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This paper used a mesoscale model to investigate the inhomogeneous landscapes impact on the thermal-dynamics over an oasis region in northeastern China. Some of the co-authors have studied land-atmosphere interaction in arid and semiarid regions for many years, and are experienced in understanding the atmospheric dynamics of oasis-desert system. However, current paper is suffered from insufficient analysis and rigorous proofreading. Substantial improvement is needed before its publication.

1. Spinup for the land surface model. Since the authors only integrate the model for one day, initial conditions should be critical to the analysis. There is no special treatment

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for the initialization of the model in the paper. While integrating MM5 for spinup may be time consuming and resulting additional uncertainty, spinning up the offline NOAH land surface model for two landscapes is helpful to obtain realistic initial soil moisture and temperature. Different vegetation type and soil texture should contribute to different spatial pattern of soil moisture from two experiments, though the atmospheric forcings might be relatively homogeneous at local scales.

2. Domain averaged water and energy budget analysis. The authors did some thermal-dynamics analysis for the landscape sensitivity, how about the energy and water budget averaged over the domain (Yuan et al., JGR, 2008JD010180)? Some statistics might be helpful to quantify the sensitivity.

3. Sensitivity to physical schemes. The author made one-day case study, perhaps due to limit availability of field campaign data. I suggest the authors use different physical schemes (e.g., PBL) to conduct additional sensitivity experiment to augment current paper.

4. Validation. Though the authors did some validation in previous paper, it is helpful to utilize all available observation to support the analysis in current paper. Observation can be incorporate into many plots in the paper.

5. Proofreading is quite necessary, though the authors have published many papers.

6. A map of China that indicates the location of Jinta Oasis is needed in Figure 1.

7. Since soil moisture is one important aspect of heterogeneity in this study, incorporating the initial soil moisture map into Figure 2 is helpful.

8. As a more quantitative analysis of thermal-dynamics than Figure 5, how about generating the diurnal evolution of vertical profiles of pseudoequivalent potential temperature averaged over the domain?

9. P1988, L5. Is the convergence over the corridor due to buffer zone issue?

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

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