

## ***Interactive comment on “Expansion of global drylands under a warming climate” by S. Feng and Q. Fu***

### **Anonymous Referee #1**

Received and published: 7 August 2013

#### General:

Global drylands encompassing hyper-arid, arid, semiarid, and dry subhumid areas cover about 41 % of the earth's terrestrial surface and are home to more than a third of the world's population. This study found that global drylands have expanded in last sixty years and will continue to expand in the 21st century. By the end of this century, the world's drylands under a high greenhouse gas emission scenario are projected to be  $5.8 \times 10^6$  km<sup>2</sup> (or 10 %) larger than in the 1961–1990 climatology. The global dryland expansions will increase the population affected by water scarcity and land degradations.

In general, I found the paper very well written and appropriate for ACP audience. I rec-

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ommend accepted this paper for publication in ACP with addressing those comments listed below:

1. Page 14640, line 3 to 5: It will be much better if authors can provide more detail explanation about meaning of the sentence: “ This algorithm is physically based and is superior to other PET formulations (Donohue et al., 2010; Dai, 2011; Sheffield et al., 2012).”
2. Page 14640, Line 6: Author should give the reason why they use two dataset and adjust UD as the CPC data?
3. Page 14647 line 4 to Page 14649 line 3: Authors need to provide some discussions about Asia dryland, especially Asia semi-arid regions.
4. Page 14649, line 24: I suggest that authors change section 4 to "Summary and Discussions".
5. Page 14649, line 4-24: I suggest that authors move those sentences to section 4: Summary and Discussions..
6. ACP published a paper about the dust effect on Asia semi-arid climate (Huang, J., P. Minnis, Yan, H., Yi, Y., Chen, B., Zhang, L., and J. K. Ayers, 2010: Dust aerosol effect on semi-arid climate over Northwest China detected from A-Train satellite measurements, Atmos. Chem. Phys., 10, 6863-6872.). Please reference this paper to increase reader understanding of the Asia aridity.

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Interactive comment on Atmos. Chem. Phys. Discuss., 13, 14637, 2013.

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