

## ***Interactive comment on “Morphological plasticity of root growth under mild water stress increases water use efficiency without reducing yield in maize” by Qian Cai et al.***

**Anonymous Referee #2**

Received and published: 2 May 2017

General comments: The paper presents an interesting analysis of morphological and physiological response to water stress in a global major crop specie, maize. As water use efficiency (WUE) is a powerful indicator of tradeoff between water transport and dry matter production, understand the variance of WUE with the different degree of water stress is very valuable. The topic is suitable for the journal, and the results provide important instruction for economical irrigation schedule for maize in semi-arid region. However, a minor revision as follows is necessary before the publication: Title & abstract: what is the definition for water stress levels? –no water stress, mild water stress, and severe water stress? Introduction: I think a clear definition of growth stage in a year is necessary ( with a table or figure), which would help us understand the spe-

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cific means of “V16”, “R1”, etc. Material and method: how does the mobile rain shelter construct and work? What height and how to prevent the possible moisture intrusion from the side? Results: Table 1 provide the actual water supply at three growing periods, what is basis of this quantity? Fig.1 why not consider the solar radiation that may be more related to transpiration and photosynthesis during the growing season? Fig. 2 why selected 49,77,113 and 141 of DAS as time for comparison? Why it is not the same period in 2015? Specific comments: Line 37-38, this sentence as a new point that should be discussed more detailed in Discussion; Line 43, what is critical water-sensitive period? that should be pointed out clearly; Line 78, what is V16,R1? Line 110-111, please consider how to define the water stress, soil water content or actual water supply? Line 115, the word “supplement” is not appropriate for the pot experiments; Line 133-144, what is means of V6,VT,R3, R5? Line 155, what is the number of repetitions for soil samples? Line 212-213 I think this point is not persuasive at this time, it should discuss deeper together with morphological plasticity in Line 259-;

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Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2017-103, 2017.

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