

## Response to referees' comments (bg-2013-228)

We have fully considered the referee's comments in the revision and improved the manuscript accordingly. Answers to referee's questions are italicized and in blue color.

We thank the editor and anonymous referees for their thoughtful and constructive comments and helpful suggestions.

### Anonymous referee # 1

General comments: This MS displays research findings on the desert ecosystem, which has great value to the global carbon cycle study. The solid analysis and understanding on the collected data clearly explain the diurnal pattern of the relationship between soil temperature and soil respiration interacted with water content. In the text, the soil several soil moisture thresholds (i.e. 0.08 cm<sup>3</sup>/cm<sup>3</sup>) are used, just wondering if you have considered wilting point and field capacity of soil water in this region.

Section 4.1 Line 15-16. Verify the statement. Figure 1 and 5 miss legends.

Specific comments:

1. In the text, the soil several soil moisture thresholds (i.e. 0.08 cm<sup>3</sup>/cm<sup>3</sup>) are used, just wondering if you have considered wilting point and field capacity of soil water in this region.

Answer: *Soil moisture thresholds (0.08cm<sup>3</sup>/cm<sup>3</sup>) was calculated from our data set., Soil respiration decoupled from soil temperature below this threshold, but was strongly related to soil temperature above this threshold. We have not measured wilting point and field capacity at this site yet, and not considered them in this manuscript.*

2. Section 4.1 line 15-16. Verify the statement.

Answer: *We changed the statement 'However, soil temperature in the morning was lower than air temperature, condensation water happened on the ground (Agam and Berliner, 2006), root activity being increased and inducing higher root respiration.' into 'However, soil temperature in the morning may be lower than the dew-point temperature, condensation water happened on the ground (Agam and Berliner, 2006), root activity being increased and inducing higher root respiration.'(see supplement 'bgd-10-9213-2013.pdf' section 4.1 line 15-16)*

3. Figure 1 and 5 miss legends

Answer: *We added legends to the figures.*