

The authors of the manuscript (bg-2017-77) addressed the reviewers' issues clearly and answered questions reasonably. The manuscript has been largely improved. However, I still have some minor comments as listed below.

Abstract:

1. L20 on page 1, compared
2. L23 on page 1, south-east instead of 'SE'
3. L24 on page 1, I would like to change the sentence "Results show a striking difference in the annual C balances with an average release of 196 ± 40 and -23 ± 20 g C m⁻² yr⁻¹ for the "degraded" and "natural" sites, respectively." into "Results show a striking difference in the annual C balances with an average **value** of 196 ± 40 and -23 ± 20 g C m⁻² yr⁻¹ for the "degraded" and "natural" sites (minus represents a carbon sink), respectively."
4. The statement "we also tested differences in all monitored meteorological and soil variables and found it most relevant that CO₂ at 1.50 m belowground was around 1000 ppm higher in the "degraded" site." is not clear to me.
5. In abstract, please weaken the wording of "subterranean ventilation of this vadose zone CO₂,, largely drives the differences in C dynamics", since GPP at natural site was nine times that at degraded site. Therefore, the C dynamics was also driven biologically.
6. Delete the last sentence in the abstract, because it does not make a sense.

Introduction:

1. L20 on page 3, delete '(biological processes)' since ecosystem respiration also include non-biological process.
2. Move last sentence in Introduction to the Material and Methods section.

Materials and Methods:

1. Delete the sentence "Furthermore, over the six years of measurements at both sites, data gaps due to low-turbulence conditions, instrument malfunction and theft were unavoidable and not randomly distributed, as noted by Ma et al. (2016)."
2. L27 on page 5, rewording the sentence "In order to test the validity of both EC stations,'
3. L30-31 on page 5, rewording the sentence " Storage term in the soil heat flux..... the vegetation (~50 cm)"
4. L2 on page 6, gross primary production (GPP)

5. L7 on page 6, why you select the data base on “(ii) $8 < \text{daily averaged bowen ratio} < 10$, and (iii) daily soil water content (in bare soil) $< 10^{\text{th}}$ percentile (in AMO) and $< 20^{\text{th}}$ percentile (in BB).”

Results:

1. L14 on page 8, with annual net C release of 240 ± 8 in AMO and net C uptake of $38 \pm 10 \text{ g C m}^{-2}$ in BB. Please change the wording regarding net ecosystem production (NEP) throughout text. Positive value of NEP represents C source or net C release, negative value represents C source or net C uptake.

2. L28 on page 8, delete the word ‘fluxes’ here.

3. L9 on page 10, “Firstly, GPP was always higher at BB compared to AMO (Fig. 7c).” . Not really for the year 11/12 in Fig. 7c?

Discussion

1. L8 on page 12, influencing GPP, R_{eco} ,

2. L26-28 on page 12, I think also higher root respiration for natural site.

Conclusions

1. L9-10 on page 14, again change the statement into “annual average net C release of 196 ± 40 for the natural site and net C uptake of $23 \pm 20 \text{ g C m}^{-2} \text{ yr}^{-1}$ for the “degraded” site were observed”