We thank the reviewer for acknowledging that “the experimental design for the photodegradation experiments was logic and reproducible.”

The reviewer suggested present the actual cell numbers in the experiment and compare them to the number of bacteria in the natural experiment before filtration. This is valuable proposition. Such data are indeed available as shown in table R1 below. The total counts in natural environments are within a factor of 2 to 3 similar to the values measured in the experiment. As such we argue that the bacterial population is not at all reduced compared to natural settings

Table R1. Total bacterial count in the sampled waters prior the experiment.

Sample I.D.	**Description**	**TBC*10^6, cell ml^{-1}**	**Cocci, %**	**Rods, %**
BZ-2-17 67°36'48,8''N, 53°54'29,8''E	Depression in peatbog, S_{area} = 7.5 m^2	0.81	89.1	10.9
BZ-24-17, 67°36.53’N 53°50.26’E	Stream in frozen peatland, $S_{watershed}$ = 7.5 km^2	5.72	76.5	23.5
BZ-12 67°36'47,7''N 53°54'38,5''E	Thermokarst lake (Isino), S_{area} = 0.005 km^2	5.36	92.2	7.8
P5 67°40'09,4'' 52°39'30,8''	r. Pechora, $S_{watershed}$ = 322,000 km^2	3.51	84.3	23.5

The reviewer also suggested that we present the concentrations of inorganic nutrients like phosphate, nitrate and ammonia. A relevant table R2 is available below and will be included in Supplement of revised manuscript if necessary. The concentrations if nutrients are generally low because the peat is essentially oligotrophic and contains very little nutrients. Together with refractory nature of OM, it could be a cause of low biodegradability of DOM, but this is typical condition for large territory under consideration.

Table R2. Inorganic nutrient concentrations in sampled waters.

Sample I.D.	Description	PO_4, µg P/L	P_{tot}, µg P/L	NO_2, µg N/L	NO_3, µg N/L	NH_4, µg N/L	N_{tot}, µg N/L	Si, µg/L
BZ-2-17 67°36'48,8''N, 53°54'29,8''E	Depression in peatbog, S_{area} = 7.5 m²	2,28	14,6	14,6	14,6	13	228	22,0
BZ-24-17, 67°36.53'N 53°50.26'E	Stream in frozen peatland, $S_{watershed}$ = 7.5 km²	9,8	-	5,0	-	152	-	392
BZ-12 67°36'47,7''N 53°54'38,5''E	Thermokarst lake (Isino), S_{area} = 0.005 km²	4,42	7,3	3,6	76,6	117	200	100,0
P5 67°40'09,4'' 52°39'30,8''	r. Pechora, $S_{watershed}$ = 322,000 km²	26,7	37,52	1,67	111,2	36,5	438	2689

The third argument of this reviewer is that "The major weakness of the current manuscript is the fact that all experiments were performed in one season only. The late summer has been shown to be a low activity period for these aquatic systems and many studies about DOM degradation have been published for this time period." We would like to point out that July in these regions is not at all the late summer but the middle summer. We did perform extensive field measurements during early summer (spring) and autumn but discussing and presenting these results go above the scope of this paper. The present study matches the period used by other researchers for biodegradation assays.

We agree that seasonal aspect should be reflected in revised version of the paper, and that comparison with other studies should be done bearing in mind this seasonal context. All noted minor issues will be taken into account in the revised version of the paper.

We thank the reviewer for insightful comments.