We would like to thank the editor in chief for her relevant suggestion. This was addressed in the result and the discussion sections. All text modifications are highlighted below in italic, between commas.

Editor in chief

I would like to thank the authors who responded to most of the comments and suggestions by making relevant additions to the text.
In particular, all responses to reviewer 1 have been nicely addressed.
For reviewer 2, although the authors gave detailed and very well argued (and therefore convincing) responses, they did not propose additional text in the manuscript to some comments. However, I believe that their argumentation is also necessary in the revised version (even by adding only a short summary) for readers that could have the same remarks as Rev1.

This concerns: the difference between expected and measured DOC concentration in control and the possible consequences on the calculations made in the different treatments for LDOC and BGE; the choice of using BP rather than BA to calculate BGE (an interesting point); most of the arguments developed in your response could be added to the Results section.
I would encourage the authors to provide those short additions before the paper can be accepted for publication.
Thank you

The difference between expected and measured DOC concentration in the control treatment, and consequences on the calculation of LDOC were added in the result section (lines: 226-236).

Modified text (lines: 225-235)

'*One hour after aerosols amendments (T_0), the measured initial concentration of DOC in the control treatment (14 ± 1 µM) was higher than the expected value of 6.3 µM (DOC concentration in artificial seawater + inoculum, see method section). This 'extra DOC' was not observed in the amended treatments, where concentrations of 40 ± 3 µM 36 µM and 34 ± 3 µM were observed in G, A and D treatments, respectively, consistent with the amount of DOC added through amendments (36 µM final concentration in the incubation bottles, see method section) (Table 1). Over the incubation period (T_0-T_{final}), DOC concentration decreased in the three amended treatments (Fig. 2A). This decrease was highest in the G-treatment (22 ± 2 µM) followed by both D (9 ± 2 µM) and A (9 µM) treatments (Table 2; Fig. 2A). In the C-treatment, a net decrease of DOC, of 5 ± 1 µM, was detected only after $T_{5.7}$ (between $T_{5.7}$ and T_{final}). As no 'extra DOC' was observed in G, A and D treatments, the variation of DOC in the control was not taken into consideration in the calculation of labile DOC in G, D and A treatments. Therefore, the resulted labile DOC fractions were 55 ± 2%, 25 ± 4% and 24 ± 8% in G, D and A treatments, respectively (Table 2).*'

The use of BP rather than BA in the calculation of BGE is addressed in the discussion section (lines: 323-331). Growth rates calculated using BA were also added in the table 3.

Modified text (lines: 323-330)

'The use of BP in the calculation of BGE could be biased as BP is determined using a leucine to carbon conversion factor. However, in this study, we still preferred using BP rather than BA in this calculation, as BA could be also subjected to a number of biases. Indeed, the determination of BGE using BA requires the utilization of abundance/biomass conversion factor and, yet biovolume varies substantially during the growth. Furthermore, the variation of cell abundance is the result of a net balance between growth and mortality. This is visible through observations of apparent growth rates, calculated from exponential growth phases of both BP and BA (Table 3), lower for BA than BP. Likewise, this is also visible regarding the lag phase, shorter for BP than BA (Table 3). This is a classical issue occurring during dilution experiments for BGEs but also leucine-conversion factors determinations (Kirchman et al., 1982; Ammerman et al., 1984).'

Modified table 3

Table 3. Duration of the exponential growth phase for bacterial abundance (BA) and bacterial production (BP), bacterial growth rate (µ) estimated from both BP and BA changes during the exponential growth phase, time integrated BP during the exponential growth phase and bacterial growth efficiency (BGE). Data from each triplicate and average (± SD) values are given for the control (C), glucose, anthropogenic and Saharan dust treatments.

Treatments	Exponential phase period for BA [days]	Exponential phase period for BP [days]	µ; [d^{-1}] (estimated from BP)	µ; [d^{-1}] (estimated from BA)	Time integrated $BP^{(b)}$ [µmol C L^{-1} dt]	BGE_{BP} [%]
C1	7.7 – 13.7	1.7 - 8.7	1.23 ± 0.19	1.41 ± 0.56	0.23	5
C2	6.7 - 8.7	1.7 - 8.7	0.94 ± 0.15	0.86 ± 0.4	0.11	2
C3	6.7 – 8.7	1.7 - 8.7	1 ± 0.13	0.94 ± 0.55	0.18	4.5
Mean (± SD)			**1.05 ± 0.15**	**1.07 ± 0.39**	**0.17 ± 0.06**	**4 ± 2**
G1	3.7 - 5.7	0 – 5.7	1.99 ± 0.32	1.21 ± 0.08	1.07	5.6
G2	2.7 – 4.7	0.7 – 3.7	3.44 ± 0.52	1.25 ± 0.49	1.87	7.8
G3	2.7 – 3.7	0 – 3.7	3 ± 0.41	1.3 ± 0.66	2.16	9.6

Mean (± SD)			**2.81 ± 0.74**	**1.25 ± 0.05**	**1.70 ± 0.57**	**7.6 ± 2**
A1	5.7 – 8.7	2.7 – 6.7	1.64 ± 0.21	1.14 ± 0.07	0.11	1.8
A2	4.7 – 8.7	2.7 – 6.7	1.62 ± 0.28	1.37 ± 0.15	0.19	1.7
Mean (± SD)			**1.63**	**1.25**	**0.15**	**1.7**
D1	5.7 – 7.7	2.7 – 7.7	1.74 ± 0.09	1.05 ± 0.19	1.11	16.1
D2	5.7 – 7.7	0.7 – 7.7	1.41 ± 0.10	1.01 ± 0.16	1.58	18.5
D3	4.7 – 5.7	1.7 - 5.7	1.80 ± 0.30	1.10 ± 0.49	0.88	8.1
Mean (± SD)			**1.65± 0.20**	**1.05± 0.04**	**1.19 ± 0.36**	**14.2 ± 5.5**