We thank Dr. Turnbull for her insightful and rapid feedback, which certainly improves the quality of our paper. We have addressed the comments point by point below:

- Reviewer's comments are shown in red
- Author's response is shown in black

Pg 3934 line 26-27. Clarify whether these values are for the extraction component only, vs including graphitization contamination.
In this part of the abstract, we wanted to emphasize the contribution of the extraction component only (*The Swiss_4S protocol + the cryo-trapping*), which does not include graphitization. In the revised draft, we will change the text to make this distinction more clear.

Original:
"The Swiss_4S protocol and the cryo-trapping contributed 0.37±0.18 μg of modern carbon and 0.13±0.07 μg of fossil carbon to the estimated blanks, with consistent estimates obtained for the two laboratories."

Revised:
The extraction procedure (Swiss_4S protocol and cryo-trapping only) contributed 0.37 ± 0.18 μg of modern carbon and 0.13 ± 0.07 μg of fossil carbon to the total blank of our system, with consistent estimates obtained for the two laboratories.

Pg 3939 lines 9-10. Please describe and/or reference these standard analytical protocols.
In the revised manuscript, we will include the following references, which include a detailed description and evaluation of each protocol.
NIOSH (NIOSH, 1999)
IMPROVE_A (Chow et al., 2007)
EUSAAR-2 (Cavalli et al., 2010)

Cavalli, F., Viana, M., Yttri, K. E., Genberg, J. and Putaud, J.-P.: Toward a standardised thermal-optical protocol for measuring atmospheric organic and elemental carbon: the EUSAAR protocol, Atmos. Meas. Tech., 3(1), 79–89, doi:10.5194/amt-3-79-2010, 2010.

Chow, J. C., Watson, J. G., Chen, L. W. A., Chang, M. C. O., Robinson, N. F., Trimble, D. and Kohl, S.: The IMPROVE_A temperature protocol for thermal/optical carbon analysis: maintaining consistency with a long-term database., J. Air Waste Manag. Assoc., 57(9), 1014–1023, doi:10.3155/1047-3289.57.9.1014, 2007.

NIOSH: ELEMENTAL CARBON (DIESEL PARTICULATE): METHOD 5040, in Manual of Analytical Methods, pp. 1–9, National Institute of Occupational Safety and Health, Cincinnati, OH., 1999.

Pg 3939 line 22 "..because it requires. . ." would read more clearly as ". . .because 14C

requires. . .”
We will re-phrase this sentence as suggested in the revised manuscript.

Pg 3940 lines 10 -11. What happens to the S3 material? Is it included in either EC or OC, or just discarded?
In the revised manuscript, we will clarify that S3 material is not included in either fraction and is therefore discarded.

Pg 3941 lines 11-12. It would be clearer to say that O2 and non-condensibles are “removed “ from the sample rather than the sample is “purified from”.
We will revise the sentence accordingly.

Pg 3942, line 5. “build” not “built”.
This will be corrected in the new version.

Pg 3947 line 24. Gauge not gage.
This will be corrected in the new version.

Section 3.3. A linear regression is a weak way of comparing these datasets, particularly since both measurements have large errors. It is not clear from the analysis whether Type II regression was used (which can take into account both errors).
We thank the reviewer for this suggestion. In the revised manuscript, we will use Pearson’s Major Axis Type II regression, in which a line is fitted by minimizing both x- and y-residuals simultaneously and all data are given equal weight.
The revised parameters are:
Slope = 1.236 (± 0.171 standard deviation) and $R^2 = 0.85$
A figure showing the difference in the slope is attached on the last page.

Comparing the two regression approaches, we found that the linear relationship holds true for the Type II regression, with a higher R^2 and slightly steeper slope than with the Type I regression (1.0536 ± 0.053, $R^2 = 0.84$).

It is worth noting that the EC samples are much smaller in size and consequently have a higher uncertainty level, which can explain the rather large standard deviation of the slope. The steepness of the slope we observe is primarily driven by the smallest measured EC sample, which consequently has highest uncertainty. If this sample is excluded, the new Type II regression slope is equal to 1.07 ± 0.01 and is much closer to the 1:1 line with $R^2 = 0.95$.
Further, this analysis does not consider the variation within a single filter, which has been shown to vary by filter mass and sample density distribution.

Certainly, given the large measurement errors, the r2 value is not very useful. A more detailed statistical analysis would be appropriate here to determine how large the biases are between the two labs – there are a number of ways to do this, perhaps most simply a paired sample t-test.
In order to obtain a better comparison between the two labs, we followed the reviewer’s

suggestion and performed a paired sample t-test, assuming unequal variances in the measurements of the two labs and two tails.

The results, which will be included in the revised manuscript, suggest that the null hypothesis ("means are equal") cannot be rejected at the 5% significance level for OC, EC and OC and EC together. The p-value or probability of observing the given result was 0.79.