Q1: *In some places, chlorophyll is estimated from aph, but the 440 nm band is used, which is divided by 0.05582. This is gross and does not consider packaging effect. At a zero cost the power law formula from aph(660) could be used instead.*

Response: We agree that a_{ph} in the red is a better proxy of Chla because this band is less affected by various accessory pigments and package effect than the blue absorption band. However, in these specific calculations this aspect is not critically important because the purpose is to generate a relatively large range of variability in one of the IOP coefficients, which is accomplished through the use of a random factor, and not to predict Chla.

Q2: *The backscattering ratios of phytoplankton and non-algal particles have to be assumed. regarding the former, there is some data by Whitmire et al. (2010), so 0.01 has not to be assumed anymore. Also, that ratio can be related to other parameters such as the specific scattering or backscattering of phytoplankton.*

Response: The paragraph has been modified as follows: "where 0.01 is the value of backscattering ratio of phytoplankton, $\tilde{b}_{b-ph}$, assumed to be constant and independent of light wavelength in the present study (IOCCG, 2006; Loisel et al., 2007). Laboratory measurements performed on various phytoplankton cultures have shown, however, that, $\tilde{b}_{b-ph}$ can exhibit a slight spectral variation with the value at 442 nm ranging from 0.0035 to 0.029 (Whitmire et al., 2010)."

Q3: *Fig. 12 is trivial and suits more a textbook than a paper with new findings. There are many ways in which the resulting AOPs can be presented. For instance, an ad-hoc classification in optical water types, and for each class the ternary plot of the absorption budget.*

Response: As mentioned in our previous response to Reviewer, the purpose of this figure is not to provide scientifically novel information but rather to illustrate the spectral and vertically-resolved (along the water column) optical information included in this new synthetic database. This can be useful to readers interested in this kind of optical data, especially that other commonly known synthetic optical databases (IOCCG, 2006; Craig et al., 2020) do not include data as a function of depth within the water column.