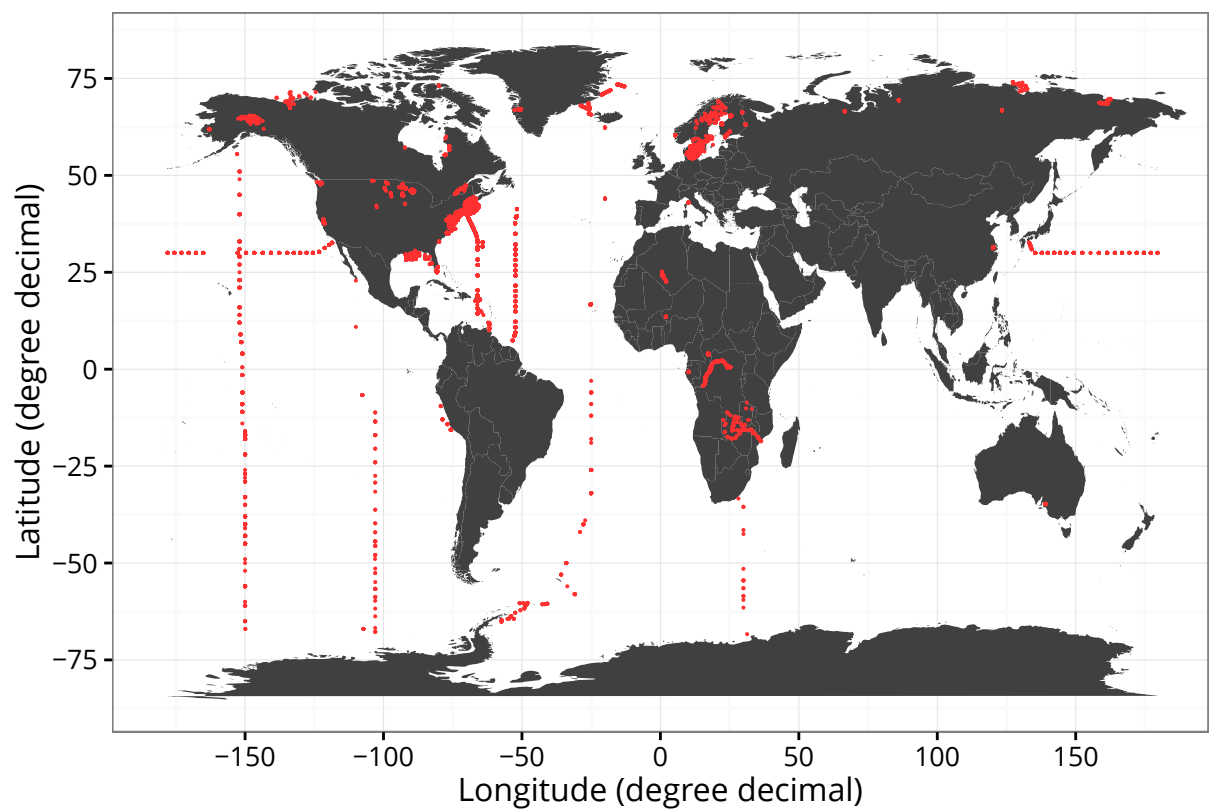
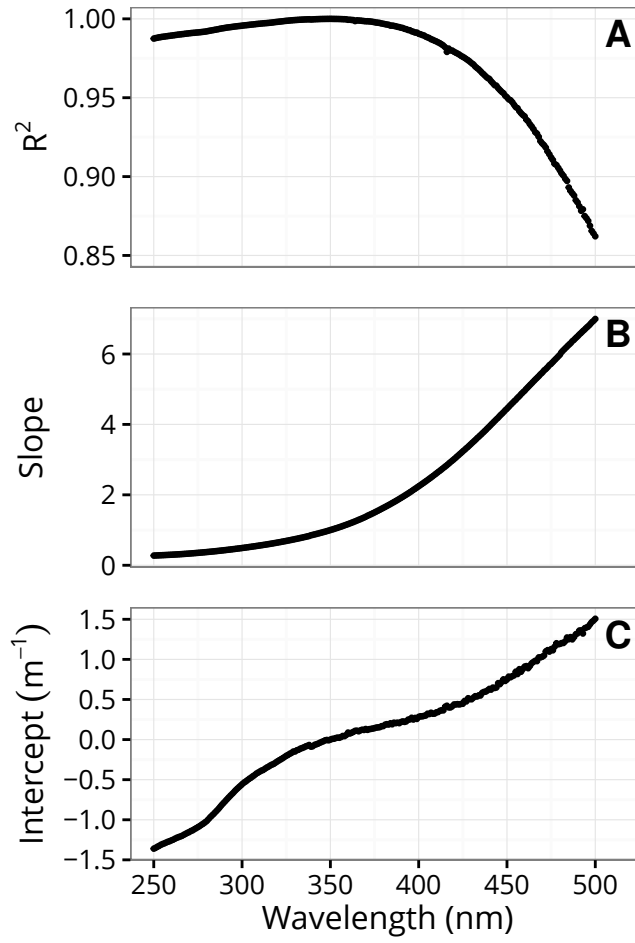


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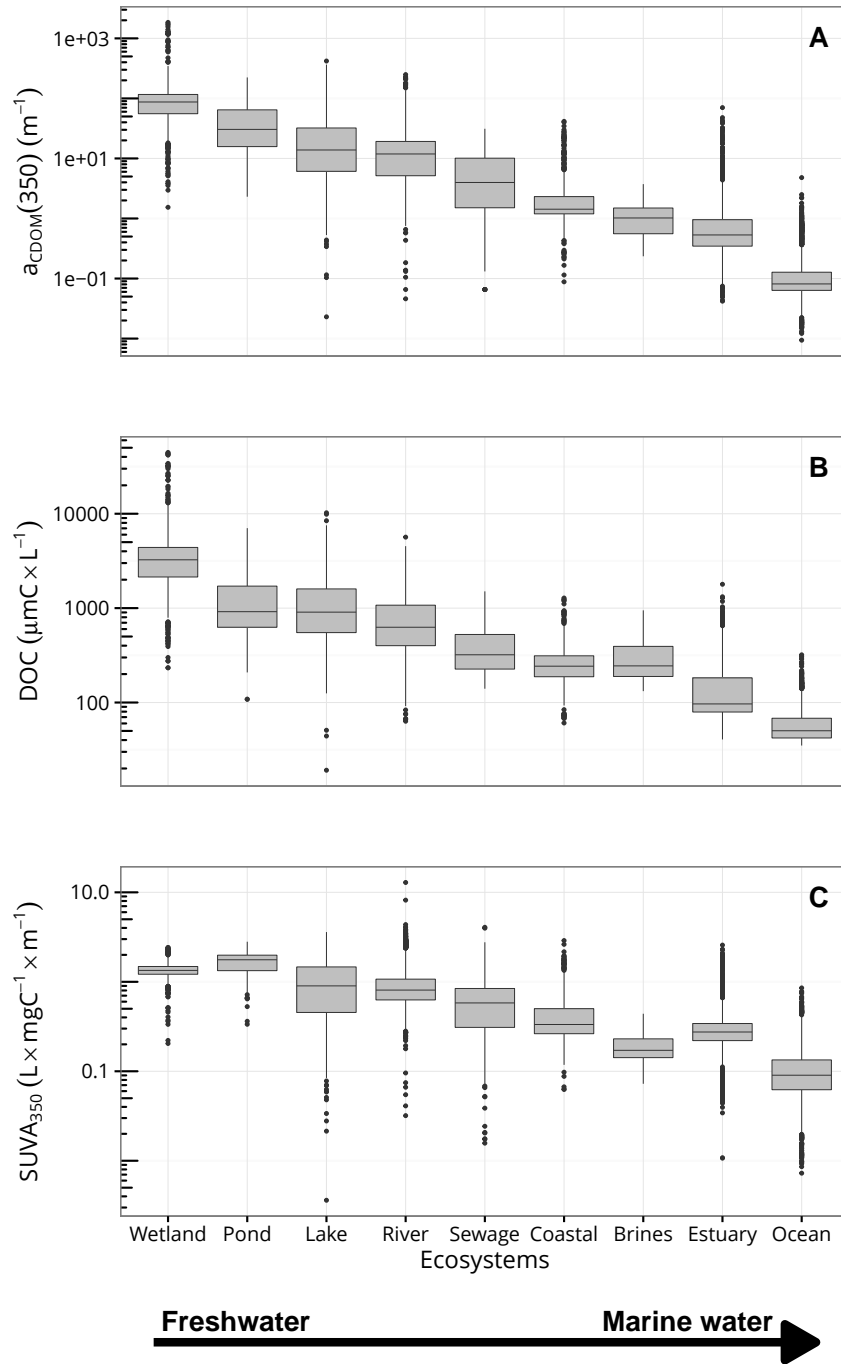
## Figures



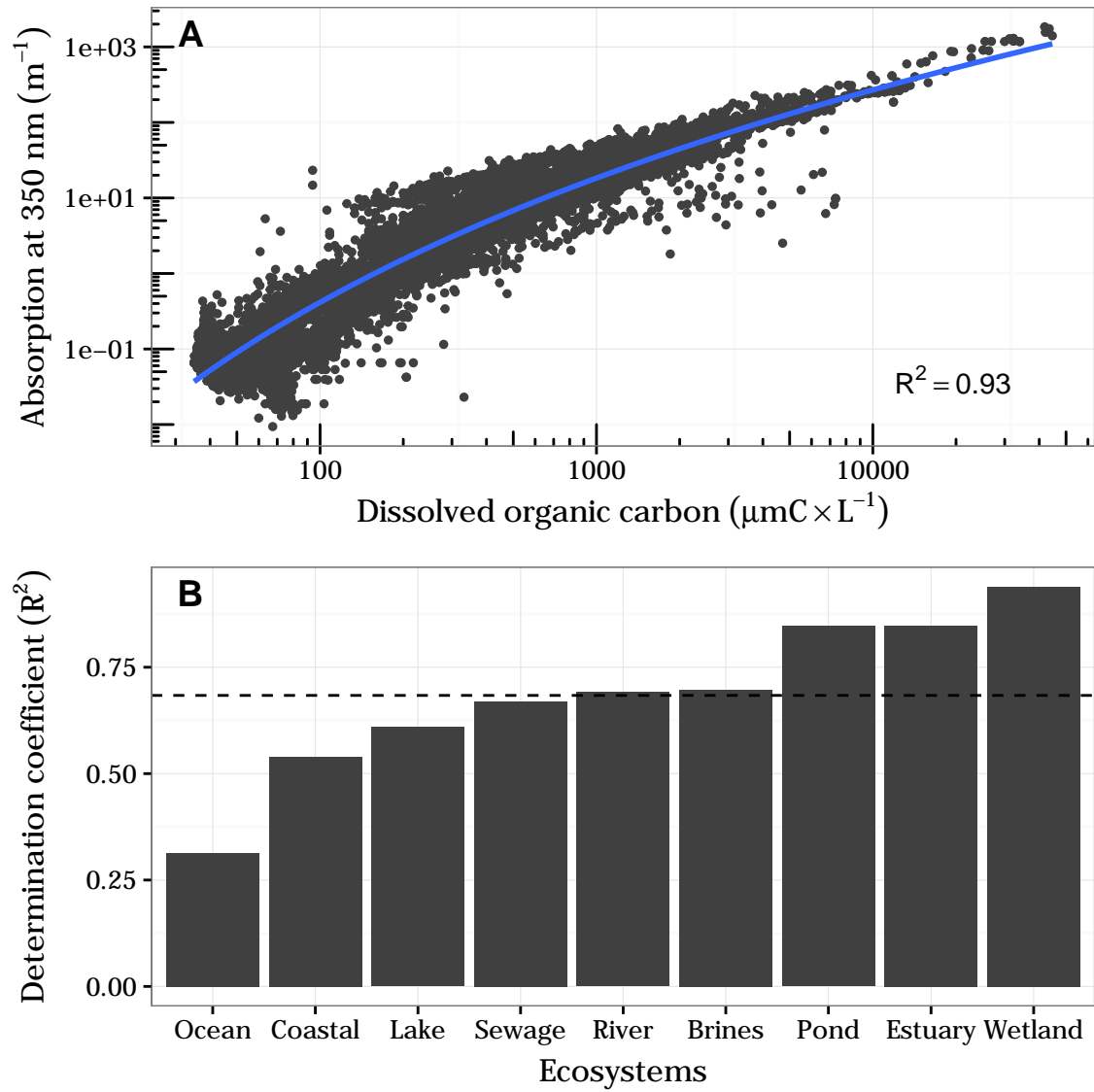
**Figure 1:** World map showing the spatial distribution of the observations extracted from the literature ( $n = xxx$ ).



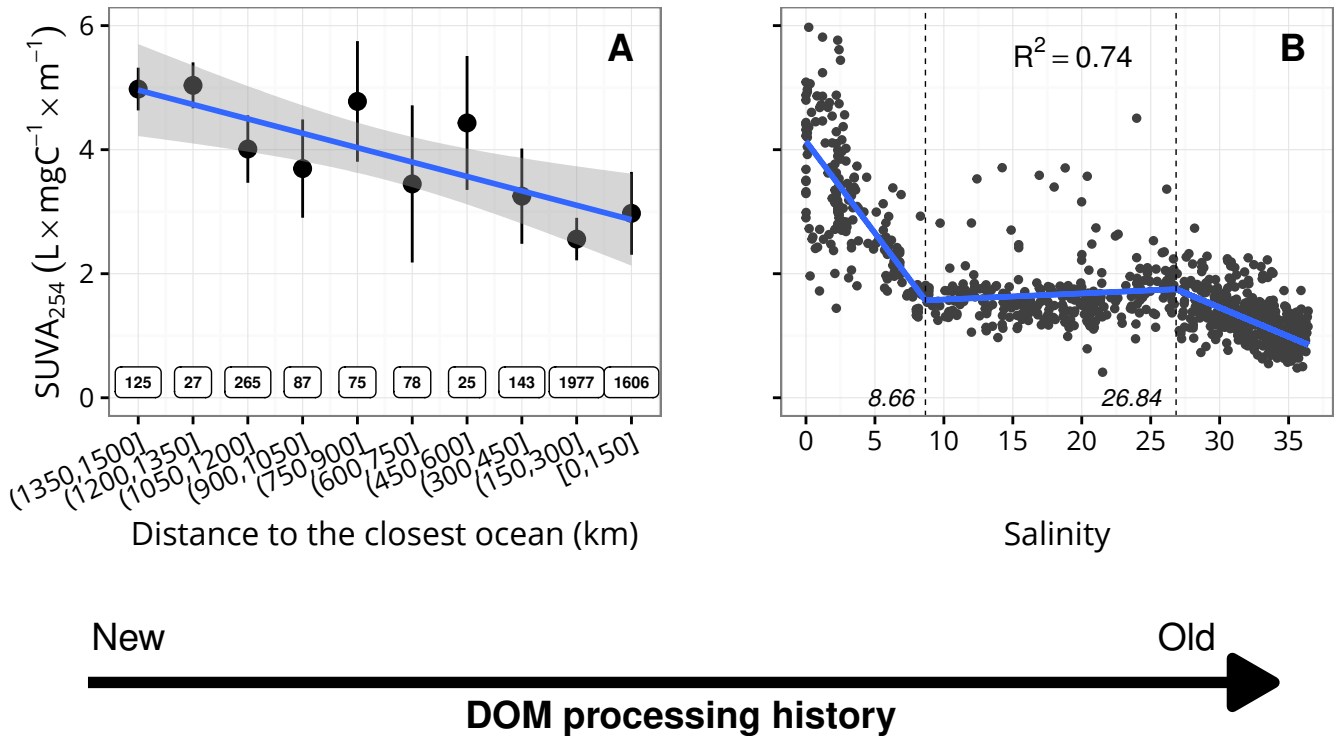
**Figure 2:** Results of the linear regressions between  $a_{\text{CDOM}}(350)$  and  $a_{\text{CDOM}}(\lambda)$ . **(A)** Determination coefficients ( $R^2$ ), **(B)** slopes and **(C)** intercepts of the linear regressions. Panels contain the results of 251 linear models, each based on 2321 data points. Note that at  $\lambda = 350$  nm,  $R^2 = 1$ , slope = 1 and intercept = 0.



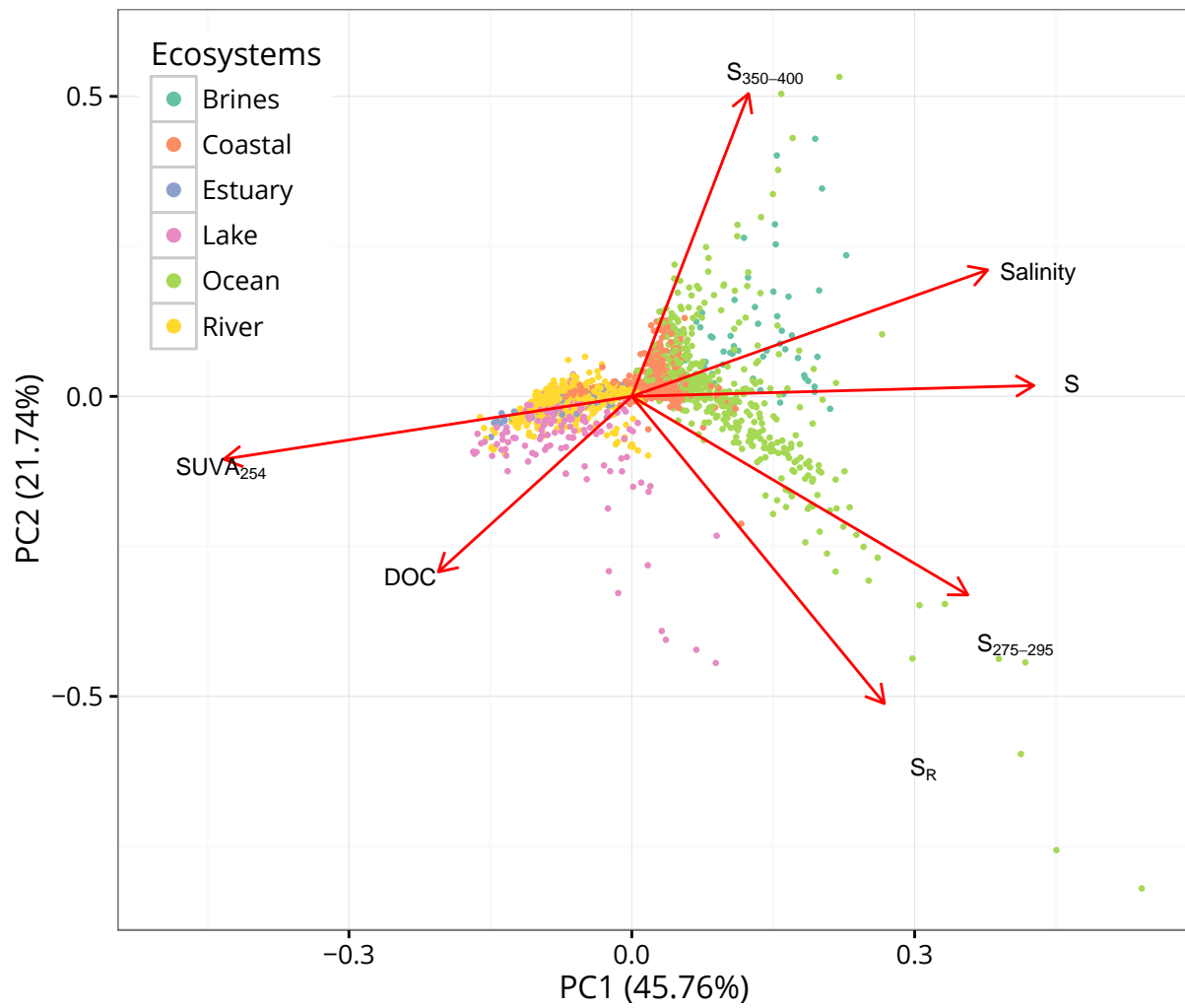
**Figure 3:** Boxplots showing the distribution of (A) absorption coefficients at 350 nm ( $a_{CDOM}(350)$ ), (B) dissolved organic carbon (DOC) and (C) the specific ultra-violet absorbance at 350 nm ( $SUVA_{350}$ ). Y-axis are log-transformed given the wide ranges spanned by the data.



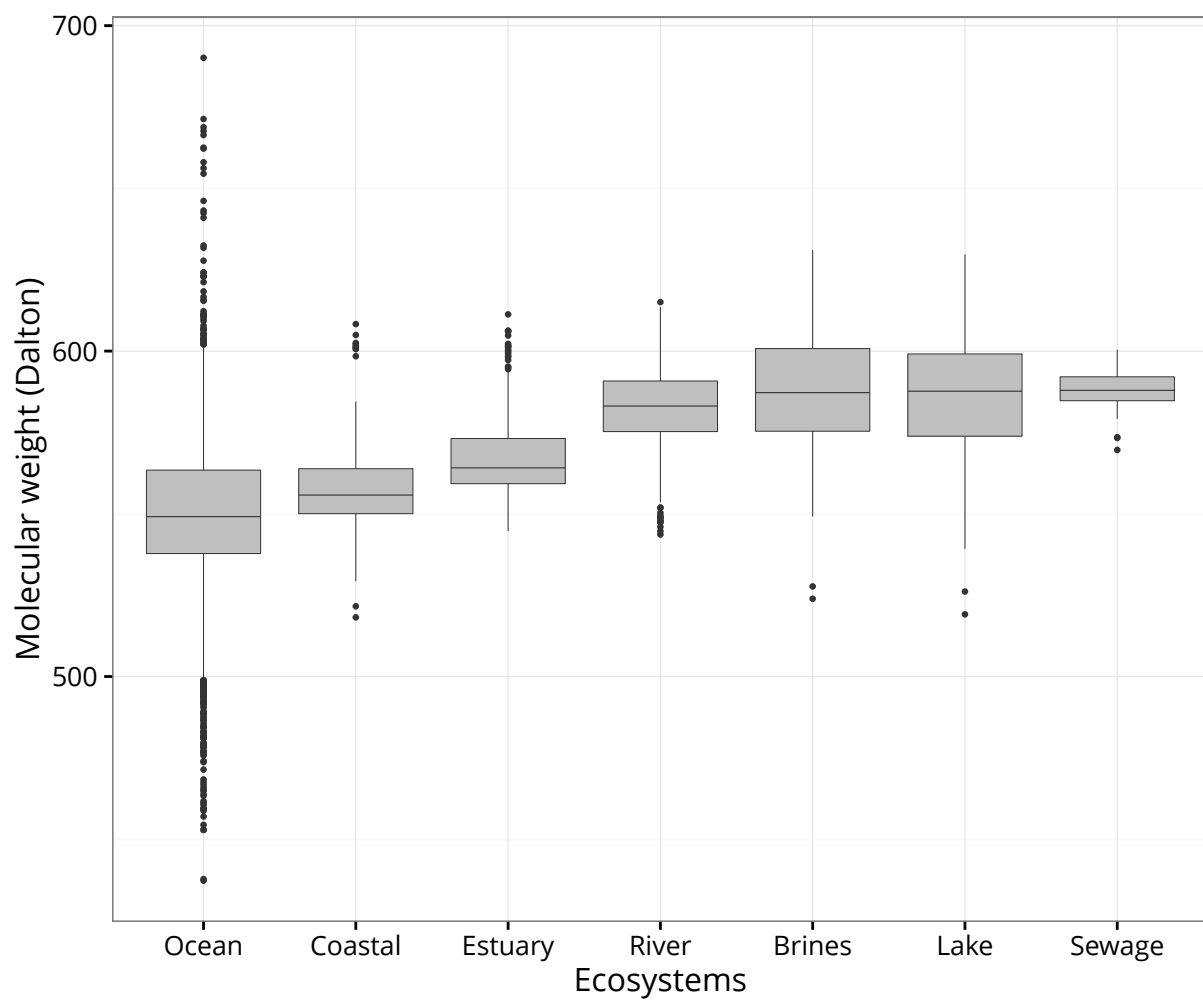
**Figure 4:** **(A)** Global relationship between absorption at 350 nm  $a_{\text{CDOM}}(350)$  and dissolved organic carbon. The blue line is the fitted values of a linear model  $y = \log(x)$ ,  $R^2 = 0.93$ ,  $p < 0.00001$ ,  $n = 11562$ . **(B)** Barplot showing the determination coefficient ( $R^2$ ) of the linear relationships between  $a_{\text{CDOM}}(350)$  and DOC by ecosystems. The dashed horizontal line represents the average of  $R^2$ .



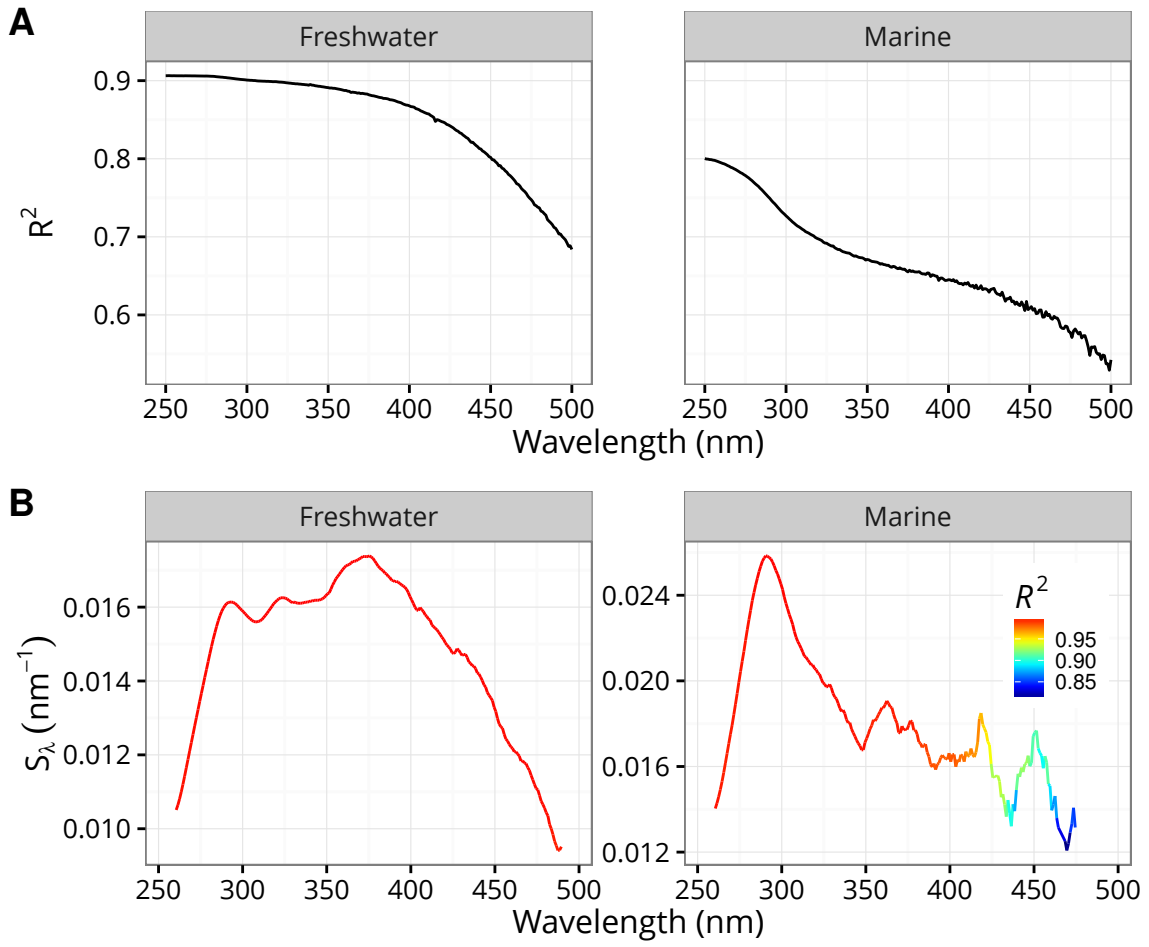
**Figure 5:** (A) Averaged SUVA<sub>254</sub> calculated using observations from river ecosystem as a function of the distance to the closest ocean. The blue line represented the fitted linear model and the shaded area the 95% confidence interval. The vertical error bars represent the standard deviation. The labels on the bottom show the number of observation in each distance bin. (B) Segmentation analysis performed on the linear relationship between SUVA<sub>254</sub> and salinity ( $R^2 = 0.74$ ,  $p < 0.00001$ ,  $n = 1841$ ). Dashed vertical lines represent the identified break-points at salinity 8.66 and 26.84.



**Figure 6:** Principal component analysis showing the linear relationships between selected variables ( $n = 1841$ ). The total variance explained by the first two principal components is 67.5%.



**Figure 7**



**Figure 8:** (A) Determination coefficient ( $R^2$ ) showing the goodness of the linear fit between DOC and absorption coefficients measured at different wavelengths for both freshwater and marine ecosystems. (B) Spectral slope curve ( $S_\lambda$ ) calculated on averaged absorption spectra on freshwater and marine ecosystems using a 21 nm wavelength interval.