remote sensing

MDPI

Supporting Information for

Improving the retrieval of carbon-based phytoplankton biomass from satellite ocean colour observations

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Figure S1 shows the scheme of the algorithm here developed.

Table S1 contains the basic statistics of the validation analysis for all the matchup with $\log_{10}$ transformed data.

Figures S2 to S13 are the global monthly climatologies of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d). Note that the 1-σ uncertainty gives an estimate of uncertainty for each b_{bp}^{k} pixel computation. The significance S is obtained after application of t-Student Test between daily Chl-b_{bp} data at pixel scale; this can help to understand the robustness of each single fit at pixel-scale. The C_{phyto} maps are global mean monthly climatological maps obtained by the application of Eq. 3 into the manuscript to monthly climatological b_{bp} maps.

Figures S14 show the global mean and standard deviation b_{bp}^{k} maps.

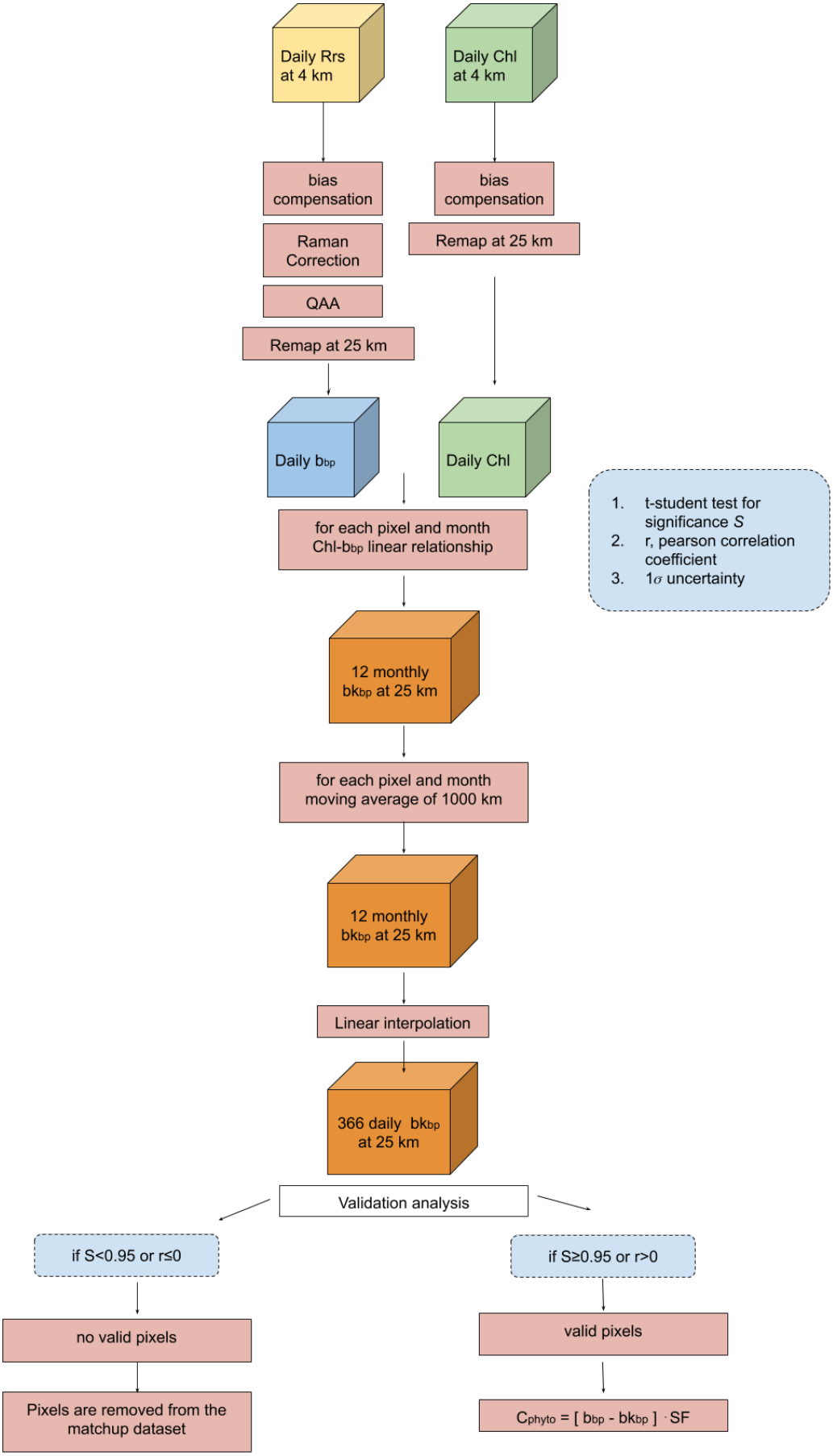

Figure S1. Scheme of the algorithm here developed. Note that b_{bp} is at 443nm.

Table S1. Statistics for each single approach using untransformed and $\log_{10}$ transformed data (N=396). δ is the bias; σ_Δ is the standard deviation of the difference and ∇ is the relative percentage bias. In bold the best values.

$\log_{10}$ transformed data						
	This Study	Bel18	Gra15	Beh05	Bre12	MV17
δ	**-0.06**	-0.02	0.33	0.26	0.13	0.37
σ_Δ	0.37	0.41	0.27	0.28	**0.32**	0.29
∇(%)	**0.17**	5.13	44.60	36.19	21.94	48.29

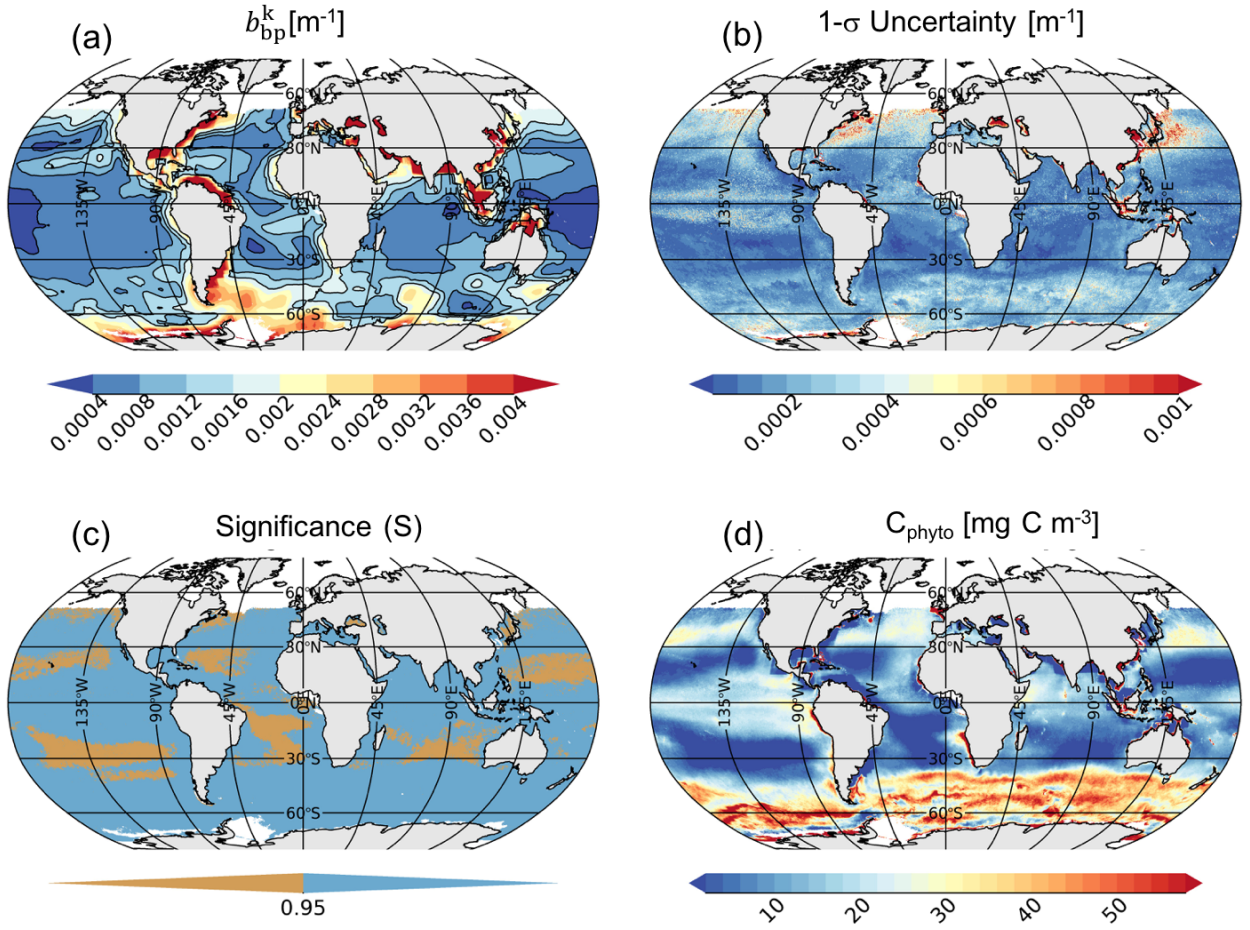

Figure S2. January global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto}(d).

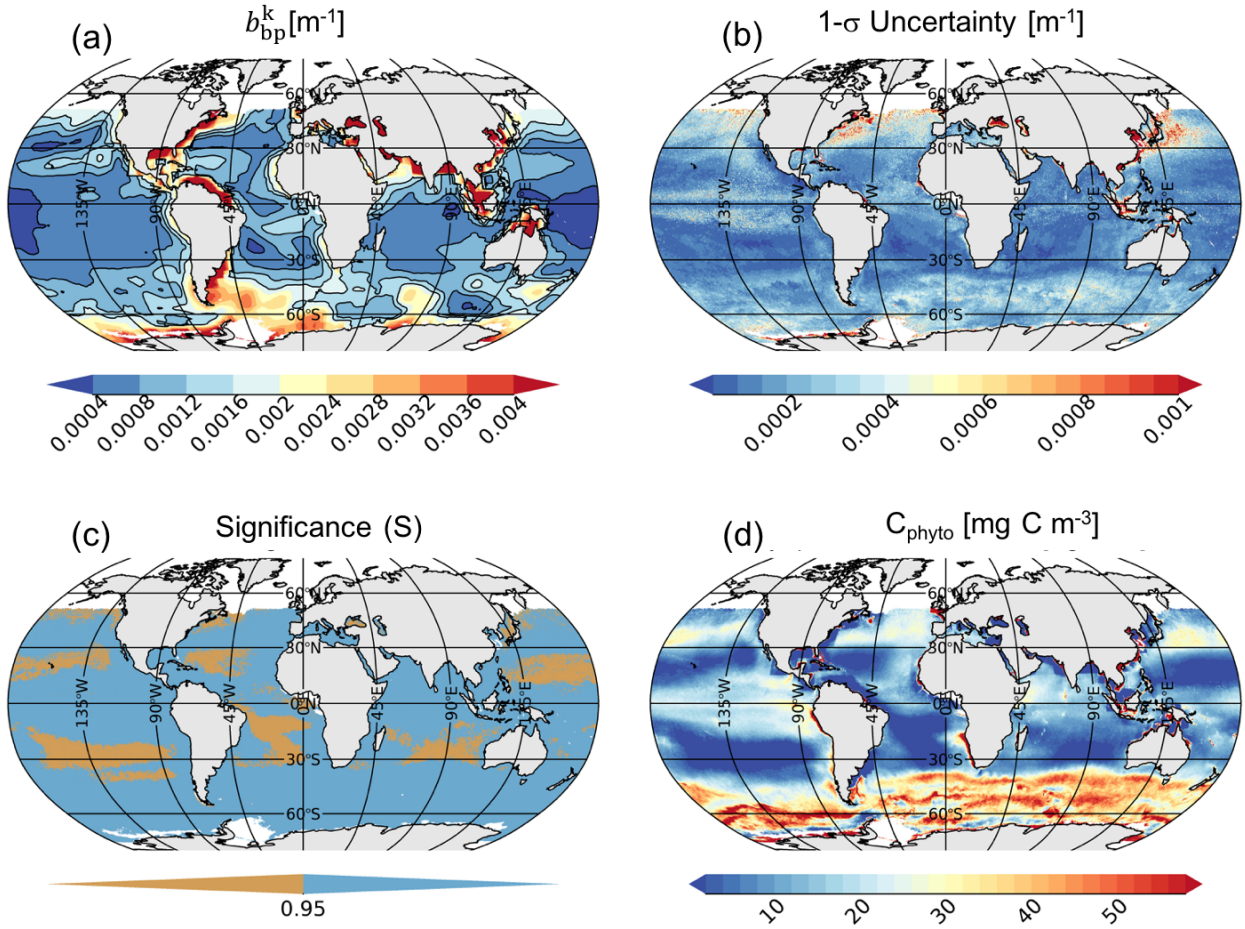

Figure S3. February global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

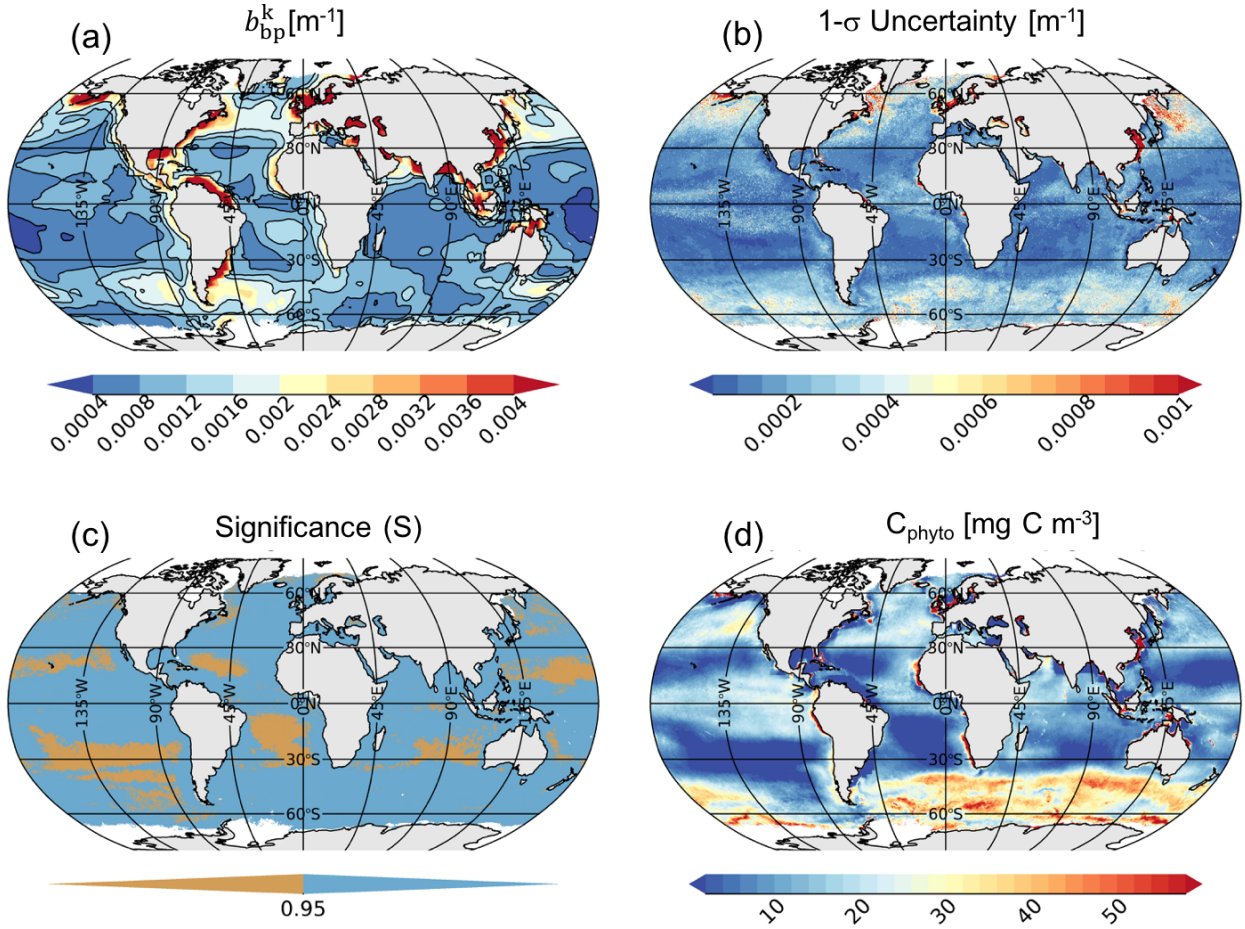

Figure S4. March global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

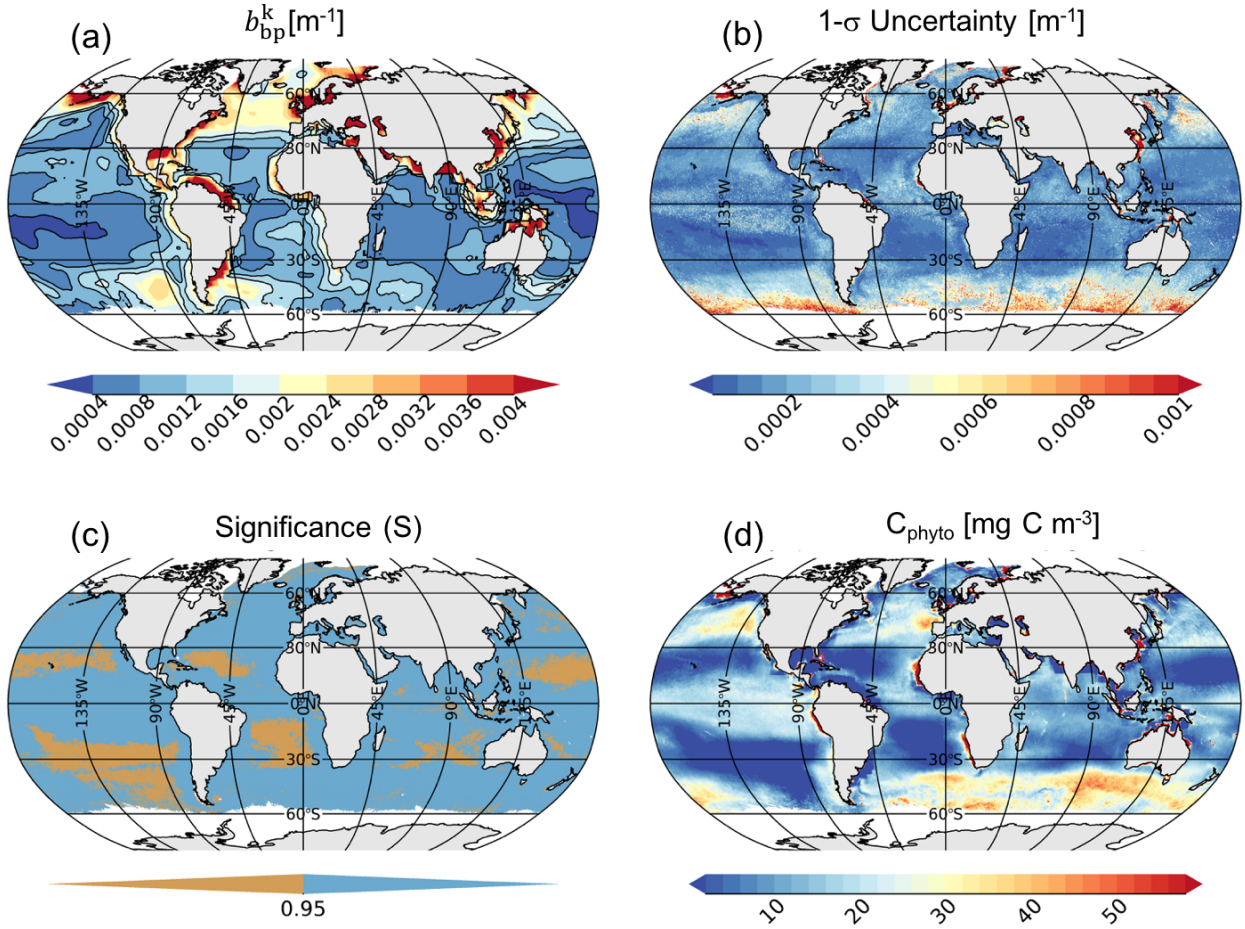

Figure S5. April global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

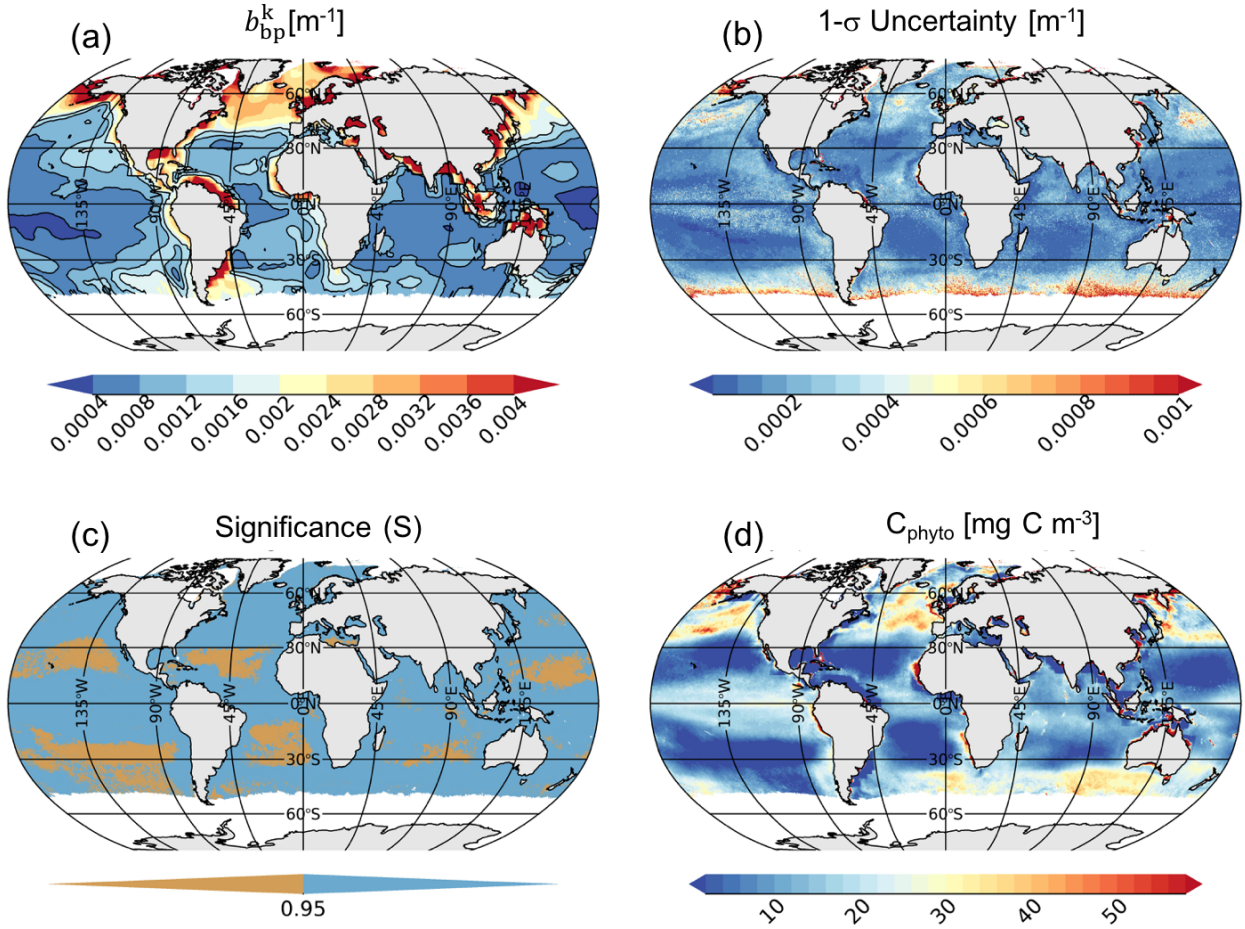

Figure S6. May global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

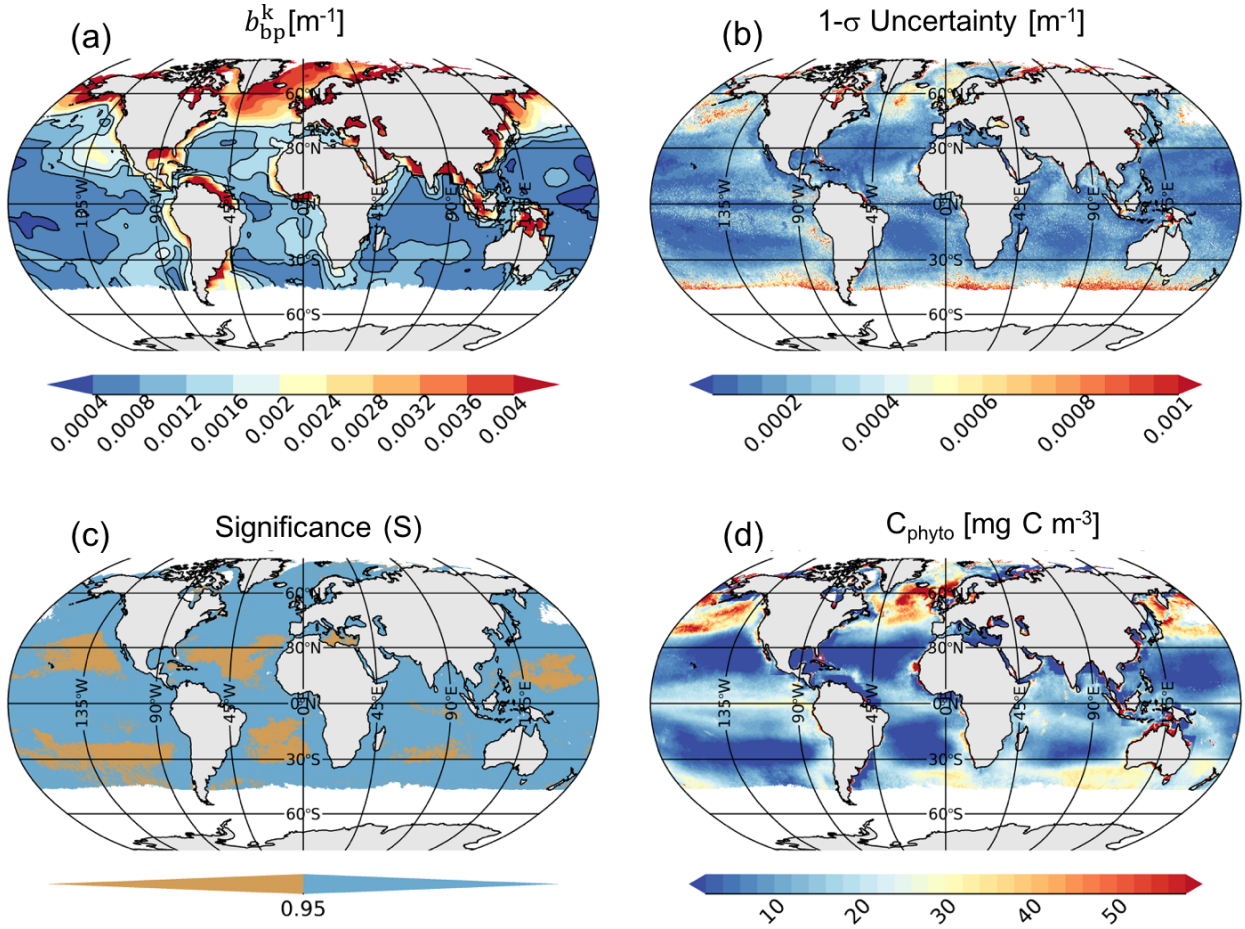

Figure S7. June global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

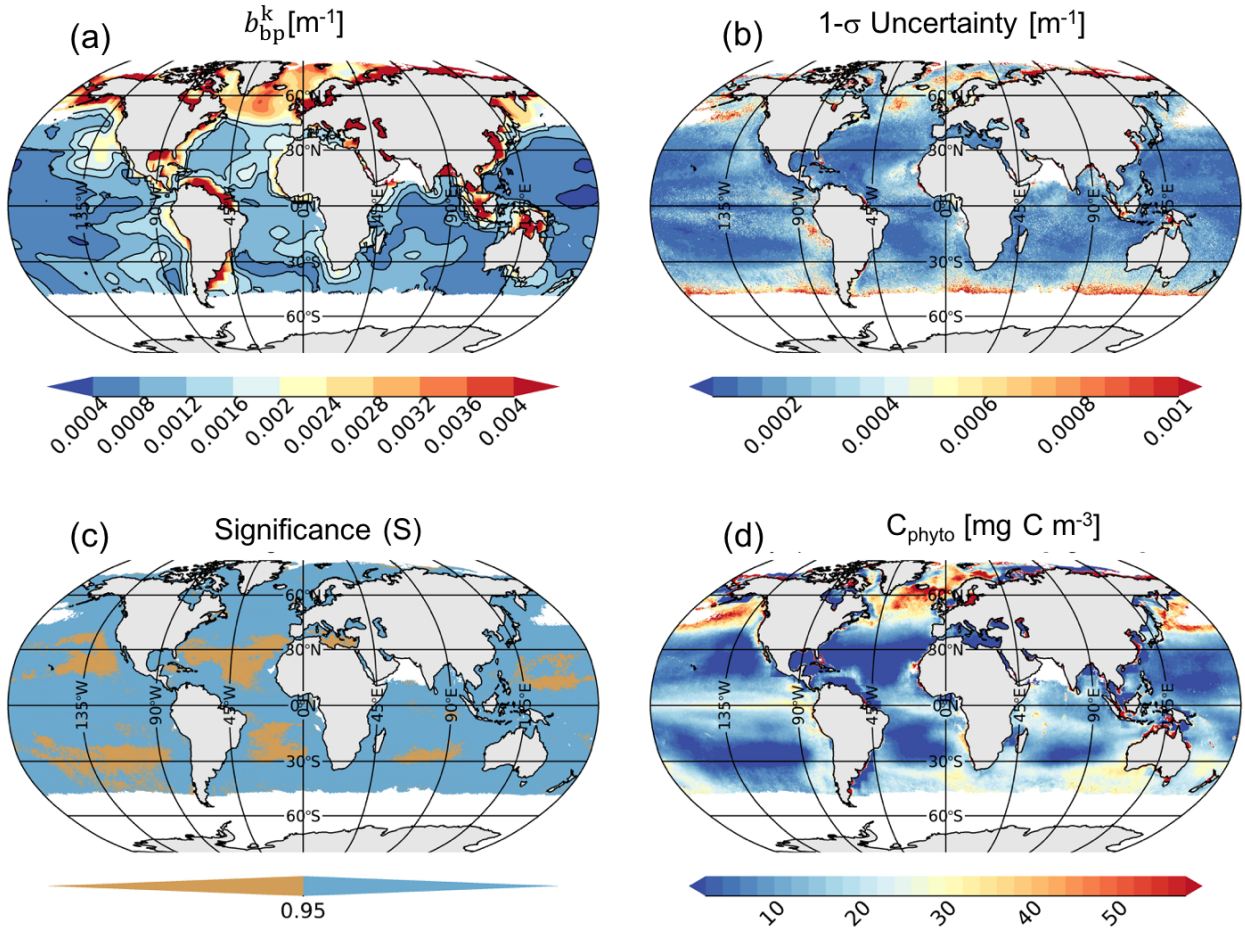

Figure S8. July mean global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

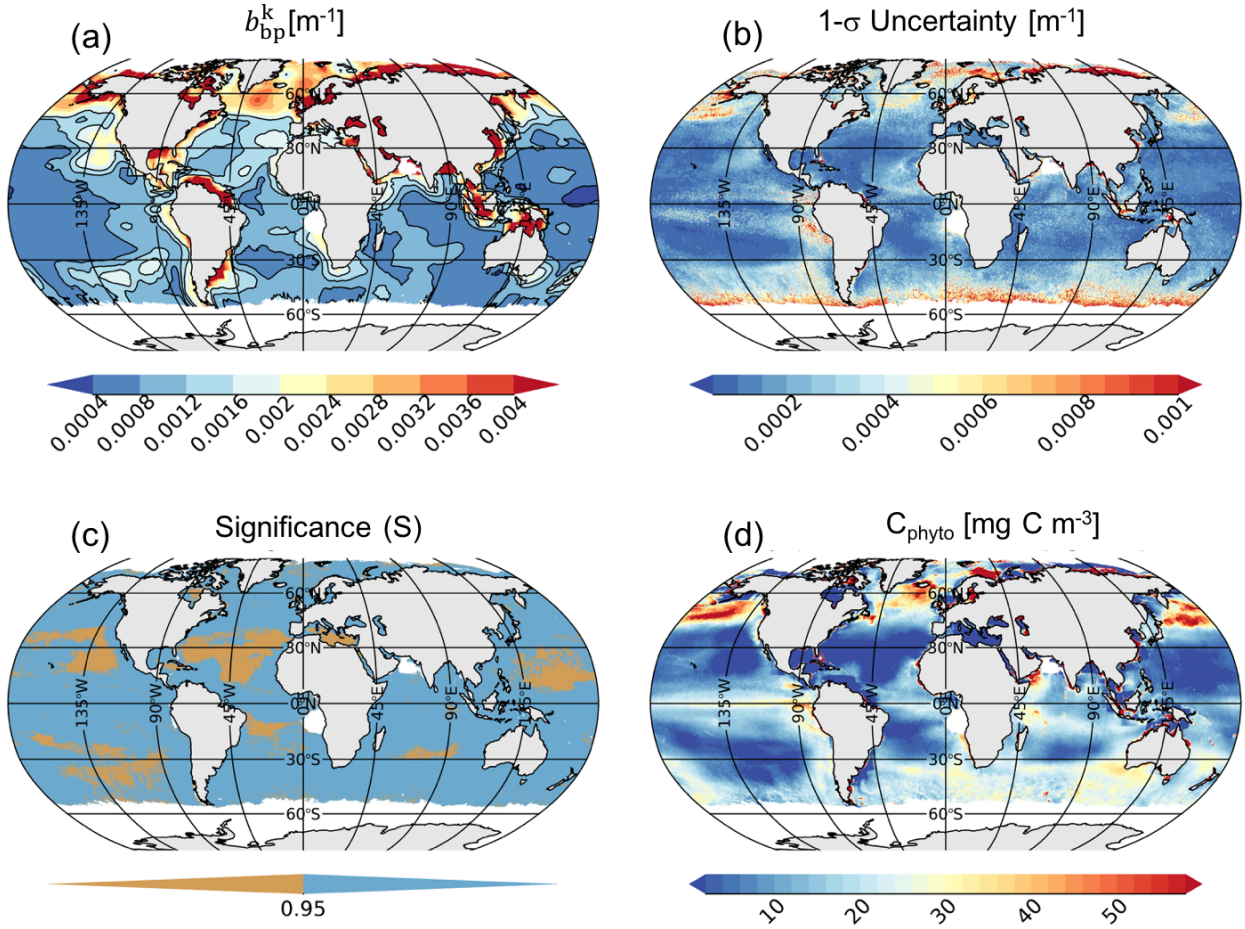

Figure S9. August global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

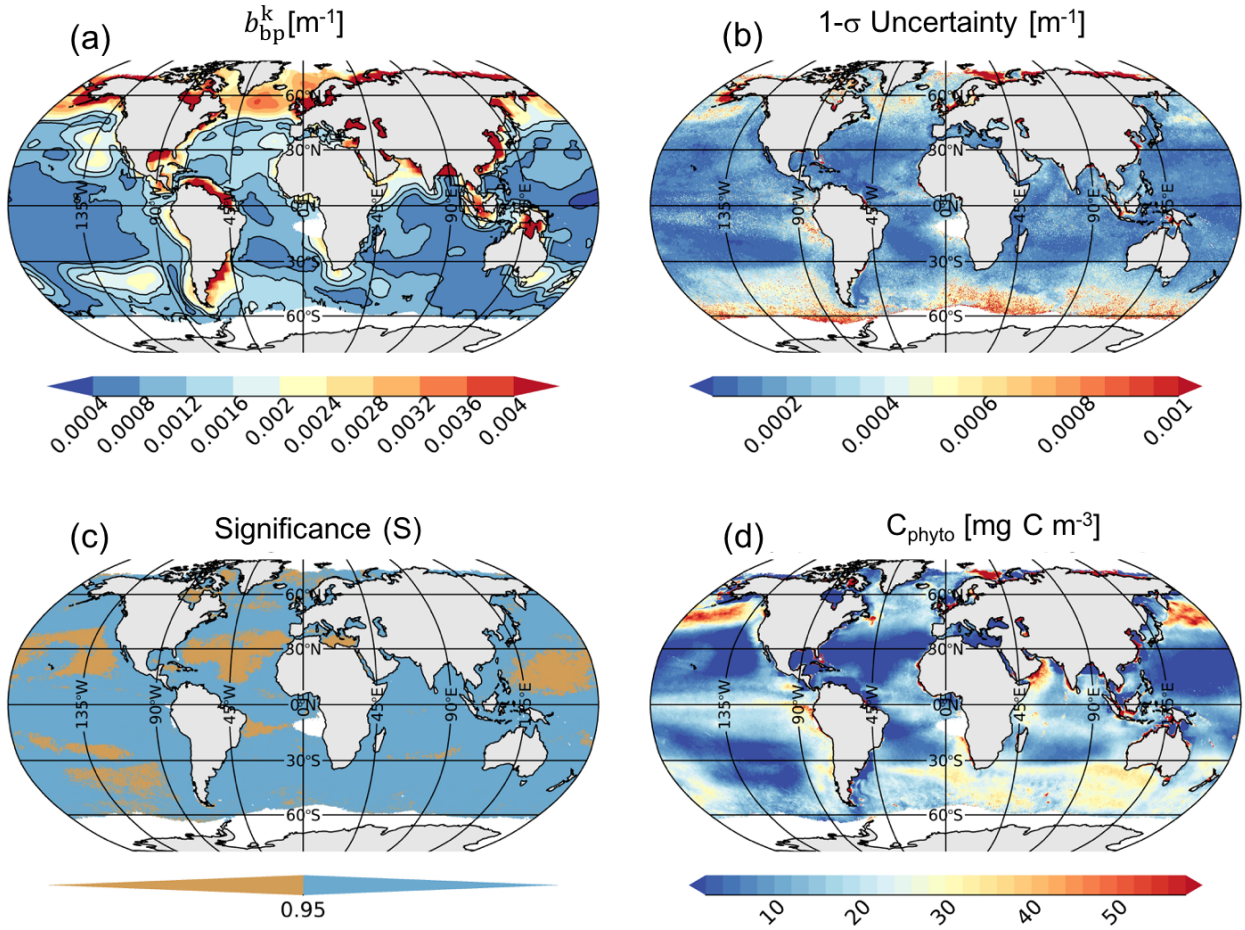

Figure S10. September global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

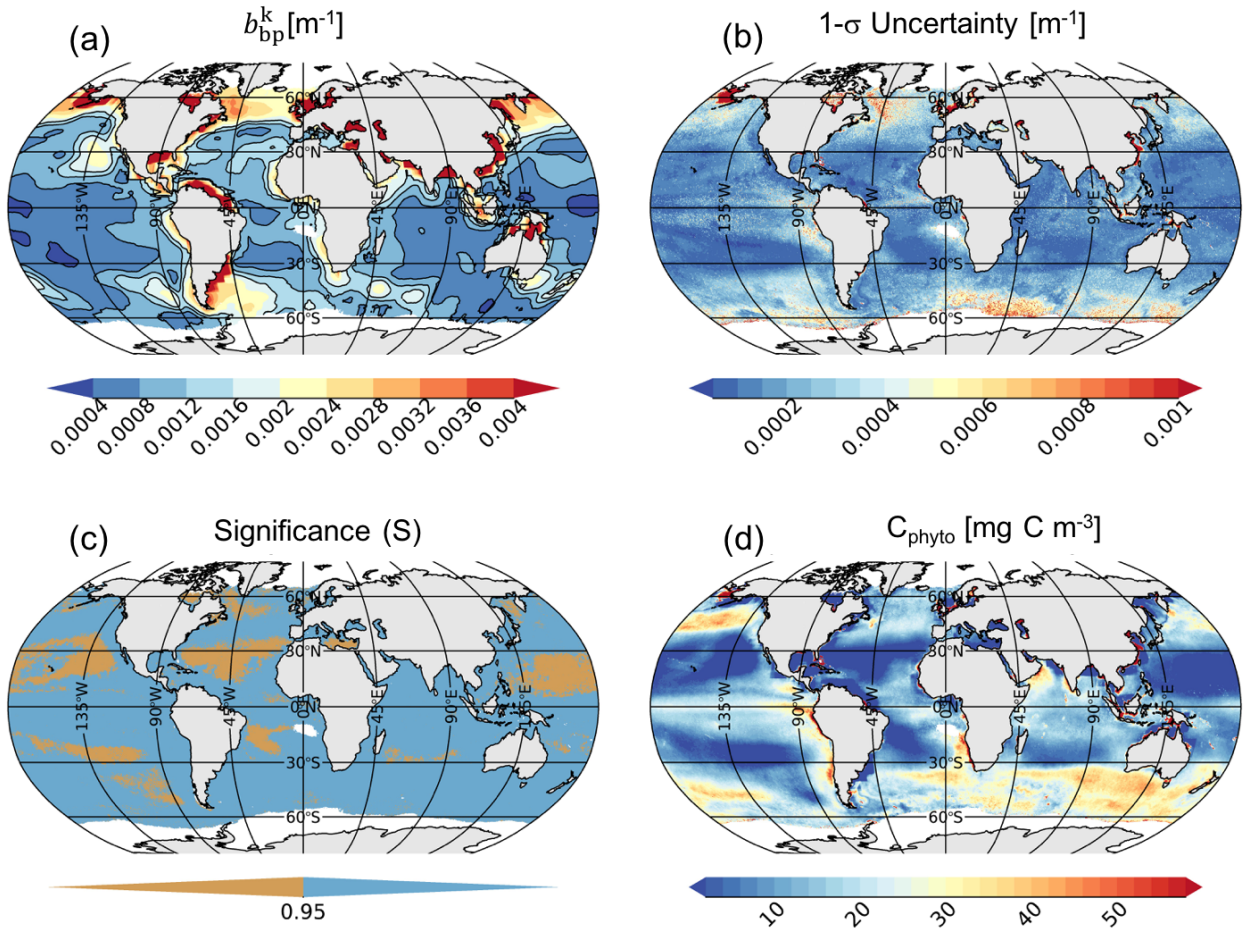

Figure S11. October global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

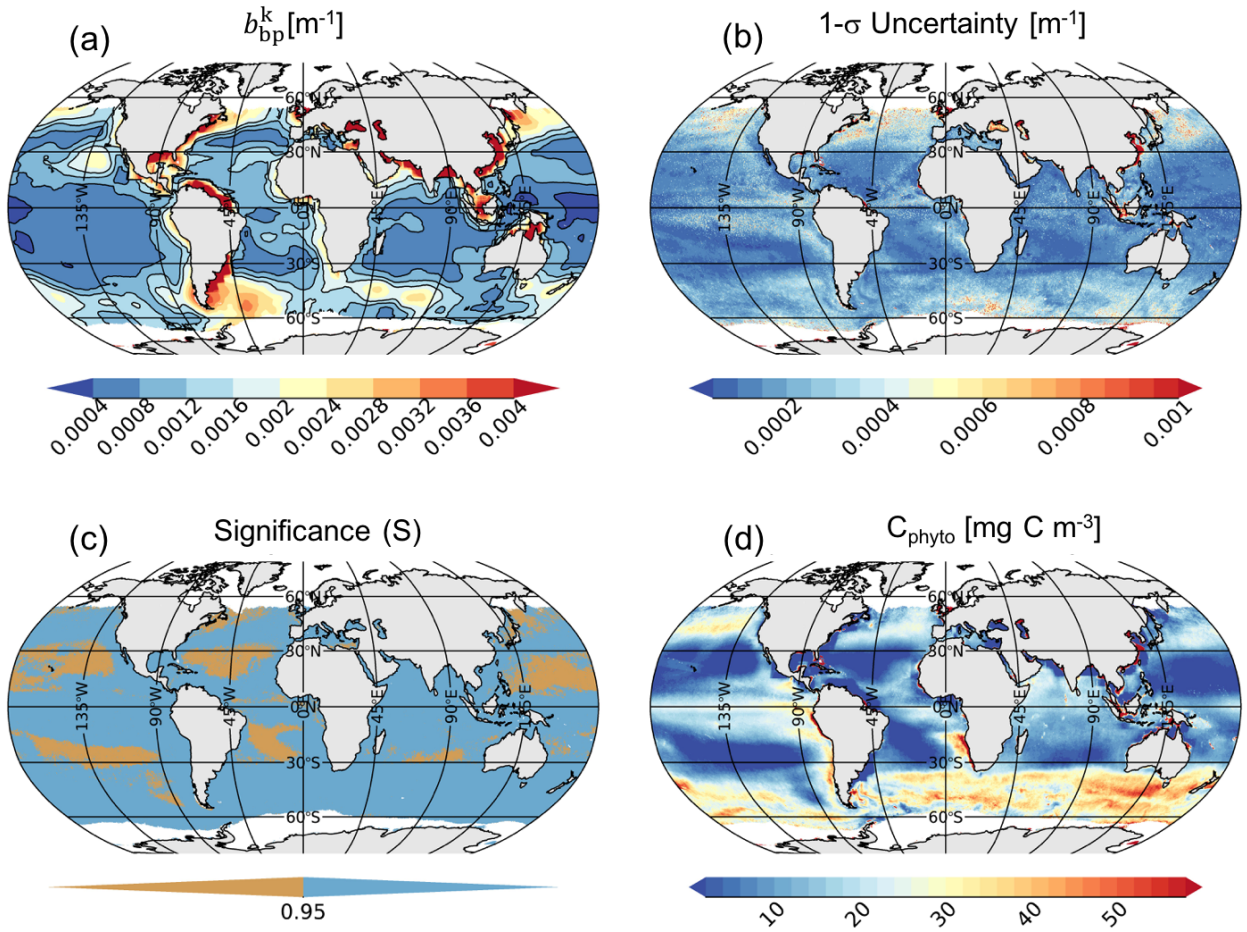

Figure S12. November global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

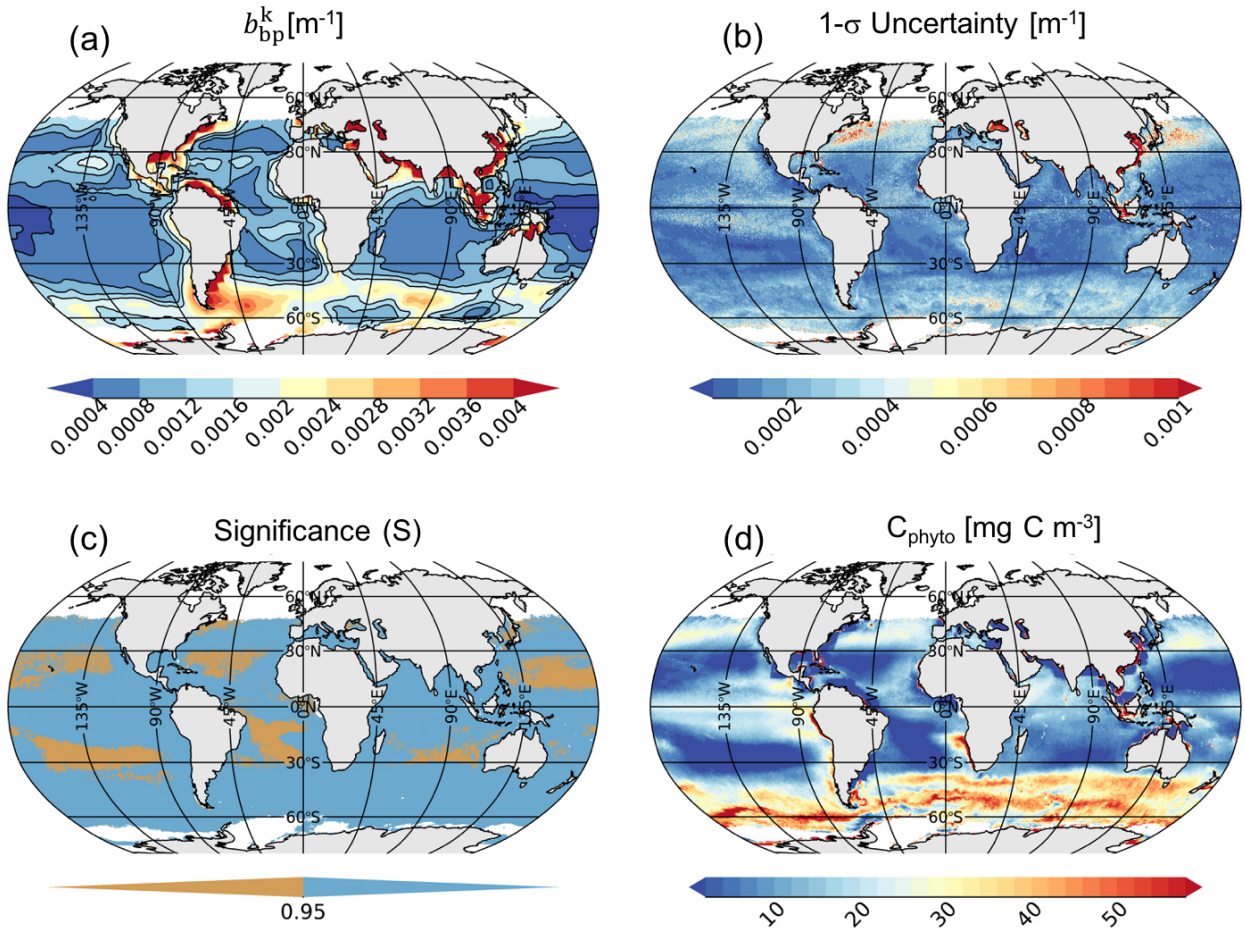

Figure 13. December global mean climatological of b_{bp}^{k} (a), 1-σ uncertainty (b), significance S (c) and C_{phyto} (d).

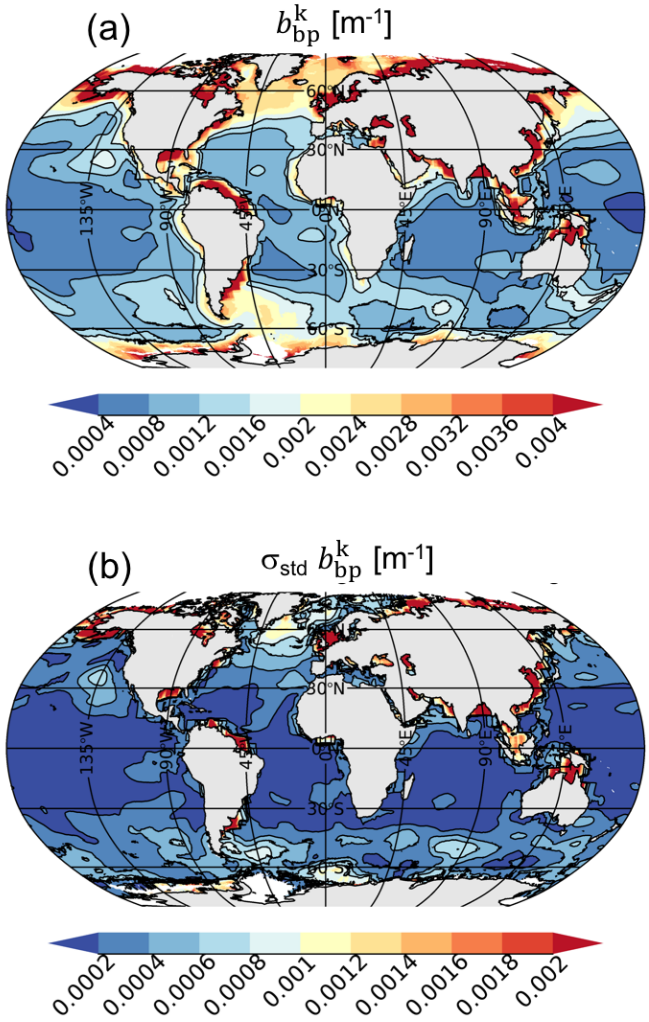

Figure 14. global mean (a) and standard deviation (b) of b_{bp}^{k}. Note that at high latitudes, the number of satellite observations used for the mean and standard deviation computations are lower than those used at low or mid-latitudes due to the winter darkness.