



Supplement of

Controlling factors on the global distribution of a representative marine non-cyanobacterial diazotroph phylotype (Gamma A)

Zhibo Shao and Ya-Wei Luo

Correspondence to: Ya-Wei Luo (ywluo@xmu.edu.cn)

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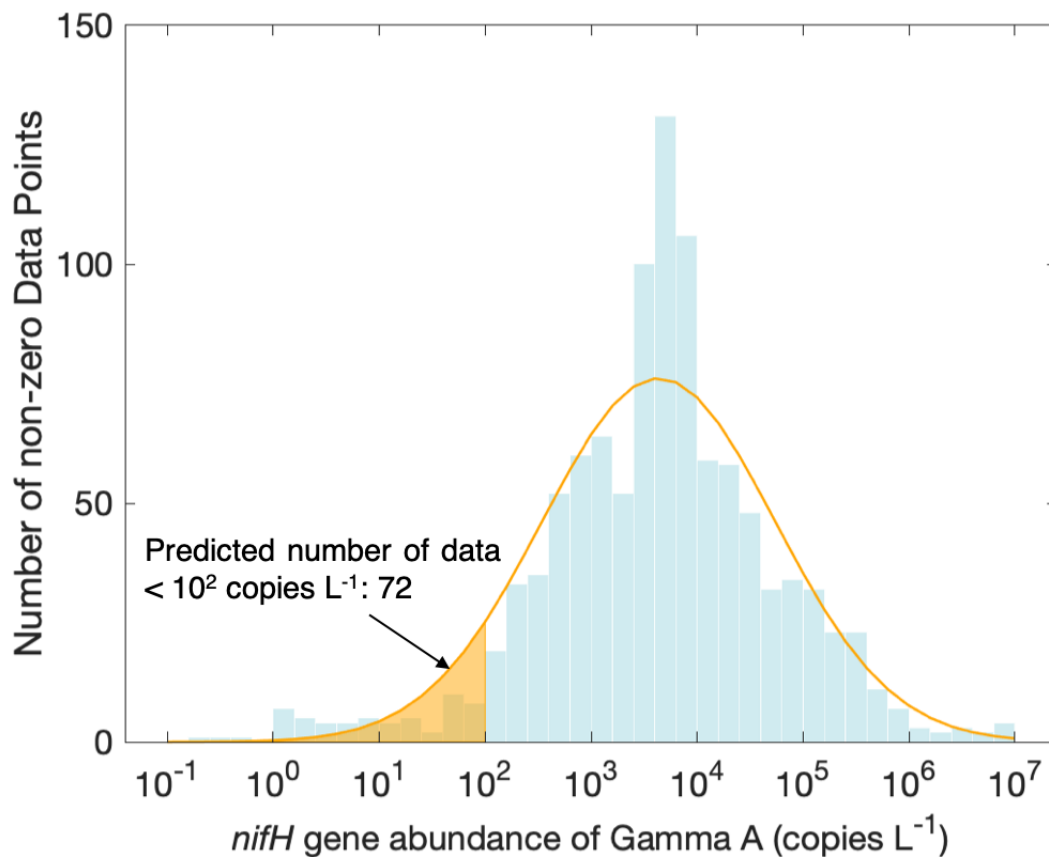


Figure S1. Histogram of non-zero *nifH*-based abundance of Gamma A in our dataset. Curve shows the predicted number of data points versus abundance assuming log-normal distribution of the data. The predicted number of non-zero data smaller than 10^2 copies L^{-1} is 72.

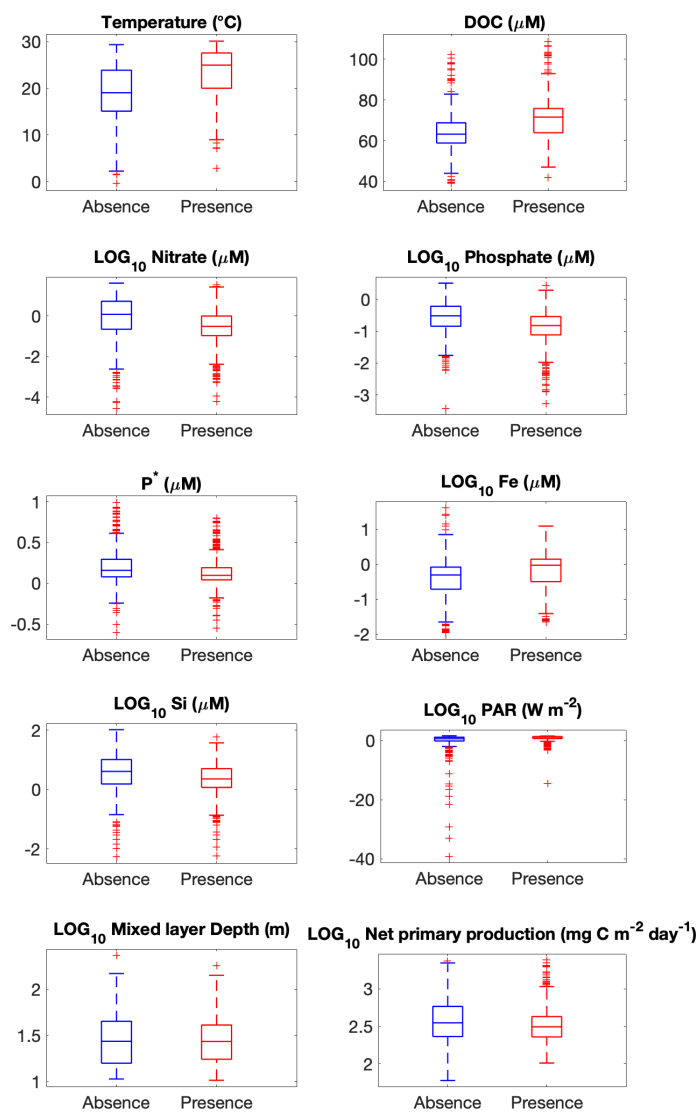


Figure S2. Environmental conditions of observed Gamma A non-zero and zero (including those reported as under detection) abundance data. Climatological monthly means (see Table 2 in main text) are used for the environmental conditions.

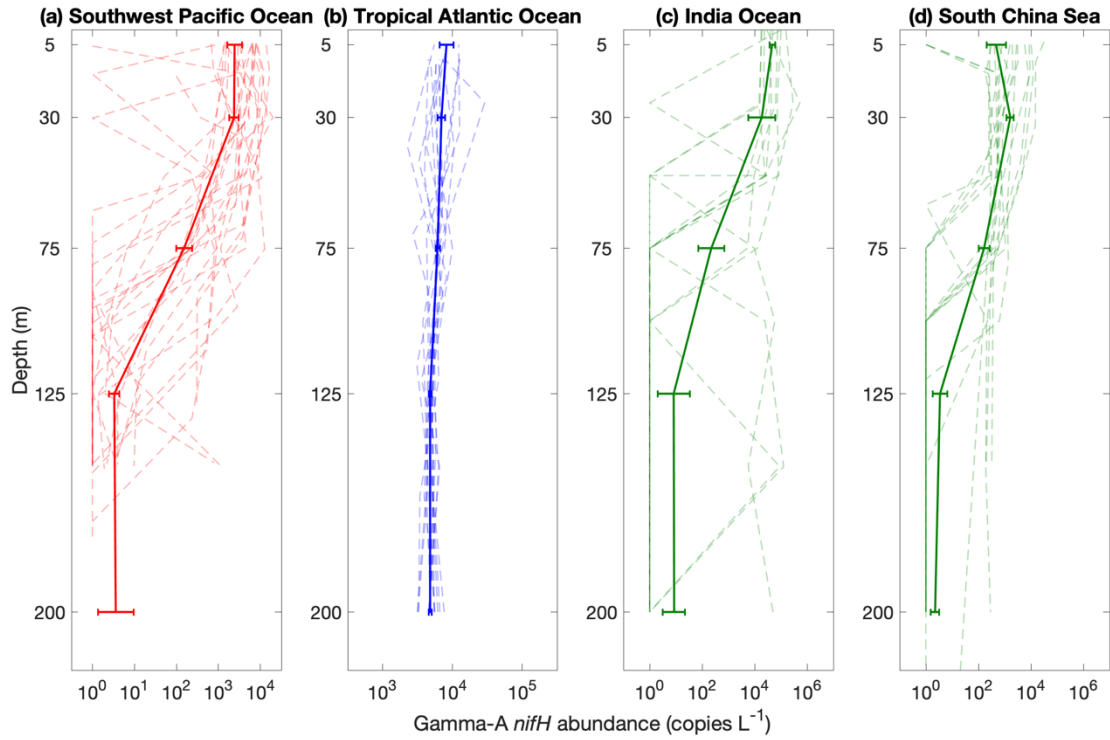
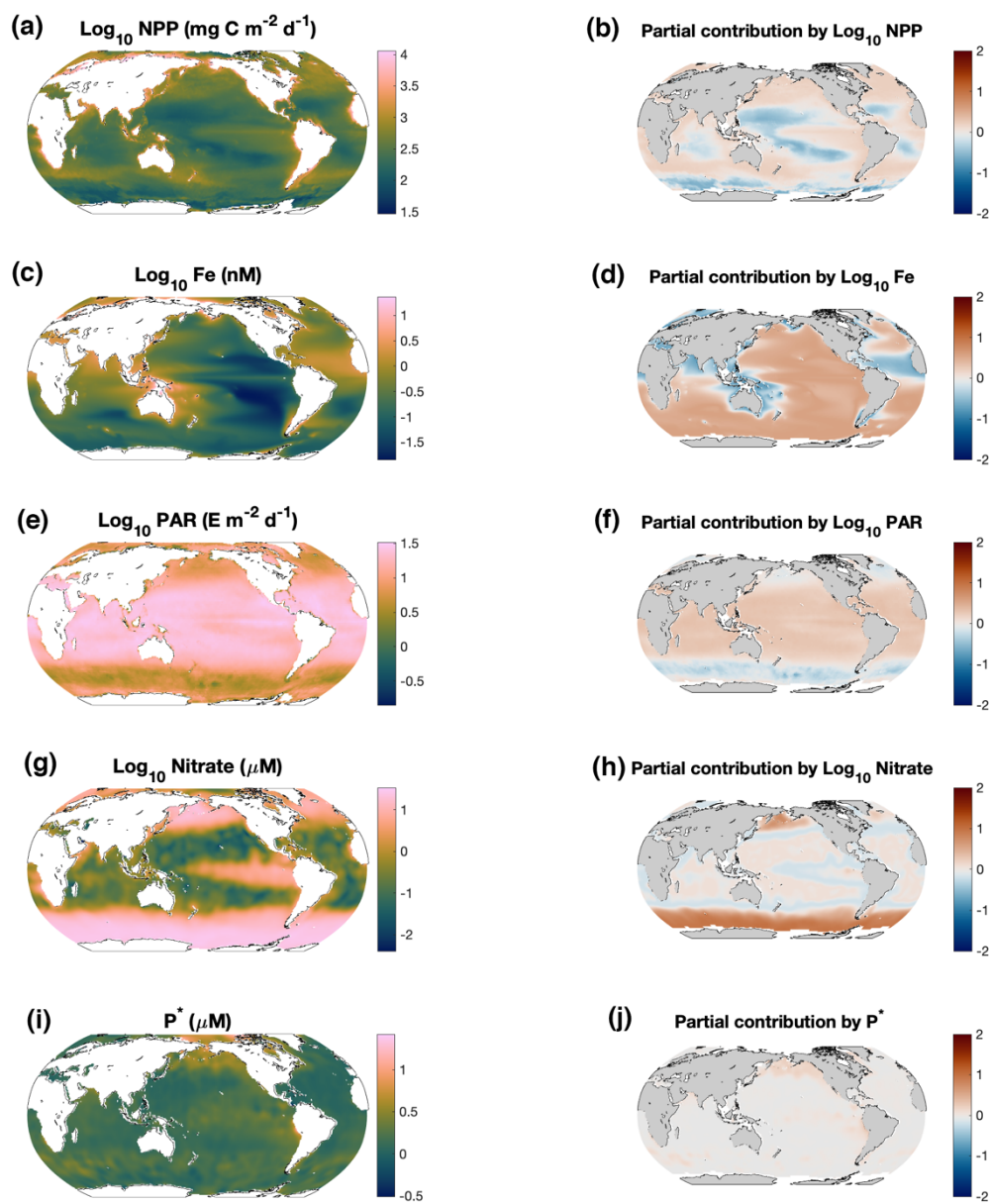
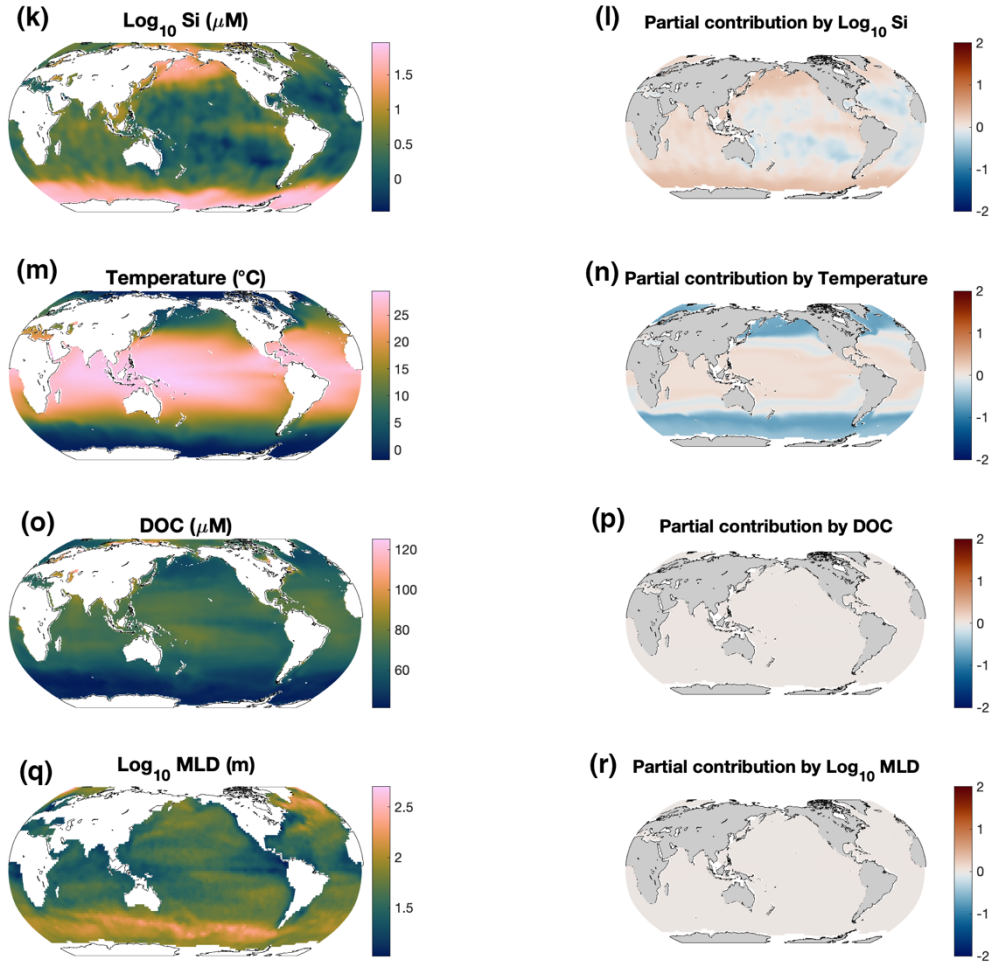


Figure S3. Vertical profiles of Gamma A abundance in (a) Southwest Pacific Ocean, (b) tropical Atlantic Ocean, (c) India Ocean, and (d) South China Sea. Dashed lines show all the sampled profiles, and solid lines and error bars are the mean and standard error in depth ranges of 0–10 m, 10–50 m, 50–100 m, 100–150 m and 150–250 m. Zero data was presented by 1 copy L^{-1} in this figure.





45 **Figure S4.** Maps of environmental parameters and their contribution to the prediction of Gamma A abundance. The data are the annual means in the surface 0–25 m ocean. The contribution includes the partial contribution to the generalized additive model by the environmental parameters. The scientific color map batlow and vik are used in several figures to prevent visual distortion of the data and exclusion of readers with color-vision deficiencies (Crameri et al., 2020).

Reference

Crameri, F., Shephard, G. E., and Heron, P. J.: The misuse of colour in science communication, Nat. Commun., 11, 5444, 10.1038/s41467-020-19160-7, 2020.