

### Appendix S1: List of 104 studies used in meta-analysis

ID	Abbreviation	Driver(s)	Reference:
1	Bechemin99	P, N	Béchemin, C., Grzebyk, D., Hachame, F., Hummert, C. and Maestrini, S.: Effect of different nitrogen/phosphorus nutrient ratios on the toxin content in <i>Alexandrium minutum</i> , <i>Aquat. Microb. Ecol.</i> , 20(2), 157–165, doi:10.3354/ame020157, 1999.
2	Berges02	T	Berges, J., Varela, D. and Harrison, P.: Effects of temperature on growth rate, cell composition and nitrogen metabolism in the marine diatom <i>Thalassiosira pseudonana</i> (Bacillariophyceae), <i>Mar. Ecol. Prog. Ser.</i> , 225, 139–146, doi:10.3354/meps225139, 2002.
3	BermanFrank01	Fe	Berman-Frank, I., Cullen, J. T., Shaked, Y., Sherrell, R. M. and Falkowski, P. G.: Iron availability, cellular iron quotas, and nitrogen fixation in <i>Trichodesmium</i> , <i>Limnol. Oceanogr.</i> , 46(6), 1249–1260, doi:10.4319/lo.2001.46.6.1249, 2001.
4	Bertilsson03	P	Bertilsson, S., Berglund, O., Karl, D. M. and Chisholm, S. W.: Elemental composition of marine <i>Prochlorococcus</i> and <i>Synechococcus</i> : Implications for the ecological stoichiometry of the sea, <i>Limnol. Oceanogr.</i> , 48(5), 1721–1731, doi:10.4319/lo.2003.48.5.1721, 2003.
5	Bi17	T	Bi, R., Ismar, S., Sommer, U. and Zhao, M.: Environmental dependence of the correlations between stoichiometric and fatty acid-based indicators of phytoplankton nutritional quality, <i>Limnol. Oceanogr.</i> , 62(1), 334–347, doi:10.1002/lno.10429, 2017.
6	Bi18	P, N, T	Bi, R., Ismar, S. M. H., Sommer, U. and Zhao, M.: Simultaneous shifts in elemental stoichiometry and fatty acids of <i>Emiliana huxleyi</i> in response to environmental changes, <i>Biogeosciences</i> , 15(4), 1029–1045, doi:10.5194/bg-15-1029-2018, 2018.
7	Bittar13	I	Bittar, T. B., Lin, Y., Sassano, L. R., Wheeler, B. J., Brown, S. L., Cochlan, W. P. and Johnson, Z. I.: Carbon allocation under light and nitrogen resource gradients in two model marine phytoplankton 1, edited by M. Posewitz, <i>J. Phycol.</i> , 49(3), 523–535, doi:10.1111/jpy.12060, 2013.
8	BlancoAmeijeiras18	Fe	Blanco-Ameijeiras, S., Moisset, S. A. M., Trimborn, S., Campbell, D. A., Heiden, J. P. and Hassler, C. S.: Elemental Stoichiometry and Photophysiology Regulation of <i>Synechococcus</i> sp. PCC7002 Under Increasing Severity of Chronic Iron Limitation, <i>Plant Cell Physiol.</i> , 59(9), 1803–1816, doi:10.1093/pcp/pcy097, 2018.
9	Borchard12	T	Borchard, C. and Engel, A.: Organic matter exudation by <i>Emiliana huxleyi</i> under simulated future ocean conditions, <i>Biogeosciences</i> , 9(8), 3405–3423, doi:10.5194/bg-9-3405-2012, 2012.
10	Boyd16	T	Boyd, P. W., Dillingham, P. W., McGraw, C. M., Armstrong, E. A., Cornwall, C. E., Feng, Y. Y., Hurd, C. L., Gault-Ringold, M., Roleda, M. Y., Timmins-Schiffman, E. and Nunn, B. L.: Physiological responses of a Southern Ocean diatom to complex future ocean conditions, <i>Nat. Clim. Chang.</i> , 6(2), 207–213, doi:10.1038/nclimate2811, 2016.

11	Brauer13	T	Brauer, V. S., Stomp, M., Rosso, C., van Beusekom, S. A., Emmerich, B., Stal, L. J. and Huisman, J.: Low temperature delays timing and enhances the cost of nitrogen fixation in the unicellular cyanobacterium <i>Cyanothece</i> , <i>ISME J.</i> , 7(11), 2105–2115, doi:10.1038/ismej.2013.103, 2013.
12	Bucciarelli10	Fe	Bucciarelli, E., Pondaven, P. and Sarthou, G.: Effects of an iron-light co-limitation on the elemental composition (Si, C, N) of the marine diatoms <i>Thalassiosira oceanica</i> and <i>Ditylum brightwellii</i> , <i>Biogeosciences</i> , 7(2), 657–669, doi:10.5194/bg-7-657-2010, 2010.
13	Claquin02	I	Claquin, P., Martin-Jezequel, V., Kromkamp, J. C., Veldhuis, M. J. W. and Kraay, G. W.: Uncoupling of silicon compared with carbon and nitrogen metabolisms and the role of the cell cycle in continuous cultures of <i>Thalassiosira pseudonana</i> (bacillariophyceae) under light, nitrogen, and phosphorus control, <i>J. Phycol.</i> , 38(5), 922–930, doi:10.1046/j.1529-8817.2002.t01-1-01220.x, 2002.
14	Cunningham17	Fe	Cunningham, B. R. and John, S. G.: The effect of iron limitation on cyanobacteria major nutrient and trace element stoichiometry, <i>Limnol. Oceanogr.</i> , 62(2), 846–858, doi:10.1002/lno.10484, 2017.
15	DeLaRocha00	Fe	De La Rocha, C., Hutchins, D., Brzezinski, M. and Zhang, Y.: Effects of iron and zinc deficiency on elemental composition and silica production by diatoms, <i>Mar. Ecol. Prog. Ser.</i> , 195, 71–79, doi:10.3354/meps195071, 2000.
16	Feng08	I, T	Feng, Y., Warner, M. E., Zhang, Y., Sun, J., Fu, F. X., Rose, J. M. and Hutchins, D. A.: Interactive effects of increased pCO <sub>2</sub> , temperature and irradiance on the marine coccolithophore <i>Emiliania huxleyi</i> (Prymnesiophyceae), <i>Eur. J. Phycol.</i> , 43(1), 87–98, doi:10.1080/09670260701664674, 2008.
17	Feng18	P, N, I, T	Feng, Y., Roleda, M. Y., Armstrong, E., Law, C. S., Boyd, P. W. and Hurd, C. L.: Environmental controls on the elemental composition of a Southern Hemisphere strain of the coccolithophore <i>Emiliania huxleyi</i> , <i>Biogeosciences</i> , 15(2), 581–595, doi:10.5194/bg-15-581-2018, 2018.
18	Finkel06	I	Finkel, Z. V., Quigg, A., Raven, J. A., Reinfelder, J. R., Schofield, O. E. and Falkowski, P. G.: Irradiance and the elemental stoichiometry of marine phytoplankton, <i>Limnol. Oceanogr.</i> , 51(6), 2690–2701, doi:10.4319/lno.2006.51.6.2690, 2006.
19	Fu05	P	Fu, F.-X., Zhang, Y., Bell, P. R. F. F. and Hutchins, D. A.: Phosphate Uptake And Growth Kinetics Of <i>Trichodesmium</i> (Cyanobacteria) Isolates From The North Atlantic Ocean And The Great Barrier Reef, Australia, <i>J. Phycol.</i> , 41(1), 62–73, doi:10.1111/j.1529-8817.2005.04063.x, 2005.
20	Fu06	P	Fu, F.-X., Zhang, Y., Feng, Y. and Hutchins, D. A.: Phosphate and ATP uptake and growth kinetics in axenic cultures of the cyanobacterium <i>Synechococcus</i> CCMP 1334, <i>Eur. J. Phycol.</i> , 41(1), 15–28, doi:10.1080/09670260500505037, 2006.

21	Fu07	T	Fu, F.-X. X., Warner, M. E., Zhang, Y. H., Feng, Y. Y., Hutchins, D. A., Fu, F.-X. X., Warner, M. E., Zhang, Y. H., Feng, Y. Y. and Hutchins, D. A.: Effects of increased temperature and CO <sub>2</sub> on photosynthesis, growth, and elemental ratios in marine <i>Synechococcus</i> and <i>Prochlorococcus</i> (Cyanobacteria), <i>J. Phycol.</i> , 43(3), 485–496, doi:10.1111/j.1529-8817.2007.00355.x, 2007.
22	Fu08a	T	Fu, F. X., Zhang, Y., Warner, M. E., Feng, Y., Sun, J. and Hutchins, D. A.: A comparison of future increased CO <sub>2</sub> and temperature effects on sympatric <i>Heterosigma akashiwo</i> and <i>Prorocentrum minimum</i> , <i>Harmful Algae</i> , 7(1), 76–90, doi:10.1016/j.hal.2007.05.006, 2008a.
23	Fu08b	Fe	Fu, F. X., Mulholland, M. R., Garcia, N. S., Beck, A., Bernhardt, P. W., Warner, M. E., Sañudo-Wilhelmy, S. A. and Hutchins, D. A.: Interactions between changing pCO <sub>2</sub> , N <sub>2</sub> fixation, and Fe limitation in the marine unicellular cyanobacterium <i>Crocospaera</i> , <i>Limnol. Oceanogr.</i> , 53(6), 2472–2484, doi:10.4319/lo.2008.53.6.2472, 2008b.
24	Fu14	T	Fu, F., Yu, E., Garcia, N., Gale, J., Luo, Y., Webb, E. and Hutchins, D.: Differing responses of marine N <sub>2</sub> fixers to warming and consequences for future diazotroph community structure, <i>Aquat. Microb. Ecol.</i> , 72(1), 33–46, doi:10.3354/ame01683, 2014.
25	Garcia11	I	Garcia, N. S., Fu, F.-X., Breene, C. L., Bernhardt, P. W., Mulholland, M. R., Sohm, J. A. and Hutchins, D. A.: Interactive effects of irradiance and CO <sub>2</sub> on CO <sub>2</sub> fixation and N <sub>2</sub> fixation in the diazotroph <i>Trichodesmium erythraeum</i> (Cyanobacteria), <i>J. Phycol.</i> , 47(6), 1292–1303, doi:10.1111/j.1529-8817.2011.01078.x, 2011.
26	Giovagnetti12	I	Giovagnetti, V., Cataldo, M. L., Conversano, F. and Brunet, C.: Growth and photophysiological responses of two picoplanktonic <i>Minutocellus</i> species, strains RCC967 and RCC703 (Bacillariophyceae), <i>Eur. J. Phycol.</i> , 47(4), 408–420, doi:10.1080/09670262.2012.733030, 2012.
27	Greene91	Fe	Greene, R. M., Geider, R. J. and Falkowski, P. G.: Effect of iron limitation on photosynthesis in a marine diatom, <i>Limnol. Oceanogr.</i> , 36(8), 1772–1782, doi:10.4319/lo.1991.36.8.1772, 1991.
28	Heiden16	I	Heiden, J. P., Bischof, K. and Trimborn, S.: Light Intensity Modulates the Response of Two Antarctic Diatom Species to Ocean Acidification, <i>Front. Mar. Sci.</i> , 3, 260, doi:10.3389/fmars.2016.00260, 2016.
29	Hoffmann07	Fe	Hoffmann, L. J., Peeken, I. and Lochte, K.: Effects of iron on the elemental stoichiometry during EIFEX and in the diatoms <i>Fragilariopsis kerguelensis</i> and <i>Chaetoceros dictyota</i> , <i>Biogeosciences</i> , 4(4), 569–579, doi:10.5194/bg-4-569-2007, 2007.
30	Hong17	N	Hong, H., Li, D., Lin, W., Li, W. and Shi, D.: Nitrogen nutritional condition affects the response of energy metabolism in diatoms to elevated carbon dioxide, <i>Mar. Ecol. Prog. Ser.</i> , 567, 41–56, doi:10.3354/meps12033, 2017.

31	Hoogstraten12	I	Hoogstraten, A., Peters, M., Timmermans, K. R. and De Baar, H. J. W.: Combined effects of inorganic carbon and light on <i>Phaeocystis globosa</i> Scherffel (Prymnesiophyceae), <i>Biogeosciences</i> , 9(5), 1885–1896, doi:10.5194/bg-9-1885-2012, 2012.
32	Hutchins07	P, T	Hutchins, D. A., Fu, F. X., Zhang, Y., Warner, M. E., Feng, Y., Portune, K., Bernhardt, P. W. and Mulholland, M. R.: CO <sub>2</sub> control of <i>Trichodesmium</i> N <sub>2</sub> fixation, photosynthesis, growth rates, and elemental ratios: Implications for past, present, and future ocean biogeochemistry, <i>Limnol. Oceanogr.</i> , 52(4), 1293–1304, doi:10.4319/lo.2007.52.4.1293, 2007.
33	Jacq14	Fe	Jacq, V., Ridame, C., L'Helguen, S., Kaczmar, F. and Salot, A.: Response of the Unicellular Diazotrophic Cyanobacterium <i>Crocospaera watsonii</i> to Iron Limitation, <i>PLoS One</i> , 9(1), e86749, doi:10.1371/journal.pone.0086749, 2014.
34	Jiang18	Fe, T	Jiang, H.-B., Fu, F.-X., Rivero-Calle, S., Levine, N. M., Sañudo-Wilhelmy, S. A., Qu, P.-P., Wang, X.-W., Pinedo-Gonzalez, P., Zhu, Z. and Hutchins, D. A.: Ocean warming alleviates iron limitation of marine nitrogen fixation, <i>Nat. Clim. Chang.</i> , 8(8), 709–712, doi:10.1038/s41558-018-0216-8, 2018.
35	Jing17	N	Jing, X., Lin, S., Zhang, H., Koerting, C. and Yu, Z.: Utilization of urea and expression profiles of related genes in the dinoflagellate <i>Prorocentrum donghaiense</i> , <i>PLoS One</i> , 12(11), 1–15, doi:10.1371/journal.pone.0187837, 2017.
36	Johansson99a	P, N	Johansson, N. and Granéli, E.: Cell density, chemical composition and toxicity of <i>Chrysochromulina polylepis</i> (Haptophyta) in relation to different N:P supply ratios, <i>Mar. Biol.</i> , 135(2), 209–217, doi:10.1007/s002270050618, 1999a.
37	Johansson99b	P, N	Johansson, N. and Granéli, E.: Influence of different nutrient conditions on cell density, chemical composition and toxicity of <i>Prymnesium parvum</i> (Haptophyta) in semi-continuous cultures, <i>J. Exp. Mar. Bio. Ecol.</i> , 239(2), 243–258, doi:10.1016/S0022-0981(99)00048-9, 1999b.
38	Kaffes10		Kaffes, A., Thoms, S., Trimborn, S., Rost, B., Langer, G., Richter, K. U., Köhler, A., Norici, A. and Giordano, M.: Carbon and nitrogen fluxes in the marine coccolithophore <i>Emiliana huxleyi</i> grown under different nitrate concentrations, <i>J. Exp. Mar. Bio. Ecol.</i> , 393(1–2), 1–8, doi:10.1016/j.jembe.2010.06.004, 2010.
39	Knapp12	N	Knapp, A. N., Dekaezemacker, J., Bonnet, S., Sohm, J. A. and Capone, D. G.: Sensitivity of <i>Trichodesmium erythraeum</i> and <i>Crocospaera watsonii</i> abundance and N <sub>2</sub> fixation rates to varying NO <sub>3</sub> - and PO <sub>4</sub> - concentrations in batch cultures, <i>Aquat. Microb. Ecol.</i> , 66(3), 223–236, doi:10.3354/ame01577, 2012.

40	Koch19	Fe	Koch, F., Beszteri, S., Harms, L. and Trimborn, S.: The impacts of iron limitation and ocean acidification on the cellular stoichiometry, photophysiology, and transcriptome of <i>Phaeocystis antarctica</i> , <i>Limnol. Oceanogr.</i> , 64(1), 357–375, doi:10.1002/lno.11045, 2019.
41	Kranz10	I	Kranz, S. A., Levitan, O., Richter, K.-U., Prášil, O., Berman-Frank, I. and Rost, B.: Combined effects of different CO <sub>2</sub> levels and N sources on the diazotrophic cyanobacterium <i>Trichodesmium</i> , <i>Plant Physiol.</i> , 154(1), 334–345, doi:10.1104/pp.110.159145, 2010.
42	Kremp09	T	Kremp, A., Rengefors, K. and Montresor, M.: Species-specific encystment patterns in three Baltic cold-water dinoflagellates: The role of multiple cues in resting cyst formation, <i>Limnol. Oceanogr.</i> , 54(4), 1125–1138, doi:10.4319/lo.2009.54.4.1125, 2009.
43	Kudo97	Fe, I	Kudo, I. and Harrison, P. J.: Effect of iron nutrition on the marine cyanobacterium <i>Synechococcus</i> grown on different N sources and irradiances, <i>J. Phycol.</i> , 33(2), 232–240, doi:10.1111/j.0022-3646.1997.00232.x, 1997.
44	Kudo00	Fe, T	Kudo, I., Miyamoto, M., Noiri, Y. and Maita, Y.: Combined effects of temperature and iron on the growth and physiology of the marine diatom <i>Phaeodactylum tricorutum</i> (Bacillariophyceae), <i>J. Phycol.</i> , 36(6), 1096–1102, doi:10.1046/j.1529-8817.2000.99042.x, 2000.
45	LaRoche93	P, N, Fe	La Roche, J., Geider, R. J., Graziano, L. M., Murray, H. and Lewis, K.: Induction of specific proteins in eukaryotic algae grown under iron-, phosphorus-, or nitrogen-deficient conditions, <i>J. Phycol.</i> , 29(6), 767–777, doi:10.1111/j.0022-3646.1993.00767.x, 1993.
46	Langer12	P, N	Langer, G., Oetjen, K. and Brenneis, T.: Calcification of <i>Calcidiscus leptoporus</i> under nitrogen and phosphorus limitation, <i>J. Exp. Mar. Bio. Ecol.</i> , 413, 131–137, doi:10.1016/j.jembe.2011.11.028, 2012.
47	Langer13	P, N	Langer, G., Oetjen, K. and Brenneis, T.: Coccolithophores do not increase particulate carbon production under nutrient limitation: A case study using <i>Emiliania huxleyi</i> (PML B92/11), <i>J. Exp. Mar. Bio. Ecol.</i> , 443, 155–161, doi:10.1016/j.jembe.2013.02.040, 2013.
48	Leonardos04a	I	Leonardos, N. and Geider, R. J.: Effects of nitrate: Phosphate supply ratio and irradiance on the C:N:P stoichiometry of <i>Chaetoceros muelleri</i> , <i>Eur. J. Phycol.</i> , 39(2), 173–180, doi:10.1080/0967026042000201867, 2004a.
49	Leonardos04b	P, I	Leonardos, N. and Geider, R. J.: Responses of elemental and biochemical composition of <i>Chaetoceros muelleri</i> to growth under varying light and nitrate : phosphate supply ratios and their influence on critical N: P, <i>Limnol. Oceanogr.</i> , 49(6), 2105–2114, doi:10.4319/lo.2004.49.6.2105, 2004b.
50	Leonardos05a	P, I	Leonardos, N. and Geider, R. J.: Elemental and biochemical composition of <i>Rhinomonas reticulata</i> (Cryptophyta) in relation to light and nitrate-to-phosphate supply ratios, <i>J. Phycol.</i> , 41(3), 567–576, doi:10.1111/j.1529-8817.2005.00082.x, 2005a.

51	Leonardos05b	P, I	Leonardos, N. and Geider, R. J.: Elevated atmospheric carbon dioxide increases organic carbon fixation by <i>Emiliania huxleyi</i> (Haptophyta), under nutrient-limited high-light conditions, <i>J. Phycol.</i> , 41(6), 1196–1203, doi:10.1111/j.1529-8817.2005.00152.x, 2005b.
52	Leong04	N	Leong, S. C. Y. and Taguchi, S.: Response of the dinoflagellate <i>Alexandrium tamarense</i> to a range of nitrogen sources and concentrations: Growth rate, chemical carbon and nitrogen, and pigments, <i>Hydrobiologia</i> , 515(1–3), 215–224, doi:10.1023/B:HYDR.0000027331.49819.a4, 2004.
53	Levasseur93	I	Levasseur, M., Thompson, P. A. and Harrison, P. J.: Physiological Acclimation of Marine Phytoplankton To Different Nitrogen Sources, <i>J. Phycol.</i> , 29(5), 587–595, doi:10.1111/j.0022-3646.1993.00587.x, 1993.
54	Levitan10	T	Levitan, O., Brown, C. M., Sudhaus, S., Campbell, D., LaRoche, J. and Berman-Frank, I.: Regulation of nitrogen metabolism in the marine diazotroph <i>Trichodesmium</i> IMS101 under varying temperatures and atmospheric CO <sub>2</sub> concentrations, <i>Environ. Microbiol.</i> , 12(7), 1899–1912, doi:10.1111/j.1462-2920.2010.02195.x, 2010.
55	Li12	N	Li, W., Gao, K. and Beardall, J.: Interactive Effects of Ocean Acidification and Nitrogen-Limitation on the Diatom <i>Phaeodactylum tricornutum</i> , <i>PLoS One</i> , 7(12), e51590, doi:10.1371/journal.pone.0051590, 2012.
56	Li13	I	Li, G. and Campbell, D. A.: Rising CO <sub>2</sub> Interacts with Growth Light and Growth Rate to Alter Photosystem II Photoinactivation of the Coastal Diatom <i>Thalassiosira pseudonana</i> , <i>PLoS One</i> , 8(1), e55562, doi:10.1371/journal.pone.0055562, 2013.
57	Li17	N, I	Li, G. and Campbell, D. A.: Interactive effects of nitrogen and light on growth rates and RUBISCO content of small and large centric diatoms, <i>Photosynth. Res.</i> , 131(1), 93–103, doi:10.1007/s11120-016-0301-7, 2017.
58	Li18	N	Li, Z., Wu, Y. and Beardall, J.: Physiological and biochemical responses of <i>Thalassiosira punctigera</i> to nitrate limitation, <i>Diatom Res.</i> , 33(2), 135–143, doi:10.1080/0269249X.2018.1489897, 2018.
59	Marchetti07	Fe	Marchetti, A. and Harrison, P. J.: Coupled changes in the cell morphology and the elemental (C, N, and Si) composition of the pennate diatom <i>Pseudonitzschia</i> due to iron deficiency, <i>Limnol. Oceanogr.</i> , 52(5), 2270–2284, doi:10.4319/lo.2007.52.5.2270, 2007.
60	Martiny16	T	Martiny, A. C., Talarmin, A., Mougnot, C., Lee, J. A., Huang, J. S., Gellene, A. G. and Caron, D. A.: Biogeochemical interactions control a temporal succession in the elemental composition of marine communities, <i>Limnol. Oceanogr.</i> , 61(2), 531–542, doi:10.1002/lno.10233, 2016.

61	McKew15	P, N	McKew, B. A., Metodieva, G., Raines, C. A., Metodiev, M. V. and Geider, R. J.: Acclimation of <i>E. miliana huxleyi</i> (1516) to nutrient limitation involves precise modification of the proteome to scavenge alternative sources of N and P, <i>Environ. Microbiol.</i> , 17(10), 4050–4062, doi:10.1111/1462-2920.12957, 2015.
62	Meyerink17	Fe	Meyerink, S. W., Ellwood, M. J., Maher, W. A., Dean Price, G. and Strzepek, R. F.: Effects of iron limitation on silicon uptake kinetics and elemental stoichiometry in two Southern Ocean diatoms, <i>Eucampia antarctica</i> and <i>Proboscia inermis</i> , and the temperate diatom <i>Thalassiosira pseudonana</i> , <i>Limnol. Oceanogr.</i> , 62(6), 2445–2462, doi:10.1002/lno.10578, 2017.
63	Mou17	N	Mou, S., Zhang, Y., Li, G., Li, H., Liang, Y., Tang, L., Tao, J., Xu, J., Li, J., Zhang, C. and Jiao, N.: Effects of elevated CO <sub>2</sub> and nitrogen supply on the growth and photosynthetic physiology of a marine cyanobacterium, <i>Synechococcus</i> sp. PCC7002, <i>J. Appl. Phycol.</i> , 29(4), 1755–1763, doi:10.1007/s10811-017-1089-3, 2017.
64	Mouginot15	P	Mouginot, C., Zimmerman, A. E., Bonachela, J. A., Fredricks, H., Allison, S. D., Van Mooy, B. A. S. and Martiny, A. C.: Resource allocation by the marine cyanobacterium <i>Synechococcus</i> WH8102 in response to different nutrient supply ratios, <i>Limnol. Oceanogr.</i> , 60(5), 1634–1641, doi:10.1002/lno.10123, 2015.
65	Muggli96	Fe	Muggli, D., Lecourt, M. and Harrison, P.: Effects of iron and nitrogen source on the sinking rate, physiology and metal composition of an oceanic diatom from the subarctic Pacific, <i>Mar. Ecol. Prog. Ser.</i> , 132, 215–227, doi:10.3354/meps132215, 1996.
66	Nielsen91	T	Nielsen, M. V. and Tønseth, C. P.: Temperature and salinity effect on growth and chemical composition of <i>Gyrodinium aureolum</i> Hulbert in culture, <i>J. Plankton Res.</i> , 13(2), 389–398, doi:10.1093/plankt/13.2.389, 1991.
67	Nielsen92	I	Nielsen, M. V.: Irradiance and daylength effects on growth and chemical composition of <i>Gyrodinium aureolum</i> Hulbert in culture, <i>J. Plankton Res.</i> , 14(6), 811–820, doi:10.1093/plankt/14.6.811, 1992.
68	Nielsen93	I	Nielsen, M. V. and Sakshaug, E.: Photobiological studies of <i>Skeletonema costatum</i> adapted to spectrally different light regimes, <i>Limnol. Oceanogr.</i> , 38(7), 1576–1581, doi:10.4319/lno.1993.38.7.1576, 1993.
69	Nielsen96	I, T	Nielsen, M.: Growth and chemical composition of the toxic dinoflagellate <i>Gymnodinium galatheanum</i> in relation to irradiance, temperature and salinity, <i>Mar. Ecol. Prog. Ser.</i> , 136, 205–211, doi:10.3354/meps136205, 1996.
70	Norici11	I	Norici, A., Bazzoni, A. M., Pugnetti, A., Raven, J. A. and Giordano, M.: Impact of irradiance on the C allocation in the coastal marine diatom <i>Skeletonema marinoi</i> Sarno and Zingone, <i>Plant, Cell Environ.</i> , 34(10), 1666–1677, doi:10.1111/j.1365-3040.2011.02362.x, 2011.

71	Oviedo14	P	Oviedo, A. M., Langer, G. and Ziveri, P.: Effect of phosphorus limitation on coccolith morphology and element ratios in Mediterranean strains of the coccolithophore <i>Emiliana huxleyi</i> , <i>J. Exp. Mar. Bio. Ecol.</i> , 459, 105–113, doi:10.1016/j.jembe.2014.04.021, 2014.
72	Passow15	I, T	Passow, U. and Laws, E.: Ocean acidification as one of multiple stressors: growth response of <i>Thalassiosira weissflogii</i> (diatom) under temperature and light stress, <i>Mar. Ecol. Prog. Ser.</i> , 541(1), 75–90, doi:10.3354/meps11541, 2015.
73	Perrin16	P, N, I	Perrin, L., Probert, I., Langer, G. and Aloisi, G.: Growth of the coccolithophore <i>Emiliana huxleyi</i> in light-and nutrient-limited batch reactors: relevance for the BIOSOPE deep ecological niche of coccolithophores, <i>Biogeosciences</i> , 13(21), 5983–6001, doi:10.5194/bg-13-5983-2016, 2016.
74	Plum15	N, I	Plum, C., Hüsener, M. and Hillebrand, H.: Multiple vs. single phytoplankton species alter stoichiometry of trophic interaction with zooplankton, <i>Ecology</i> , 96(11), 3075–3089, doi:10.1890/15-0393.1, 2015.
75	Qu18	N, T	Qu, P., Fu, F. and Hutchins, D. A.: Responses of the large centric diatom <i>Coscinodiscus</i> sp. to interactions between warming, elevated CO <sub>2</sub> , and nitrate availability, <i>Limnol. Oceanogr.</i> , 63(3), 1407–1424, doi:10.1002/lno.10781, 2018.
76	Rabouille17	I	Rabouille, S., Semedo Cabral, G. and Pedrotti, M.: Towards a carbon budget of the diazotrophic cyanobacterium <i>Crocospaera</i> : effect of irradiance, <i>Mar. Ecol. Prog. Ser.</i> , 570, 29–40, doi:10.3354/meps12087, 2017.
77	Rasdi15	P, N	Rasdi, N. W. and Qin, J. G.: Effect of N:P ratio on growth and chemical composition of <i>Nannochloropsis oculata</i> and <i>Tisochrysis lutea</i> , <i>J. Appl. Phycol.</i> , 27(6), 2221–2230, doi:10.1007/s10811-014-0495-z, 2015.
78	Richardson96	N	Richardson, T. L., Ciotti, Á. M., Cullen, J. J. and Villareal, T. A.: Physiological and optical properties of <i>Rhizosolenia formosa</i> (bacillariophyceae) in the context of open-ocean vertical migration, <i>J. Phycol.</i> , 32(5), 741–757, doi:10.1111/j.0022-3646.1996.00741.x, 1996.
79	Rokita12	I	Rokitta, S. D. and Rost, B.: Effects of CO <sub>2</sub> and their modulation by light in the life-cycle stages of the coccolithophore <i>Emiliana huxleyi</i> , <i>Limnol. Oceanogr.</i> , 57(2), 607–618, doi:10.4319/lo.2012.57.2.0607, 2012.
80	Roleda13	T	Roleda, M. Y., Slocombe, S. P., Leakey, R. J. G., Day, J. G., Bell, E. M. and Stanley, M. S.: Effects of temperature and nutrient regimes on biomass and lipid production by six oleaginous microalgae in batch culture employing a two-phase cultivation strategy, <i>Bioresour. Technol.</i> , 129, 439–449, doi:10.1016/j.biortech.2012.11.043, 2013.
81	Ruan17	N	Ruan, Z. and Giordano, M.: The use of NH <sub>4</sub> <sup>+</sup> rather than NO <sub>3</sub> <sup>-</sup> affects cell stoichiometry, C allocation, photosynthesis and growth in the cyanobacterium <i>Synechococcus</i> sp. UTEX LB 2380, only when energy is limiting, <i>Plant. Cell Environ.</i> , 40(2), 227–236, doi:10.1111/pce.12858, 2017.



82	SanudoWilhelmy04	P	Sañudo-Wilhelmy, S. A., Tovar-Sanchez, A., Fu, F.-X., Capone, D. G., Carpenter, E. J. and Hutchins, D. A.: The impact of surface-adsorbed phosphorus on phytoplankton Redfield stoichiometry, <i>Nature</i> , 432(7019), 897–901, doi:10.1038/nature03125, 2004.
83	Schaum18	T	Schaum, C.-E., Buckling, A., Smirnov, N., Studholme, D. J. and Yvon-Durocher, G.: Environmental fluctuations accelerate molecular evolution of thermal tolerance in a marine diatom, <i>Nat. Commun.</i> , 9(1), 1719, doi:10.1038/s41467-018-03906-5, 2018.
84	Schoo10	P	Schoo, K. L., Aberle, N., Malzahn, A. M. and Boersma, M.: Does the nutrient stoichiometry of primary producers affect the secondary consumer <i>Pleurobrachia pileus</i> ?, <i>Aquat. Ecol.</i> , 44(1), 233–242, doi:10.1007/s10452-009-9265-4, 2010.
85	Shi15	I	Shi, D., Li, W., Hopkinson, B. M., Hong, H., Li, D., Kao, S. J. and Lin, W.: Interactive effects of light, nitrogen source, and carbon dioxide on energy metabolism in the diatom <i>Thalassiosira pseudonana</i> , <i>Limnol. Oceanogr.</i> , 60(5), 1805–1822, doi:10.1002/lno.10134, 2015.
86	Six04	I	Six, C., Thomas, J., Brahmsha, B., Lemoine, Y. and Partensky, F.: Photophysiology of the marine cyanobacterium <i>Synechococcus</i> sp. WH8102, a new model organism, <i>Aquat. Microb. Ecol.</i> , 35(1), 17–29, doi:10.3354/ame035017, 2004.
87	Skau17	P, T	Skau, L. F., Andersen, T., Thrane, J.-E. and Hessen, D. O.: Growth, stoichiometry and cell size; temperature and nutrient responses in haptophytes, <i>PeerJ</i> , 5, e3743, doi:10.7717/peerj.3743, 2017.
88	Staehr02	N	Staehr, P., Henriksen, P. and Markager, S.: Photoacclimation of four marine phytoplankton species to irradiance and nutrient availability, <i>Mar. Ecol. Prog. Ser.</i> , 238, 47–59, doi:10.3354/meps238047, 2002.
89	Steinhoff14	P, N	Steinhoff, F. S., Karlberg, M., Graeve, M. and Wulff, A.: Cyanobacteria in Scandinavian coastal waters - A potential source for biofuels and fatty acids?, <i>Algal Res.</i> , 5(1), 42–51, doi:10.1016/j.algal.2014.05.005, 2014.
90	Strzepek00	I, T	Strzepek, R. F. and Price, N. M.: Influence of irradiance and temperature on the iron content of the marine diatom <i>Thalassiosira weissflogii</i> (Bacillariophyceae), <i>Mar. Ecol. Prog. Ser.</i> , 206, 107–117, doi:10.3354/meps206107, 2000.
91	Sugie13	Fe	Sugie, K. and Yoshimura, T.: Effects of p CO <sub>2</sub> and iron on the elemental composition and cell geometry of the marine diatom <i>Pseudo-nitzschia pseudodelicatissima</i> (Bacillariophyceae) 1, <i>J. Phycol.</i> , 49(3), 475–488, doi:10.1111/jpy.12054, 2013.
92	Sugie16	Fe	Sugie, K. and Yoshimura, T.: Effects of high CO <sub>2</sub> levels on the ecophysiology of the diatom <i>Thalassiosira weissflogii</i> differ depending on the iron nutritional status, <i>ICES J. Mar. Sci.</i> , 73(3), 680–692, doi:10.1093/icesjms/fsv259, 2016.

93	Sugie17	N, Fe	Sugie, K. and Kuma, K.: Change in the elemental composition and cell geometry of the marine diatom <i>Attheya longicornis</i> under nitrogen- and iron-depleted conditions, <i>Diatom Res.</i> , 32(1), 11–20, doi:10.1080/0269249X.2017.1301999, 2017.
94	Sun11	P	Sun, J., Hutchins, D. A., Feng, Y., Seubert, E. L., Caron, D. A. and Fu, F. X.: Effects of changing pCO <sub>2</sub> and phosphate availability on domoic acid production and physiology of the marine harmful bloom diatom <i>Pseudo-nitzschia multiseries</i> , <i>Limnol. Oceanogr.</i> , 56(3), 829–840, doi:10.4319/lo.2011.56.3.0829, 2011.
95	Sun18	N	Sun, M., Yang, Z. and Wawrik, B.: Metabolomic Fingerprints of Individual Algal Cells Using the Single-Probe Mass Spectrometry Technique, <i>Front. Plant Sci.</i> , 9, 571, doi:10.3389/fpls.2018.00571, 2018.
96	Taucher15	T	Taucher, J., Jones, J., James, A., Brzezinski, M. A., Carlson, C. A., Riebesell, U. and Passow, U.: Combined effects of CO <sub>2</sub> and temperature on carbon uptake and partitioning by the marine diatoms <i>Thalassiosira weissflogii</i> and <i>Dactyliosolen fragilissimus</i> , <i>Limnol. Oceanogr.</i> , 60(3), 901–919, doi:10.1002/lno.10063, 2015.
97	Tew14	T	Tew, K. S., Kao, Y. C., Ko, F. C., Kuo, J., Meng, P. J., Liu, P. J. and Glover, D. C.: Effects of elevated CO <sub>2</sub> and temperature on the growth, elemental composition, and cell size of two marine diatoms: potential implications of global climate change, <i>Hydrobiologia</i> , 741(1), 79–87, doi:10.1007/s10750-014-1856-y, 2014.
98	Thompson89	I	Thompson, P. A., Levasseur, M. E. and Harrison, P. J.: Light-limited growth on ammonium vs. nitrate: What is the advantage for marine phytoplankton?, <i>Limnol. Oceanogr.</i> , 34(6), 1014–1024, doi:10.4319/lo.1989.34.6.1014, 1989.
99	Thompson93	I	Thompson, P. A., Guo, M. and Harrison, P. J.: The influence of irradiance on the biochemical composition of three phytoplankton species and their nutritional value for larvae of the Pacific Oyster ( <i>Crassostrea gigas</i> ), <i>Mar. Biol.</i> , 117(2), 259–268, doi:10.1007/BF00345671, 1993.
100	Thompson94	I	Thompson, P. A., Guo, M. X. and Harrison, P. J.: Influence of irradiance on the nutritional value of two phytoplankton species fed to larval Japanese scallops ( <i>Patinopecten yessoensis</i> ), <i>Mar. Biol.</i> , 119(1), 89–97, doi:10.1007/BF00350110, 1994.
101	Wood95	I	Wood, G. J. and Flynn, K. J.: Growth of <i>Heterosigma carterae</i> (Raphidophyceae) on nitrate and ammonium at three photon flux densities: evidence for N stress in nitrate-growing cells, <i>J. Phycol.</i> , 31(6), 859–867, doi:10.1111/j.0022-3646.1995.00859.x, 1995.
102	Xu14	Fe	Xu, K., Fu, F.-X. and Hutchins, D. A.: Comparative responses of two dominant antarctic phytoplankton taxa to interactions between ocean acidification, Warming, Irradiance, And iron availability, <i>Limnol. Oceanogr.</i> , 59(6), 1919–1931, doi:10.4319/lo.2014.59.6.1919, 2014.

103	Zhu16	Fe, T	Zhu, Z., Xu, K., Fu, F., Spackeen, J. L., Bronk, D. A. and Hutchins, D. A.: A comparative study of iron and temperature interactive effects on diatoms and <i>Phaeocystis antarctica</i> from the Ross Sea, Antarctica, Mar. Ecol. Prog. Ser., 550, 39–51, doi:10.3354/meps11732, 2016.
104	Zhu17	T	Zhu, Z., Qu, P., Gale, J., Fu, F. and Hutchins, D. A.: Individual and interactive effects of warming and CO <sub>2</sub> on <i>Pseudo-nitzschia subcurvata</i> and <i>Phaeocystis antarctica</i> , two dominant phytoplankton from the Ross Sea, Antarctica, Biogeosciences, 14(23), 5281–5295, doi:10.5194/bg-14-5281-2017, 2017.