**Table S1.** Abundance of two unicellular diazotrophs in the South Atlantic as determined by qPCR. Depth profiles are shown for stations where depth profiles of N2-fixation were measured or where there were detectable numbers below the surface. UD = undetected; DNQ = detected, not quantifiable; data not available indicated with a dash.

Station Date Lat. (°N) Lon. (°E) depth (m) UCYN-A *Crocosphaera*

 (copies l-1)

1 18Nov07 -11.25 330 8 UD DNQ

2 19Nov07 -11.25 332.5 8 DNQ UD

3 20Nov07 -11.5 335 8 UD DNQ

3 20Nov07 -11.5 335 20 - DNQ

3 20Nov07 -11.5 335 40 DNQ -

6 23Nov07 -12.5 342.5 8 DNQ UD

7 24Nov07 -12.5 345 8 UD UD

8 25Nov07 -12.5 347.5 8 DNQ UD

9 25Nov07 -12.5 350 8 DNQ DNQ

10 26Nov07 -12.5 352.5 8 DNQ UD

11 27Nov07 -12.5 355 8 UD 86

12 28Nov07 -13.25 357.5 8 UD DNQ

13 01Dec07 -13.25 0 8 DNQ UD

13 01Dec07 -13.25 0 20 UD UD

14 02Dec07 -13.75 2.5 8 UD UD

15 03Dec07 -13.6 5 8 DNQ UD

16 04Dec07 -14.25 7.5 8 UD UD

17 04Dec07 -14.75 10 8 42573 230

17 04Dec07 -14.75 10 20 307601 UD

17 04Dec07 -14.75 10 40 720 UD

17 04Dec07 -14.75 10 70 3233 -

17 04Dec07 -14.75 10 110 775 -

18 05Dec07 -14.75 11.5 8 DNQ DNQ

19 05Dec07 -14.75 12.2 8 21847 UD

19 05Dec07 -14.75 12.2 20 524 DNQ

19 05Dec07 -14.75 12.2 40 DNQ DNQ

19 05Dec07 -14.75 12.2 70 DNQ -

19 05Dec07 -14.75 12.2 110 DNQ -

20 06Dec07 -17.5 11.25 8 DNQ DNQ

21 07Dec07 -20 12 8 DNQ -

22 08Dec07 -24 13.5 8 DNQ -

24 09Dec07 -25 13.5 8 UD -

25 10Dec07 -25 11.5 8 DNQ UD

27 11Dec07 -25 10 8 DNQ -